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A STUDY OF AIRBNB IN LONDON

THE EFFECT OF THE COVID-19 PANDEMIC ON THE STRATEGIES OF HOSTS AND THE CONSEQUENTIAL IMPACT ON ECONOMIC RETURNS

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A Mamma, che mi spinge ad essere ambiziosa.

A Daddy, che dà sempre consigli saggi (che faccio solo finta di non sentire).

A Maria Chiara, su cui posso sempre contare.

Ad Elizabeth, che avrà sempre un posto particolare nel mio cuore.

A Matteo, il ragazzo più speciale che la vita potesse farmi conoscere.

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A Nonno, fonte di grande sapere e conoscenza.

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A tutti i miei cugini, zii e zie, tutti esempi importanti nella mia vita, ognuno a modo suo.

A tutti i miei amici, che mi hanno sempre trasmesso energia e felicità.

Abstract

The outbreak of the Covid-19 Pandemic destabilised all industries, severely impacting tourism and hospitality. As a result, the Peer-to-Peer (P2P) accommodation sector, originally on a growth trajectory, was suddenly hit with massive losses.

By focusing on the impact of the Pandemic on Airbnb in London, the aim of this thesis is to quantify the economic effects of the individual strategies adopted by hosts to respond to the evolving demand trends. The empirical analysis is based on a dataset of Airbnb listings in London broken down at the property-by-month level (i.e., the unit of analysis), with observations covering the period from January 2019 to December 2020.

More specifically, this thesis attempts to conduct a structured analysis of the overall impact of the Pandemic on the tourism and hospitality industry, on the accommodation sector and, more specifically, on Airbnb, focusing on the platform's responses to the crisis and on the evolution of travel patterns. The study follows with a descriptive analysis of Airbnb in London, with particular attention paid to the change in demand and consequential change in supply. In order to assess the impact of the Pandemic, year-over-year changes in various metrics are presented, including variations in the Average Daily Rate (ADR), the Revenue Per Available Night (RevPAN) and the Occupancy Rate. Finally, an econometric model, and more specifically a Difference-in-Differences model, is used to assess the impact on economic performance of the strategies adopted by hosts in response to changes in demand. The model allows for the evaluation of the most successful strategies during a period of demand crisis.

This study was considered particularly worthwhile and novel bearing in mind that little is known about the impact of Covid-19 on Peer-to-Peer accommodation, and the effects of host strategies on economic performance. The study has both theoretical and practical implications since, on one hand, it provides insights into the evolution of demand trends in Peer-to-Peer accommodation and, on the other, it may lead to improved crisis management strategies by understanding what the most effective responses to the Pandemic have been.

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1. Introduction

On March 11, 2020, the WHO declared the novel Coronavirus (Covid-19) outbreak a global Pandemic (Ghebreyesus, 2020). Within a few weeks, the world would come to a complete standstill, with unprecedented and unforeseeable social, economic, political, technological, legal, and sanitary consequences.

With infections rapidly spreading across the globe, governments quickly began to restrict all types of travel by imposing various containment measures, such as travel bans and lockdowns. These disruptions had a significant impact on travel, making the tourism industry one of the most severely impacted by the Coronavirus disease outbreak (UNWTO, 2021c).

With airlines grounding their fleet and ceasing operations, everything came to a halt (Sahin, 2020). Flight numbers decreased by 88% in April compared to the previous year (Eurocontrol, 2020), and international tourist arrivals declined by 72.75% in 2020, plummeting to their lowest level in more than 30 years (UNWTO, 2021a). Furthermore, decisions to shut down hotels, restaurants, museums, cinemas, and theme parks, further disrupted the travel ecosystem.

The international hospitality and leisure industries, deeply linked to the tourism industry, were also confronted with enormous economic challenges (Farmaki et al., 2020). Unsurprisingly, with hotel occupancy decreasing by 85% in April year-over-year, despite the significant drops in hotel prices (STR, 2020), 2020 was named the worst year for hospitality in terms of Occupancy Rates since the Great Depression (CBRE, 2020). Like the traditional hotel industry, the short-term home rental market was significantly impacted.

Within 8 weeks, Airbnb lost 80% on a gross bookings value basis, prior to cancellations and alterations (Airbnb, 2021b), of what it took 12 years to build. Suddenly there was this sense of everything breaking at the same time. In this moment of crisis, as the business was tumbling down, Airbnb realised it had to completely revisit its strategy to face this sudden existential crisis.

The Pandemic not only caused great losses, but also restructured the whole meaning of travel, changing people's mindset. Travel patterns have changed dramatically, with traveller's needs and expectation evolving.

With demand decreasing at a higher rate than supply, market competition became extremely fierce. Furthermore, the re-configuration of customer habits resulted in a new demand segmentation leading to new economic performances of host strategies. To avoid being crushed by the recession and by the fierce competition, hosts had to employ the appropriate procedures at their disposal to extract rents in the newly reconfigured segments.

The ultimate goal of the present study is to quantify the causal effects directly attributable to the Pandemic on a variety of performance metrics, as well as to examine the mitigating effects of the strategies put in place by hosts in the highly competitive environment to respond to the new demand trends.

More specifically, throughout the thesis, the following research questions are addressed:

RQ-1) What were the global consequences of the health crisis and, more specifically, what were the effects on the tourism and hospitality industries?

RQ-2) How strongly was Airbnb impacted by the Pandemic and how did it respond to the threatening circumstances?

RQ-3) How did demand trends evolve as a result of the Covid-19 Pandemic outbreak?

RQ-4) What were the causal effects attributable to Covid-19 alone on host performance measures?

RQ-5) What strategies did Airbnb hosts implement to react to the crisis and what were their respective mitigating effects? Which strategies proved to be the most effective?

The methodology of this study envisages an initial descriptive analysis of the Airbnb market in London before and after the onset of the global Pandemic to evaluate changes in demand, adjustments in supply, and variations in various performance metrics over a two-year period (i.e., January 2019 – December 2020).

The London Airbnb market was chosen as the context of the following research. Apart from being one of the top ten destinations for both international tourist arrivals and international tourism receipts (UNWTO, 2021b), London was disproportionately impacted by the Covid-19 Pandemic (Statista, 2022) due to its dense population. Furthermore, because of its extensive

demand and supply segmentation, London was able to adapt to a wide range of customer needs and expectations that arose during the health crisis.

Because the observed variations in economic results cannot be attributed solely to the outbreak of the global Pandemic, a first econometric model is used to isolate the pure causal effect attributable to the health emergency on performance metrics. Effectively, average performance results typically differ between years and depending on the time of year which is considered, independent of the Covid-19 virus emergence. In addition, to isolate this pure causal effect, seasonality patterns and intrinsic time-invariant property characteristics must be controlled for.

Only after conducting a thorough investigation into the effects of the health crisis on performance metrics in the London Airbnb market, the study focuses on the strategies adopted by hosts as response measures. In particular, the two strategies examined in this study both refer to the booking process. Hosts have two basic tools to manage interactions with guests: the cancellation policy and the Instant Book option. Two other econometric models, like the first but applied on different sub-datasets according to the examined strategy, are employed to investigate which strategies effectively mitigated those effects directly attributable to the Pandemic.

The descriptive and econometric analyses are based on a large-scale longitudinal dataset of Airbnb listings in London at a property-by-month level (i.e., the unit of analysis), with data obtained from the provider of short-term rental data AirDNA. The data spans the months from January 2019 to December 2020, allowing to compare the pre-Covid-19 period to the post-Covid-19 period. Monthly observations were kept from the original dataset for each property if, in that specific month, the property was active on the platform[1]. More specifically, the 2019 dataset includes 945,048 observations on 147,265 listings managed by 76,723 hosts, while the 2020 dataset consists of 671,607 observations on 113,928 listings managed by 46,691 hosts.

The purpose of this research is to fill a gap in the literature. So far, the literature has primarily focused on the Airbnb platform during periods of rapid growth and expansion (e.g., Guttentag,

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[1] A property is considered active on the platform in month t, if in that month $Reservation\ Days_t + Available\ Days_t > 0$.

2015). Because the Covid-19 Pandemic has not only impacted demand and supply, but has also permanently altered consumer needs and expectations, previous studies cannot be applied to the new normal (Dolnicar & Zare, 2020). Furthermore, to the best of my knowledge, while some studies have already examined the impact of the global Pandemic outbreak on the decline of overall demand (e.g., Ştiubea, 2021), supply (e.g., Adamiak, 2021), and evolution of demand trends (e.g., Farmaki et al., 2020), very few have focused on the response strategies adopted by hosts and on their effectiveness.

The study has theoretical as well as practical implications. On one hand, it provides insights into the variation in demand, in supply and into the evolution of demand trends in Peer-to-Peer accommodation. On the other hand, understanding how to respond to emerging needs and expectations, as well as recognising what the most effective responses to the Pandemic have been, may lead to improved crisis management strategies.

2. Literature Review

2.1. The effects of the Pandemic

2.1.1. The global effects of Covid-19

The World Health Organization (WHO) received notification of cases of pneumonia in the city of Wuhan, China, with no known cause on December 31, 2019 (WHO, 2020). On January 7, Chinese authorities identified a novel Coronavirus, 2019-nCoV, later known as SARS-CoV-2, as the cause of these cases (Istituto Superiore di Sanità, 2020).

Italy was the first European country to experience a major outbreak in early 2020, becoming the first country in the world to enact a nationwide lockdown on March 9, 2020 (Horowitz, 2020). As the virus spread around the world, many countries would implement similar measures in the coming months.

As attempts to contain the virus failed, Covid-19 rapidly transformed from being a severe problem seemingly confined to China, to a global health emergency almost overnight. After having acknowledged it as a Public Health Emergency of International Concern on January 30, 2020, on March 11, 2020, the WHO declared the novel Coronavirus (Covid-19) outbreak a global Pandemic (Ghebreyesus, 2020).

According to *A Dictionary of Epidemiology*, the standard reference for epidemiologists, edited by Miquel Porta (2008), a Pandemic is *"an epidemic occurring worldwide, or over a very wide area, crossing international boundaries and usually affecting a large number of people"*. The same publication defines an epidemic as *"the occurrence in a community or region of cases of an illness [...] clearly in excess of normal expectancy"*.

By the beginning of May 2020 there were over 3.36 million confirmed cases and more than 246,000 reported deaths worldwide (Our World in Data, 2020-2022) and these numbers were bound to quickly increase. To slow down the spread of the Coronavirus disease, strict measures were implemented all over the world, disrupting most economic activities. Governmental interventions included travel restrictions, lockdowns, social distancing, quarantines, business closures, workplace hazard controls, testing systems, and tracing contacts of the infected.

While being severely affected by the Pandemic, the global tourism industry was also one of the major contributors to the diffusion of the virus (Nicolaides et al., 2019). The more people travel, the more likely it is for a disease to spread internationally (Farmaki et al., 2020).

In this globalised context and considering Covid-19's transmission pathways - the long incubation period, the presence of asymptomatic carriers and the virus's ability to survive in the external environment - it was almost impossible to contain the disease where it had originated. More specifically, with a long incubation period, people spread across the globe without even realising they were carrying the virus. At the same time, the difficulty in detecting asymptomatic carriers, often unaware of being infected, favoured the emergence of unexpected disease foci, making traceability almost impossible (Li et al., 2020). Furthermore, the virus's ability to survive for several days outside the host's body, enabled people to become infected simply by touching contaminated surfaces, despite the minimal risk of infection. The measures enacted by governments were expected to only slow down the spread of the Covid-19. It quickly became clear that a vaccine needed to be developed quickly in order to effectively overcome the Pandemic.

Several studies have identified the numerous factors that have caused the threat of Pandemic emergence to increase in the 21st century (Hall et al., 2020), these include: the growing mobility of the population, urbanisation, the industrialisation of food production processes and the expansion of global transport networks (Connolly et al., 2020; Hall, 2020). The outbreak of diseases like SARS, MERS, the Ebola and Zika viruses and more recently Covid-19 stands as evidence of the growing Pandemic threat (Farmaki et al., 2020). However, while all these diseases may have had health, social and economic impacts, Coronavirus is the only recent disease to have been classified as a Pandemic and as an economic super-shock. It is expected that not only diseases, but also super-shocks will appear more frequently in the future (Dolnicar & Zare, 2020).

According to the definition given by Investopedia (2021), an economic shock is *"any change to fundamental macroeconomic variables or relationships that has a substantial effect on macroeconomic outcomes and measures of economic performance, such as unemployment, consumption, and inflation"*.

Dolnicar and Zare (2020) postulate that three criteria differentiate economic shocks from those defined as super-shocks. First, the economic downturn and resulting decline in travel is global. Second, the economic shock is more severe, with economic growth reductions twice as large as those caused by regular shocks. Third, the shock has the potential to trigger structural changes in certain sectors of the industry.

As of March 9, 2022, exactly two years after Italy went into lockdown, the Pandemic had caused more than 451.61 million confirmed cases[2] (Our World in Data, 2020 - 2022) and 6.02 million lives lost to the disease[3] (Our World in Data, 2020 - 2022), making it one of the deadliest in history. The case fatality rate (CFR), defined as the number of deaths divided by the total number of people with confirmed illness, can be used to determine the severity of the disease. As reported by the WHO, Covid-19, has a 3.4% global fatality rate (Linas, 2020). Even with the CFR being lower than for other viruses, like SARS and MERS, Covid-19 has led to more total deaths as more people have been infected.

With vaccinations being vital to bring the Pandemic under control and make it less threatening, national vaccine rollout initiatives began and continued with full force. The global population saw a ray of hope when on December 31, 2020, the WHO issued its first emergency use validation for a Covid-19 vaccine, making the Pfizer/BioNTech vaccine the first available for use (Moore, 2021). Now, as of March 9, 2022, 10.85 billion Covid-19 vaccine doses have been administered, protecting 63.4% of the population at least partially (Our World in Data, 2020-2022).

The Covid-19 Pandemic triggered severe disruption around the world, initiating an unprecedented global health, social and economic emergency.

As far as the United States are concerned, the Covid-19 induced recession is thought to be the deepest since the Second World War and has been frequently compared to the Great Depression. The 2020 recession began with dramatic drops in economic activity, employment, and stock prices that matched or exceeded the initial declines of the Great Depression

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[2] Due to limited testing, the number of confirmed cases is lower than the true number of infections.

[3] For some countries the number of confirmed deaths is much lower than the true number of deaths. This is because of limited testing and challenges in the attribution of the cause of death.

(Wheelock, 2020). However, unlike the Great Depression, which lasted several years and, when it finally reached a trough nearly four years later, economic activity, employment, and consumer and equity prices were all far below their initial levels, the current downturn might be shorter (Wheelock, 2020). Nonetheless, by directly impacting all countries, the Covid-19 Pandemic will have more widespread effects than past recessions.

In 2020, world real GDP fell by 3.5% (Congressional Research Service, November 2021), world merchandise trade recorded a 7.4% decline in value (UNCTAD, 2021c), and global services trade was even more severely impacted with a contraction of 20% in value compared to 2019 (UNCTAD, 2021c). Companies were forced to rapidly adjust to the new normal and develop strategies to survive and succeed in the new environment. As of October 2021, the International Monetary Fund (IMF) has predicted the global economy to have grown by 5.9% in 2021, more than compensating for the 3.5% decline in 2020.

The significant economic impact has occurred for several reasons, including decreased productivity, trade disruption, reduction of travel and change in consumer spending (Pak et al., 2020). The productive activity slowed down due to global supply chain disruptions and firm closures. The global supply chain disruptions were mostly caused by businesses and borders being shut down, with transportation of goods becoming more difficult and expensive (UNCTAD, 2021b). Countries, and in some cases Regions, closed their borders, bringing to a general suspension of international, and in some cases domestic, travel. Consequently, service industries such as tourism, hospitality and transportation have suffered massive losses. In parallel, consumers have changed their spending behaviour, because of lower income, the feeling of fear and panic that comes with a health crisis (Pak et al., 2020) and the evolution of their needs. The Pandemic sparked a meteoric rise in online sales, with the number of transactions increasing for household products, jewellery and watches, sporting items, and cosmetics (Gu et al., 2021).

The Pandemic's economic repercussions have been very heterogeneous, varying greatly by industry and country. Office workers, for example, are more likely to switch to flexible working arrangements during the restrictions, whereas many industrial, tourism, retail, and transport workers will face significant job reductions as a result of community restrictions and low demand for their goods and services (Pak et al., 2020). Furthermore, while some countries are

heavily reliant on international trade in both goods and services, which were severely impacted particularly during the Pandemic's early stages, others are more self-sufficient.

In addition to economic repercussions, the Pandemic has had environmental and social consequences. The environment benefitted from the near-global lockdowns, which significantly reduced pollution. In terms of social impacts, the Pandemic raised issues of racial and geographic discrimination, health inequity, and of balance between public health imperatives and individual rights.

2.1.2. Covid-19 in the tourism and hospitality industries

2.1.2.1. World

The United Nations World Tourism Organization (UNWTO) (2020) identified tourism as one of the hardest hit industries, emphasising the high exposure of small and medium enterprises. Prior to the Covid-19 Pandemic, travel and tourism accounted for more than 10% of the global economy (Airbnb, 2021d), backed by a 56-fold growth in international travel from 1950 to 2018 (Roser, 2017), and supported more than 320 million jobs globally (Behsudi, 2020). Then in 2020, with airlines grounding their fleet and ceasing operations, everything came to a halt (Sahin, 2020). Flight numbers decreased by 88% in April compared to the previous year (Eurocontrol, 2020) and international arrivals plummeted to their lowest level in more than 30 years (UNWTO, 2021a). In addition to this, decisions being taken to shut down hotels, restaurants, museums, cinemas, and theme parks, further disrupted the travel ecosystem.

Directly linked to the tourism industry, the international hospitality and leisure industries have also been experiencing tremendous economic problems as a direct result of countries closing their borders and implementing lockdown measures (Farmaki et al., 2020). Unsurprisingly, with hotel occupancy decreasing by 85% in April year-over-year, despite the significant drops in hotel prices (STR, 2020), 2020 was named the worst year for hospitality in terms of Occupancy Rates since the Great Depression (CBRE, 2020). Similarly to the traditional hotel industry, the short-term home rental market was significantly impacted, with Airbnb Occupancy Rates falling significantly below 2019 levels (AirDNA, 2020).

The tourism and hospitality industries might not be stranger to pandemics, with shocks occurring on a regular basis (Farmaki et al., 2020), however, the emergence and rapid spread

of the new Coronavirus (Covid-19) has had unprecedented effects globally (Farmaki et al., 2020).

Compared to 2019, the number of international tourist arrivals on a global scale declined by 72.75% in 2020, or more than 1.06 billion trips, and by 71.52% in 2021, or more than 1.04 billion trips (Table 1). If the pre-Covid-19 months of January and February 2020 are excluded, the fall in international tourist arrivals amounts to 82.91%, compared to March-December 2019 (Figure 1).

Table 1: Annual international tourist arrivals on a global scale in 2019, 2020 and 2021 with relative comparisons

	2019	2020	2021
International tourist arrivals	1,459,136k	397,582k	415,525k
% change vs. 2019		-72.75%	-71.52%
% change vs. 2020			+4.51%

Source: Own elaboration based on data retrieved from UNWTO (2022).

Figure 1: International tourist arrivals in the World (thousands)

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2019	96790	94381	107464	118034	120659	135335	163245	164832	131859	116837	99642	108039
2020	98001	81185	37794	3862	5494	12263	34395	39583	30381	21076	14663	16865
2021	13753	11971	16111	18415	23194	32952	57100	64370	53301	47835	37203	37299
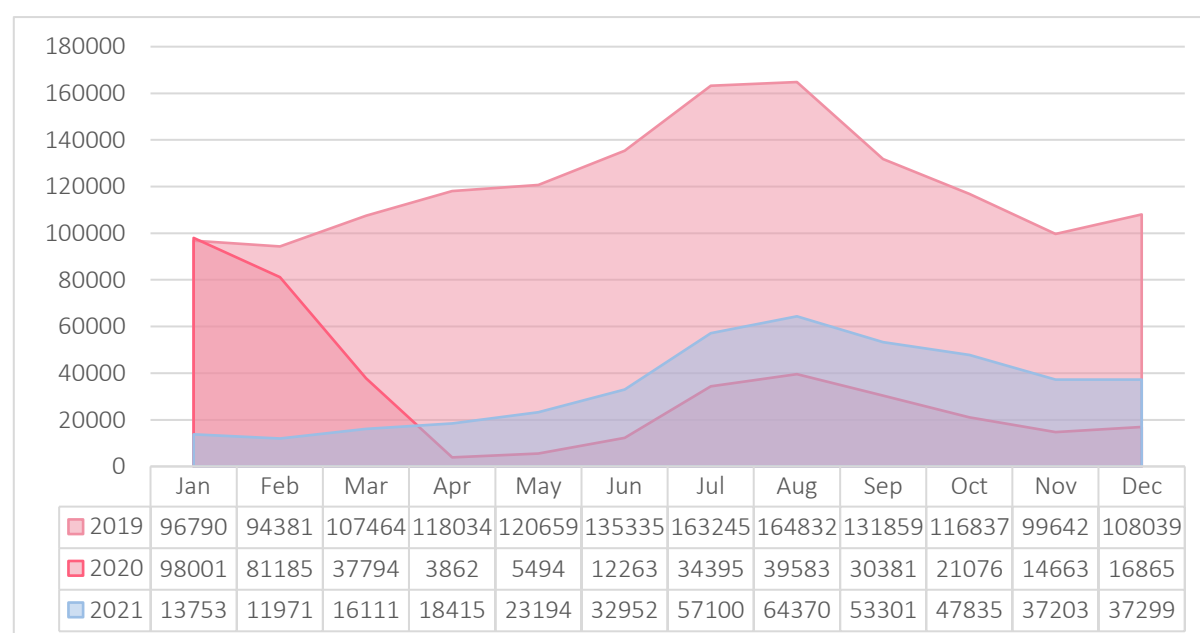
Source: Own elaboration based on data retrieved from UNWTO, 2022.

With the easing up of travel restrictions and with the vaccine rollout, 2021 registered a slight improvement in the number of international tourist arrivals, seeing a +4.51% increase with respect to 2020 (Table 1). The number of international tourist arrivals was higher in 2021 with respect to 2020 in all months from April to December (Figure 1). This demonstrates that, in terms of arrivals, 2021 was a better year for tourism overall, given that January and February 2020 were pre-Covid-19 months and that many countries went into lockdown near the end of March 2020.

On a global scale, 2021 was a slightly better year than 2020 in terms of international tourist arrivals. However, only the Americas and Europe saw an improvement between 2020 and 2021, as Africa, Asia and the Pacific, and the Middle East witnessed a further drop (Figure 2).

Figure 2: International tourist arrivals – comparison between 2020 and 2019 and between 2021 and 2019

Source: Own elaboration based on data retrieved from UNWTO (2022).

More specifically, North-East Asia, South-East Asia, Oceania, North Africa and South Asia have been the most affected regions, whereas the least affected regions have been North America, Western Europe and the Caribbean (UNCTAD, 2021a).

International tourist arrivals in the Northern Hemisphere have rebounded during the summer season as a result of the rapid vaccination campaign, the relaxation of entry restrictions in many nations, and increased travel confidence (UN, 2021).

In terms of vaccinations, while the proportion of vaccinated people in both the country of origin and the destination may be decisive, it is likely that tourists will still be hesitant to travel long distances, preferring closer destinations with high vaccination levels (UNCTAD, 2021a). The benefit of vaccinations is more pronounced in some countries than others. Losses are reduced in most developed countries but are magnified in developing countries where the lack of widespread vaccinations keeps tourists away. Tourism in continents such as Europe and North America, which rely on domestic tourism as well as international travel and have a high proportion of vaccinated people, is expected to recover faster, whereas developing countries that depend on international travel only will bear the greatest burden.

In addition to vaccinations, also the easing up of entry restrictions is fundamental to get people travelling again. Increased coordination and communication on travel requirements is critical in this context (UNCTAD, 2021a), as the difficulty in understanding the various rules established by different countries, as well as the various entry requirements, acts as a psychological barrier to travel. Other measures to facilitate travel could include low-cost, fast, and reliable testing, which would hopefully eliminate the need for quarantine upon arrival (UNCTAD, 2021a). Common standards must be established for destination countries to accept testing in the source countries. Concurrently, agreements are being made to simplify travel. Tourism in Europe, in particular, is benefitting greatly from the agreements reached between nations facilitating free movement within the European Union, which resulted in the introduction of the EU Digital Covid Certificate.

Finally, restoring the trust of travellers who are concerned about their health and are afraid of having their travel plans cancelled and being stranded abroad is critical to revive tourism. Aside from vaccinations, which make people less anxious to travel by reducing the risk of the virus, it is vital to provide travellers with flexibility by allowing them to cancel reservations if necessary.

2.1.2.2. Europe

For the reasons detailed above, Europe will probably rebound quicker than other regions. In comparison to 2019, total international arrivals in Europe dropped by 69.40% in 2020 and by 62.58% in 2021 (Figure 3). However, if the pre-Covid-19 months of January and February 2020 are excluded, the fall amounts to 77.55% when comparing the March-December period of 2020 to the same period in 2019 (Figure 3).

Figure 3: International tourist arrivals in Europe (thousands)

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2019	37041	37745	45604	56722	64124	77645	97808	98672	77831	59364	42415	43205
2020	38506	38490	17580	1818	3256	9532	29844	34428	24647	14000	7013	6795
2021	5784	5712	7145	8364	12362	21120	43251	52133	41902	34567	22885	21016
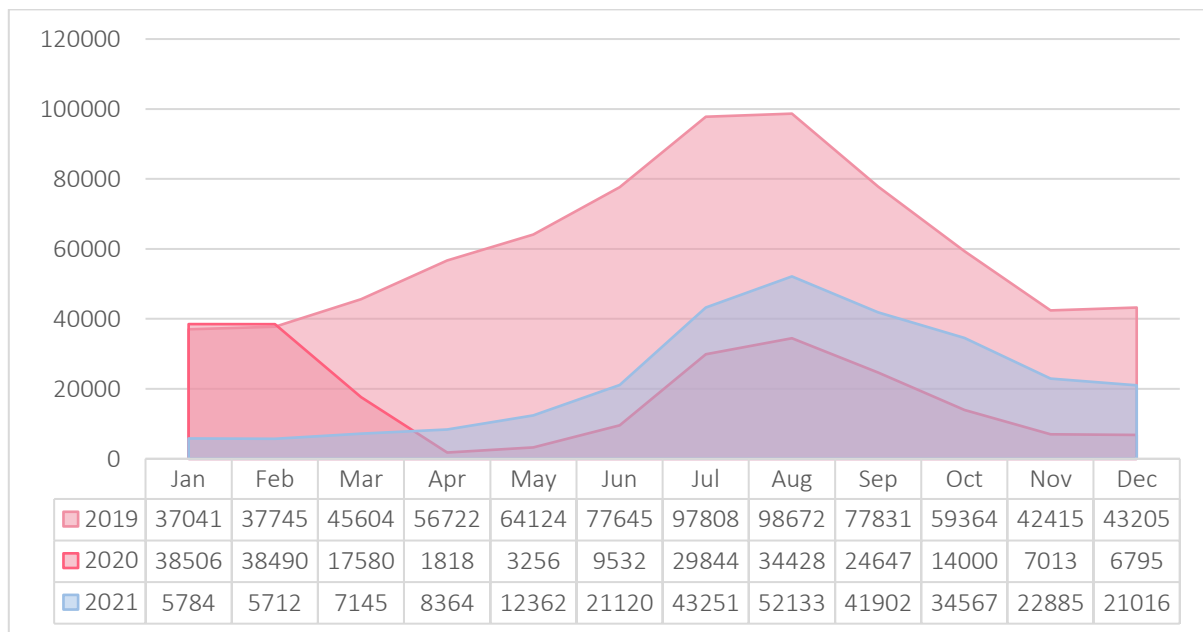
Source: Own elaboration based on data retrieved from UNWTO, 2022.

2.1.2.3. United Kingdom

As far as the United Kingdom is concerned, total international arrivals in the country dropped by 72.83% in 2020 with respect to 2019 (Figure 4), exceeding the European average of 69.40%. Excluding the months of January and February from the analysis, since the measures to block the Pandemic became widespread starting from March 2020, the fall amounts to 84.43% (Figure 4), versus the 77.55% registered overall in Europe. The drop in international arrivals in the UK has also been affected by Brexit. However, because the transition period ended on December 31, 2020, amidst the various lockdowns, it is hard to separate the effects of the two.

Figure 4: International tourist arrivals in the United Kingdom (thousands)

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2019	2830	2372	3129	3199	3438	3727	4155	4418	3292	3731	3121	3445
2020	3036	2512	1446	95	127	176	813	865	644	502	420	464
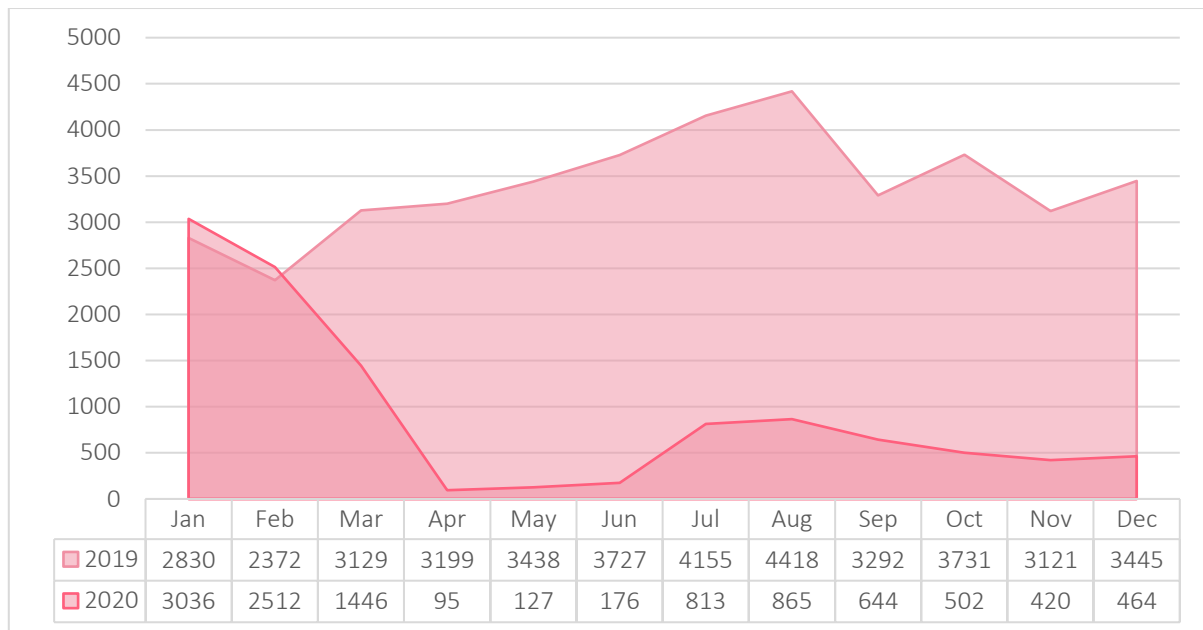
Source: Own elaboration based on data retrieved from UNWTO, 2022.

Hospitality, which includes the accommodation and the food and beverage service activities sector, has been one of the most affected industries by lockdowns and government restrictions throughout the Coronavirus (Covid-19) Pandemic, having registered a 45.26% drop in turnover in 2020 compared to 2019 (Table 2).

Table 2: Turnover in the hospitality industry in 2019 and 2020 - UK

	2019	2020	% Change
Accommodation sector	£28,938,926,000	£13,629,581,000	-52.90%
Food and beverage service activities sector	£76,754,041,000	£44,223,171,000	-42.38%
Hospitality industry	£105,692,967,000	£57,852,752,000	-45.26%

Source: Own elaboration based on data retrieved from Ramuni, 2021.

With daily deaths registered by the National Health Service (NHS) passing from an average of 803.50 in April 2020 to an average of 9.65 in August 2020 (GOV.UK, 2022), the Government eased off Covid-19 linked limitations during Summer 2020. The hospitality industry benefitted from the less restrictive measures that were in place, with turnover transitioning from an 87.13% year-over-year loss registered in April 2020 to a 24.05% year-over-year drop in August 2020 (Figure 5, Table 3).

Figure 5: Monthly turnover in the hospitality industry from January 2020 to May 2021 - UK
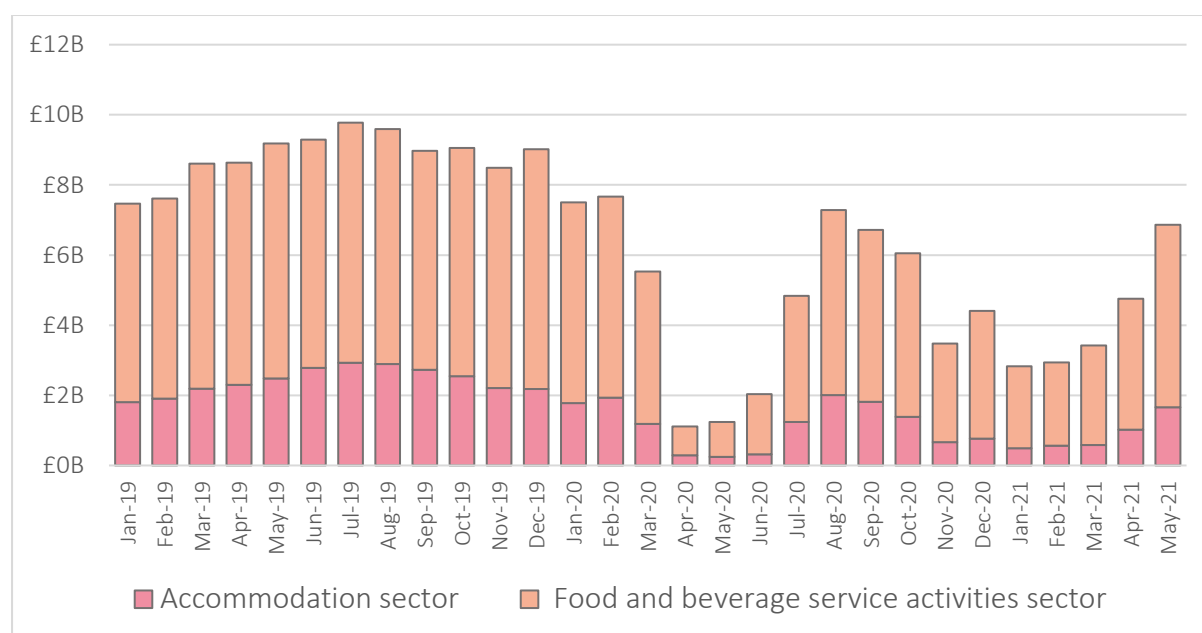
Source: Own elaboration based on data retrieved from Ramuni, 2021.

Table 3: Monthly turnover in the hospitality industry from January 2020 to May 2021 with year-over-year percentage changes - UK

HOSPITALITY INDUSTRY	2019	2020	% change
January	£7,465,263,000	£7,497,820,000	+0.44%
February	£7,612,034,000	£7,666,389,000	+0.71%
March	£8,603,727,000	£5,528,943,000	-35.74%
April	£8,635,339,000	£1,111,063,000	-87.13%
May	£9,178,894,000	£1,240,531,000	-86.48%
June	£9,293,658,000	£2,035,934,000	-78.09%
July	£9,777,104,000	£4,837,264,000	-50.52%
August	£9,589,395,000	£7,283,033,000	-24.05%
September	£8,970,970,000	£6,717,968,000	-25.11%
October	£9,056,228,000	£6,050,428,000	-33.19%
November	£8,489,180,000	£3,475,714,000	-59.06%
December	£9,021,175,000	£4,407,665,000	-51.14%
TOTAL	£105,692,967,000	£57,852,752,000	-45.26%

Source: Own elaboration based on data retrieved from Ramuni, 2021.

The accommodation sector saw a smaller improvement with respect to the food and beverage service activities sector, with the year-over-year change in turnover in the month of August being -30.43% (Table 4) and -21.30% (Table 5) respectively.

Table 4: Monthly turnover in the accommodation sector from January 2020 to May 2021 with year-over-year percentage changes - UK

ACCOMMODATION SECTOR	2019	2020	% change
January	£1,802,130,000	£1,780,106,000	-1.22%
February	£1,910,643,000	£1,931,965,000	+1.12%
March	£2,187,124,000	£1,183,196,000	-45.90%
April	£2,303,103,000	£294,890,000	-87.20%
May	£2,477,615,000	£245,356,000	-90.10%
June	£2,780,241,000	£317,747,000	-88.57%
July	£2,928,581,000	£1,239,567,000	-57.67%
August	£2,890,789,000	£2,011,246,000	-30.43%
September	£2,724,063,000	£1,816,084,000	-33.33%
October	£2,548,711,000	£1,383,629,000	-45.71%
November	£2,205,948,000	£662,258,000	-69.98%
December	£2,179,978,000	£763,537,000	-64.98%
TOTAL	£28,938,926,000	£13,629,581,000	-52.90%

Source: Own elaboration based on data retrieved from Ramuni, 2021.

Table 5: Monthly turnover in the food and beverage service activity sector from January 2020 to May 2021 with year-over-year percentage changes - UK

FOOD AND BEVERAGE SERVICE ACTIVITY SECTOR	2019	2020	% change
January	£5,663,133,000	£5,717,714,000	0.96%
February	£5,701,391,000	£5,734,424,000	0.58%
March	£6,416,603,000	£4,345,747,000	-32.27%
April	£6,332,236,000	£816,173,000	-87.11%
May	£6,701,279,000	£995,175,000	-85.15%
June	£6,513,417,000	£1,718,187,000	-73.62%
July	£6,848,523,000	£3,597,697,000	-47.47%
August	£6,698,606,000	£5,271,787,000	-21.30%
September	£6,246,907,000	£4,901,884,000	-21.53%
October	£6,507,517,000	£4,666,799,000	-28.29%
November	£6,283,232,000	£2,813,456,000	-55.22%
December	£6,841,197,000	£3,644,128,000	-46.73%
TOTAL	£76,754,041,000	£44,223,171,000	-42.38%

Source: Own elaboration based on data retrieved from Ramuni, 2021.

During the summer months travel significantly increased in the UK, however most holiday makers followed government advice to avoid foreign holidays by switching to domestic holidays.

To support the national economy and boost consumer spending, the Government devised different policy measures including the Eat Out to Help Out scheme. By offering 50% off the cost of food and/or non-alcoholic drinks consumed in participating businesses across the UK, the initiative aimed to help protect jobs in the hospitality sector by encouraging people to eat out (Hutton, 2020). In August, the scheme boosted consumer spending. However, dining out fell from mid-September as restrictions were re-imposed on hospitality venues.

2.1.2.4.   Direct and indirect effects

According to the UNWTO most recent forecast, the Coronavirus Pandemic has cost the global tourism sector USD $2 trillion in lost revenue in 2020 and has approximately cost the same

amount in 2021 (UN, 2021). The UNWTO (2021c) further estimates that 100-120 million direct tourism jobs were threatened.

Tourism experts believe that tourism will not fully recover until 2023 or later (UNWTO, 2021d), the main barriers being travel restrictions, slow containment of the virus, low traveller confidence and a poor economic environment (UNCTAD, 2021a). The emergence of new variants, spikes in oil prices and the disruptions in global supply chains, are all further causing the industry's recovery to be fragile and slow (UN, 2021).

The indirect effects are even more devastating, as labour and capital remain idle, and the lack of demand for intermediate goods and services has a negative upstream effect on many sectors. Diminished output in one sector reduces demand for inputs from other sectors, and so on down the supply chain. In the absence of any stimulus measures, a drop in tourist receipts results in a 2.5-fold loss in real GDP on average, due to linkages with upstream sectors (UNCTAD, 2021a).

Although crises generally have long-term negative effects on travel patterns, tourist demand, and destination image (Chew and Jahari, 2014; Chien and Law, 2003; Corbet et al., 2019), the tourism and hospitality industries have historically proven to be resilient. Destinations do, in fact, recover in the majority of cases (Seabra et al., 2020), especially when crisis management strategies are in place (Alonso-Almeida and Bremser, 2013), as travel behaviour tends to resume to normalcy as soon as the situation allows it (Dombey, 2004; Zeng et al., 2005).

Nonetheless, while many of the previously mentioned pandemics were short-lived (Gössling et al., 2020), the newly emerged Covid-19 virus, having varied risk perceptions, is expected to have long-term consequences for the tourism and hospitality industries (Ying et al., 2020), affecting operational aspects. The Pandemic has opened Pandora's box for Peer-to-Peer (P2P) accommodation platforms, exposing the vulnerable aspects of the sector (Farmaki et al., 2020).

While the traditional hospitality industry appears willing and capable of adjusting its operations to respond to the change in risk perceptions, concerns have been raised about the future of the P2P accommodation sector, and specifically the ability of hosts to follow suit (Farmaki et al., 2020). As a result, trading of space on Peer-to-Peer platforms may not return to pre-Covid-19 levels (Dolnicar & Zare, 2020), as the future of the sector remains to be seen.

While prior to Covid-19, many countries felt compelled to regulate short-term to promote fair competition and reduce the negative effects on the community (von Briel & Dolnicar, 2020), now regulators believe it is necessary to incentivise space trading via online platforms (Dolnicar & Zare, 2020).

2.1.2.5. Alleviating measures

According to a report published by United Nations Conference on Trade And Development (UNCTAD) (2021a), the following three measures are critical to mitigate the drastic effects of the Pandemic.

First and foremost, it is important to bring tourism back on track. This will be heavily reliant on the vaccine uptake, the removal and coordination of travel restrictions among countries, and the rebuilding of travellers' confidence.

Second, it is critical to mitigate the socio-economic impacts on livelihoods by enacting fiscal policies that support tourism businesses and workers. However, while this is helpful as a transitionary measure, incurred debts must be repaid at some stage. Rather than specific jobs, workers in declining sectors should be protected, for example through training.

Third, countries must make strategic decisions about the future of tourism in their territories, making structural adjustments where needed. Governments need to decide which businesses to support and for how long, since some tourism businesses will not survive even once travel restrictions are lifted. The Pandemic's long-term implications must be considered. The emergence of new variants, the increase in oil prices, the disruption of global supply chains, and, on top of this, increased environmental awareness, may further boost domestic tourism at the expense of international travel. Developing countries that count on international tourism might want to consider how to diversify resources away from this industry.

2.1.3. Covid-19 and Airbnb

2.1.3.1. Effects on the Airbnb platform

Together with the global tourism industry, the hospitality industry was significantly affected by the unprecedented disruption caused by the Covid-19 Pandemic. According to some industry analysts, hotels will have an advantage over P2P accommodation rentals in the post-Covid era primarily due to the lack of standardisation in P2P accommodation host practices which

accentuates concerns over health and safety (Glusac, 2020). Conversely, another line of thought is that the Pandemic will reinforce the demand for P2P accommodation as the rental of private apartments enables people to avoid personal contact.

Going into 2020, Airbnb was growing at a rapid pace and aggressively expanding into new categories (Taulli, 2020). In this dynamic growth path, the number of active listings kept rising. Even in March 2020, at the brink of an imminent Pandemic, 8% more active offers were available on average in major European cities[4], although a decline had already begun in Milan and Venice (Gyódi, 2021). It was not yet clear that, within weeks, the Covid-19 Pandemic would completely shut down the travel industry. Data for April show that the crisis became visible in the remaining cities almost immediately. By April, the gross bookings for nights and experiences plunged by 72% on a year-over-year basis (Taulli, 2020). In terms of market size, the greatest falls occurred in Lisbon, London, and Amsterdam, where, by August, around one fourth of active listings were withdrawn from the platform (Gyódi, 2021). It soon became obvious that Airbnb would have had to completely revisit its strategy to face its sudden existential crisis.

In 2020, Airbnb registered total revenues[5] of USD $3.4 billion, a 30% year-over-year fall when compared to the USD $4.8 billion in 2019 (Airbnb, 2021b), with all regions[6] generating less in 2020 than in 2019 (AllTheRooms, 2022). While this decrease is certainly substantial, it turned out to be less significant than predictions: at the depth of the Pandemic, Airbnb forecasted the 2020 revenue to be less than half of what it was in 2019 (Airbnb, 2021b). Despite the loss being lower than forecasted, because of the drop in revenue, Airbnb had to let go of a quarter of its workforce and raise emergency funding of around USD $2 billion (Fairley et al., 2021). In Q3 2020, which coincides with the summer months, revenue dropped by 18% year-over-year, reaching USD $1,342 million (Figure 6). Also in Q4 2020 results were satisfactory, with revenue of USD $859 million being down only 22% year-over-year (Figure 6), despite the second wave of Covid-19 cases and lockdowns the world experienced.

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[4] Study conducted by Kristóf Gyódi (2021) on 9 major EU cities including: Amsterdam, Barcelona, Berlin, Lisbon, London, Milan, Paris, Venice, Vienna.

[5] Commission that Airbnb generates on all bookings made on its platform.

[6] North America, Europe, Asia Pacific, Latin America, and Africa.

Figure 6: Quarterly Revenue (USD $M)
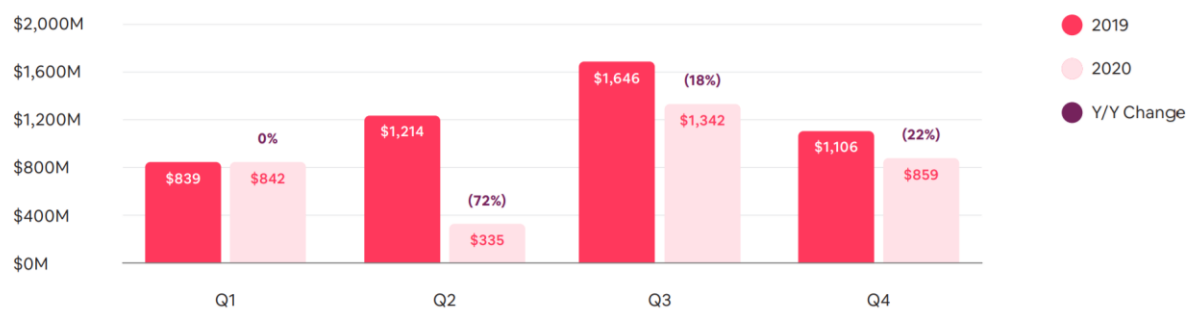
Source: Airbnb, 2021b.

The total number of Nights and Experiences Booked[7], net of cancellations and alterations, were 193.2 million in 2020, resulting in a 41% drop when compared to 2019 (Airbnb, 2021b). Despite the Pandemic, Airbnb's business proved highly resilient, with strength in North America, domestic travel, nearby travel, and long-term stays (Airbnb, 2021b). In its challenge to adapt to the changed environment, Airbnb put the Experiences product on hold and pivoted its original product to create online Experiences. Despite a 37% drop on a year-over-year basis, Airbnb managed to attract USD $23.9 billion in Gross Booking Value (GBV)[8], net of cancellations and alterations, thanks to the inherent adaptability of the platform to support a wide range of use cases (Airbnb, 2021b).

The GAAP net loss of USD $4.6 billion in 2020, compared to GAAP net loss of USD $674 million in 2019, was largely impacted by charges related to the IPO and subsequent stock price increase (Airbnb, 2021b). More specifically, the net loss included USD $2.8 billion of non-cash stock-based compensation expense (Figure 7). At the completion of the IPO in December 2020, Airbnb was required to recognise a significant portion of all stock-based compensation provided to its employees over the last several years. In parallel, the increase in stock price also raised the value of warrants issued in connection with a term loan agreement entered in April

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[7] Nights and Experiences Booked on the platform in a period represents the sum of the total number of nights booked for stays and the total number of seats booked for experiences, net of cancellations and alterations that occurred in that period.

[8] Gross Booking Value represents the dollar value of bookings on the platform in a period and is inclusive of Host earnings, service fees, cleaning fees, and taxes, net of cancellations and alterations that occurred during that period.

2020. Consequently, a non-cash mark-to-market adjustment of USD $827 million related to the warrants in Q4 2020 was recorded (Figure 7). Finally, the net loss also included USD $103 million of taxes associated to the IPO.

Figure 7: Quarterly GAAP Net Income/(Loss) (USD $M)

Source: Airbnb, 2021b.

Throughout 2020 Airbnb focused on improving its cost structure by reducing discretionary spending, improving variable costs, and tightly managing fixed expenses across the company (Airbnb, 2021b). As a result of its strong financial discipline, excluding the impact of stock-based compensation and stock-settlement obligations, which represent employer and related taxes associated with the IPO, Airbnb succeeded in reducing its operating expenses on a year-over-year basis in all categories (Airbnb, 2021b). Despite the impact of Covid-19 on Airbnb's revenue, its 2020 Adjusted EBITDA improved overall from the previous year, thanks to the better results registered in Q3 2020 and Q4 2020 on a year-over-year basis (Figure 8). In 2020, Airbnb's Adjusted EBITDA was USD $(251) million, compared to USD $(253) million in 2019, despite revenue being USD $1.4 billion lower (Airbnb, 2021b).

Figure 8: Quarterly Adjusted EBITDA (USD $M)
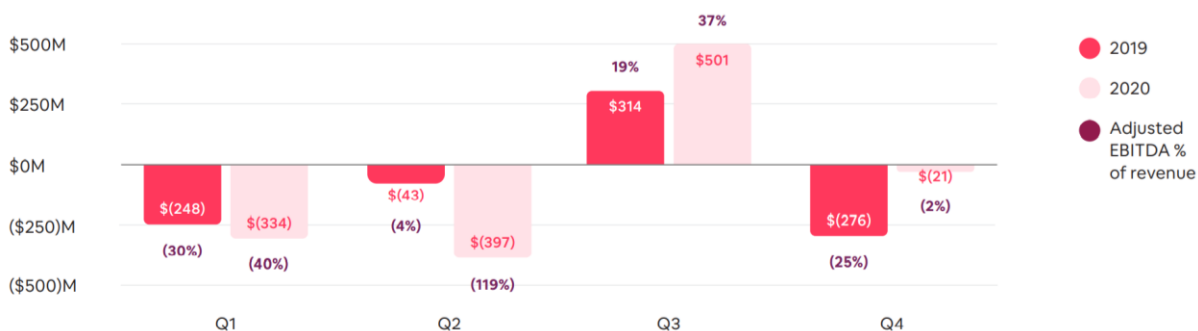
Source: Airbnb, 2021b.

It seems that Covid-19 has effectively disrupted the disruptor. The Pandemic has, in fact, disrupted the business operations of Airbnb, forcing the company to refocus and restructure.

With the disruptive impacts being unevenly distributed across key stakeholders, hosts have suffered the most because of the Pandemic (Fairley et al., 2021). Some hosts and co-hosts lost their businesses over Covid-19, many just survived, and a few thrived by leveraging the new opportunities brought about by the Pandemic. Guests were certainly less affected since Airbnb guaranteed refunds even when strict cancellation policies were in place regardless of hosts' sentiments, given that the Pandemic is effectively a superior force. The effects of the health crisis have also extended to other actors, like cleaners, who play their role in the hosting process.

Dolnicar & Zare (2020) anticipated that the future of P2P platforms would be affected by the disruption primarily in two ways: the proportion of investor-hosted listings dropping, and trading of space not recovering to its pre-Covid-19 levels. As far as Airbnb is concerned, the company saw many hosts who bought properties as investments for the short-term market move to the long-term. However, despite predictions, Airbnb managed to quickly return to demand levels similar to the pre-Covid-19 era already in 2021 (Airbnb, 2022d).

Even though the future of Airbnb is uncertain and heavily dependent on the success of the strategies put in place by the company and by the host population, Airbnb's stock market success reflects the general expectation that, as the vaccine is rolled out and restrictions are lifted, the travel industry will rebound, and the home sharing model will continue to redefine the tourism experience economy in the future.

2.1.3.2. Effects on the host population

Of all stakeholders, hosts have certainly suffered the most because of the Pandemic. However, the sudden drop in demand caused by Covid-19 impacted host types differently.

2.1.3.2.1. Host categorisation

2.1.3.2.1.1. Professional and non-professional hosts

At the most basic level, a distinction can be made between professional and non-professional hosts (Farmaki, Stergiou, & Kaniadakis, 2019; Li, Moreno, & Zhang, 2015).

According to Xie, Heo and Mao (2021), professional hosts include both multi-listing hosts (or multi-hosts) and full-time hosts. Multi-listing hosts are those who manage more than one property in a given month (Li et al., 2017), whereas full-time hosts are those whose listings are available on Airbnb – whether booked or not – for a full month (Xie, Heo & Mao, 2021). On the contrary, non-professional hosts are both single-listing hosts and part-time hosts.

Professional hosts, the most successful and valuable hosts on the platform (Xie, Heo & Mao, 2021), outperform non-professional hosts. More specifically, professional hosts account for roughly 71% of Airbnb's USD $14.1 billion in revenue in its top 12 markets (Dogru et al., 2020). According to Li et al. (2017), Airbnb properties managed by professional hosts earn 16.9% more in daily revenue and have 15.5% higher Occupancy Rates than properties owned by non-professional hosts. Their dominance in certain markets may eventually crowd out smaller hosts, effectively eradicating Airbnb's grassroot nature in its early days (Xie, Heo & Mao, 2021).

Hoteliers argue that professional hosts create unfair competition by converting housing stock into quasi-hotels, posing a threat to the hotel industry (Hickey & Cookney, 2016; Somerville & Levine, 2017). For these reasons, Xie, Heo and Mao (2021) advocate for a strong regulatory stance toward these professional hosts by re-evaluating their tax obligations and insurance requirements, with the ultimate aim of ensuring the well-being of all suppliers in a fair game of the P2P economy.

2.1.3.2.1.1.1. Single-listing vs. multi-listing hosts

Multi-hosts – hosts who list multiple properties on Airbnb - are one of the two types of professional hosts (Gunter & Onder, 2018; Li et al., 2017).

When compared to single-listing hosts, multi-listing hosts have superior performances (Xie, Heo & Mao, 2021): they generate a higher Average Daily Rate and a higher Occupancy Rate.

Multi-listing hosts clearly have an advantage in operating P2P accommodation sharing, owing to their experience, productivity, and efficiency (Li et al., 2017). By running multiple units, they collect more demand information in a given period and, as a result, have a better understanding of the local short-term rental market (Li et al., 2017). Furthermore, other than gaining valuable experience, they can spread fixed costs (such as equipment and overhead) across multiple listings. As a result, multi-listing hosts may capitalise on resources and

opportunities, optimise pricing strategies, increase synergy and cross-sale across listings, escalate productivity and efficiency, and eventually improve operational performance (Xie, Heo & Mao, 2021) with respect to their single-listing counterparts, leading to a competitive advantage in listing performance.

Single-listing hosts, on the other hand, frequently suffer from pricing inefficiencies, such as less frequent price adjustments and insufficient response to surges in demand, resulting in poor performance (Li et al., 2017).

According to Xie, Heo, and Mao (2021), if a host has multiple listings, the positive effect of customer evaluation on listing performance per night is mitigated as multi-listing hosts have an intrinsic higher degree of credibility and are perceived as more legitimate business operators. Furthermore, multi-listing hosts also have higher review volumes since they rent out properties more frequently (Xie, Heo and Mao, 2021). As a result, a multi-unit business operation reduces the overall level of uncertainty for travellers. On the opposite side of the spectrum, single-listing hosts who have fewer resources, volumes, and experience to influence performance, are more likely to care about customer ratings. For this reason, customer evaluation is more important in listing performance for single-listing hosts than for multi-listing hosts.

Xie and Mao (2017) issued a gentle warning that as their accommodation-sharing businesses expand, multi-listing hosts will face an unavoidable trade-off between quality and quantity due to an individual's limited resources (time, attention, etc.), which may jeopardise customer satisfaction and evaluation, hindering listing performance. As a result, it is critical for the P2P accommodation-sharing platform to monitor the quality performance of multi-listing hosts, detecting any act of listing expansion at the expense of declining customer satisfaction.

2.1.3.2.1.1.2. Part-time vs. full-time hosts

Full-time hosts – hosts who rent out their listings for the entire month or year (O'Neill & Ouyang, 2016) – are the second type of professional hosts. Conversely to full-time hosts, part-time hosts open up their listing only when they are not using the property and thus tend to list their units for periods shorter than the full length of a month or year.

Part-time hosts outperform full-time hosts for a listing on an Average Daily Rate basis due to their efficient utilisation of accommodation as a perishable good (Xie, Heo & Mao, 2021). While it may be true that part-time hosts face constraints in terms of when and whether to rent out their listings, it is also true that part-time hosts are more adept at meeting sporadic demand and are highly responsive to fluctuations in demand caused by major events (for example, cultural festivals and sporting events) (Xie, Heo & Mao, 2021). If a full-time host decides to rent out their accommodation for a full month or longer, then the price of the listing will be more standardised and less responsive to the variations of supply and demand. In addition, if the booking covers an entire month, discounts are often applied to the price.

Other than following the fluctuations in demand more effectively, part-time hosts are also more selective about when to open the listings, compared to full-time hosts. When there is a high demand for lodging and a limited supply, part-time hosts are more likely to list their properties so that they can charge high rates (Xie, Heo & Mao, 2021).

It is for this reason that major events tend to increase not only the demand for accommodation but also the number of Airbnb listings in the market. The largest increases in Airbnb supply and demand occur during major events, according to the STR report on Airbnb & Hotel Performance (2019). For example, there was a significant increase in Airbnb supply during the 2014 Super Bowl in East Rutherford, New Jersey, and there were 76% more Airbnb units available during the 2015 Boston Marathon (Xie, Heo & Mao, 2021). This evidence supports Zervas et al. (2017)'s finding according to which Airbnb homes can be instantly scaled by part-time hosts to match on-demand needs.

As explained by Gyódi (2021), in the absence of high entry costs, Airbnb hosts can decide whether to serve guests based on the current market prices and the marginal cost of providing the service. On the contrary, hotels need to pay high entry costs. In addition, unlike Airbnb hosts, hotels have a fixed capacity that cannot be expanded during periods of high demand, and that remains idle during off-peak periods. Airbnb supply is much more flexible and can better react to the fluctuation of demand (Einav et al., 2016).

Airbnb's ability to scale instantaneous supplies may have helped part-time hosts make a lot of money in a short period of time, boosting the performance of a listing for its available nights (Xie, Heo & Mao, 2021). According to the Rational Agent Theory (Osborne & d Rubinstein,

2001), part-time hosts would only offer listings if the perceived monetary benefits outweighed the opportunity cost of their hosting activities. For this reason, when demand is high it is probable that part-time hosts would make their properties available, since the Revenue Per Available Night will be higher than average. In terms of performance, part-time hosts greatly benefit from this opportunistic (maximising the return on their time and effort) and selective listing practice.

According to a study conducted by Xie et al. (2021) across 407 cities in the entire state of California, on average, a listing managed by a full-time host generates 23.8% less monthly Revenue Per Available Night than a listing managed by a part-time host.

In parallel to this, O'Neill and Ouyang (2016) demonstrated professional hosts' higher revenue-generating capabilities. Even if on a per nightly basis, part-time hosts perform better, full-time hosts on average generate more revenue than part-time hosts (Xie, Heo & Mao, 2021).

While customer evaluation has a positive effect on listing performance per night, it differs between professional host, being weaker for multi-listing hosts but magnified for full-time hosts (Xie, Heo, & Mao, 2021). Full-time hosts place a higher value on customer ratings than part-time hosts (Xie, Heo & Mao, 2021). Having a higher level of commitment, full-time hosts devote more effort in attracting and retaining guests. In addition, they firmly believe that customer ratings have a long-term impact on their dedicated listing operation and thus have a greater influence on a listing managed by them than on a listing managed by a part-time host and, for customer ratings to effectively be a powerful reputation signal, consistent accumulation over time is necessary. Customer evaluation can help hosts perform better, whereas customer reputation, plays a significant role in mitigating the host disadvantage in operating a full-time listing. The selective nature of part-time hosts, on the other hand, indicates a smaller commitment to hosting activities and associated factors such as customer ratings (Xie, Heo & Mao, 2021).

According to Xie, Heo and Mao (2021), Airbnb should consider revenue management to encourage more part-time hosting activities in areas and at times where guest demand is high and city regulations are strict by supporting part-time hosts in providing services. Airbnb is currently providing tools like Calendar Updates (https://blog.atairbnb.com/calendar-updates/)

and Smart Pricing (https://blog.atairbnb.com/smart-pricing/) to assist hosts in maintaining an up-to-date calendar and a market-driven price.

2.1.3.2.1.2. Capitalists, Befrienders and Ethicists

Other than the distinction made between professional and non-professional hosts, Hardy and Dolnicar (2018a) suggest a further categorisation based on the key factors motivating hosting and the cost structures encountered, thus distinguishing between Capitalists, Befrienders, and Ethicists. Because of the major disparities in their values and personal business models, these three types of hosts each have unique hosting experiences (Fairley et al., 2021).

The pure types below, defined by Hardy and Dolnicar (2018a), are uncommon as hosts are typically a mix of each.

Capitalists seek the greatest return on investment: their hosting behaviour is centred on maximising profit margins for both long-term and short-term financial gain. For this reason, they tend to confirm all booking requests, accepting the Instant Book option, without determining their individual risk and merely consider P2P networks as distribution channels. They are typically unattached to the spaces they rent out and have no desire to interact with guests and to communicate with other hosts.

Befrienders may welcome the money, but profit is not their priority. They have a strong desire to socialise, meet new people and expand their social circle. They generally wish to interact with guests before the booking is confirmed, meet them when they arrive, and possibly communicate with them during their stay. It is crucial to them that their guests' needs are met, and hence they provide information and recommendations. Befrienders may also enjoy interactions with other hosts, though this is not necessarily the case; socialising with guests is their priority.

Ethicists want to live an ethical life. Their behaviour is thus guided by the principle of ensuring sustainability in all aspects of their lives, including space utilisation. Passionate about their participation to P2P accommodation networks, of all host types they are the most likely to interact with other like-minded hosts and form neo-tribes around their hosting activity.

The above classification is linked to the primary reason for participating in Peer-to-Peer accommodation trading. However, there are other features that differentiate host types, such

as how they manage hosting-related tasks (Hardy & Dolnicar, 2018a). Whereas some hosts prefer to have complete control over all aspects of their listing, some are willing to accept recommendations, regarding for example the minimum number of nights guests must stay or the recommended price.

2.1.3.2.1.3. Hosting agents

As the idea of renting accommodation as an investment is becoming increasingly popular, demand is growing for full-service co-hosting providers (Sigala & Dolnicar, 2018), namely, individuals or businesses who effectively take on the entire hosting role (Fairley et al., 2021). Capitalist hosts generally have no desire to oversee the day-to-day operations of their short-term rental business and seek to outsource hosting-related activities entirely (Forgacs & Dolnicar, 2018).

Hosting agents handle all aspects of hosting. In exchange for a percentage of the rental income, they manage marketing, handle accommodation bookings, and perform maintenance on Airbnb (Xie, Heo & Mao, 2021). Therefore, when a host hires a hosting agent, there is no further interaction between the host and the guest. The host is essentially a property investor, and the hosting agent is a business with management rights (Reinhold & Dolnicar, 2021).

Outsourcing hosting-related activities not only allows Capitalist hosts to run their businesses more efficiently, but also assures increased guest satisfaction that translates into better reviews (Fairley et al., 2021). Guest have raised their expectations and customer satisfaction has become key as they no longer perceive Airbnb as a niche offering for alternative travellers, but now compare the properties directly to hotel rooms (Mohlmann, 2015).

Airbnb understood the benefits of encouraging co-hosting some time ago, first introducing the co-hosting function on its platform in 2016 to enable someone other than the owner or long-term tenant of the listed property to take over all hosting work on their behalf (Kokalitcheva, 2016). Later, with the intent of directly expanding its services in this sector, it acquired Luckey Homes in 2018 (Stevens, 2018), a well-established full-service co-hosting service provider (Airbnb, 2020a).

Co-hosting has the potential to further accelerate Airbnb's growth by encouraging Capitalist hosts who do not have the time nor interest to engage in hosting to join the platform (Fairley et al., 2021).

2.1.3.2.2. Toward the professionalisation and commercialisation of the listings in the pre-Covid-19 era

When Airbnb first launched, it was perceived as an alternative way to find lodging while travelling but, as word spread about its benefits, it soon grew from a fringe phenomenon to a mainstream tourist accommodation option (Fairley et al., 2021). Peer-to-Peer accommodation networks quickly expanded and renting vacation accommodation from a private person rather than a professional, licensed, commercial provider, became common among tourists. As a result, Airbnb attracted an increasing number of Capitalist hosts who entered the market (Hardy & Dolnicar, 2018a; Karlsson & Dolnicar, 2016) to leverage the entrepreneurial opportunities presented (Sigala & Dolnicar, 2018).

This increased interest from profit-driven investors resulted in the professionalisation and commercialisation of the listings (Dolnicar, 2021). There is various evidence demonstrating the increase in proportion of Capitalist hosts.

First, the percentage of entire homes listed on the platform has been increasing over time. Because of the differences in key factors motivating hosting, typically Capitalists rent out entire apartments whereas Befrienders and Ethicists tend to rent out rooms in their private accommodation. In 2017, two-thirds of Airbnb listings were entire homes, with the remaining one-third being private rooms in shared accommodation – a significant shift from 2012, when entire homes accounted for only 57% of listings (Ke, 2017). This, however, is due not only to the increase in commercial providers, but also to the shift in demand (Fairley et al., 2021). The shift of consumer preference toward renting entire flats as opposed to sharing accommodation has become even more evident with the Pandemic.

Second, the number of multi-listing host has been growing: 42% of hosts listed more than one property in 2016, rising to 49% in 2020 (Ferreri & Sanyal, 2018; Inside Airbnb, 2020). This is a further demonstration of the commercialisation of the listings since multi-hosts are generally driven by the desire to maximise their profits.

Third, Airbnb is opening up its space to professional accommodation providers, like hotels and catered accommodation providers, like bed-and-breakfasts, with the ultimate objective of attracting as many types of customers as possible. With the introduction of hotels on the platform Airbnb is attracting guests like business travellers who historically would not have considered staying in a P2P accommodation (Guttentag and Smith, 2017). Since commercial providers list properties for no other reason than to maximise their return on investment and profit, this is another evidence of Airbnb's increasing professionalisation over time.

Fourth, from 2017 to 2019, the number of instantly bookable spaces which require no host validation increased from 1 million to 3.6 million (Alltherooms, 2020). Since Capitalist hosts are uninterested in determining the risk of individual booking requests before confirming them, this could be another demonstration of the increasing commercialisation of the listings.

Finally, the rise of commercial intermediaries managing properties for third parties, further suggests that Airbnb was departing from its original philosophy and becoming primarily a commercial space trading platform (O'Neill & Ouyang, 2016).

This shift caused concern among the pioneers of hosting, who came to believe that the original ethos of Airbnb had vanished (Hardy & Dolnicar, 2018b) and that the company had evolved into just another commercial distribution channel for tourist accommodation, drifting away from its roots (Fairley et al., 2021). When Airbnb was first founded, hosts commonly were either Befrienders who enjoyed the social aspect of hosting, or Ethicists who were firm believers in the principle of sharing (Hardy & Dolnicar, 2018a; Karlsson & Dolnicar, 2016).

As Covid-19 would later demonstrate, Befrienders and Ethicists turned out to be the most resilient to external circumstances. The reason underlying being that both types of hosts tend to rent out spare rooms in their primary residence that would otherwise be unoccupied and typically incur little additional costs by listing units on Airbnb - they must simply wash towels and bedlinen and use a marginal amount of extra electricity and water (Fairley et al., 2021). Therefore, if nobody books the accommodation, Befrienders and Ethicist hosts incur no further costs. As a result, they are free to list and delist spaces whenever they want to (Dolnicar, 2018).

2.1.3.2.3. Away from the professionalisation and commercialisation of the listings in the post-Covid-19 era

Capitalist hosts seem to have experienced a significant impact on their ability to keep their properties and finances afloat as hosting tends to represent their main source of income. Capitalist hosts, in case of a fall in demand, continue to incur expenses on the available space, without being able to generate any income (Dolnicar & Zare, 2020). On the contrary, Befrienders and Ethicists only incur minor additional costs, since they typically rent out the available space in their homes (Dolnicar & Zare, 2020). For them, a sudden drop in demand simply means losing discretionary income and missing out on the chance to meet and socialise with new people.

The asymmetric burden on the various kinds of hosts has resulted in different host reactions. As the Pandemic progressed, it became clear to many hosts and co-hosts, and in particular to Capitalist hosts who saw their properties as an investment, that they would be unable to continue paying all their expenses without earning any income (Fairley et al., 2021). The overwhelming financial pressure generated, caused the majority of Capitalist hosts feeling they should leave Peer-to-Peer accommodation either temporarily or permanently. Some have effectively chosen to exit the rental market and others to transition from the short-term to the long-term rental market, much more stable, to ensure expense coverage (Fairley et al., 2021). Those who felt they would have managed to cover their expenses for the duration of the crisis have decided to stay in the short-term market (Dolnicar & Zare, 2020). Conversely, most Befrienders and Ethicists simply ended up leaving their rooms vacant when demand was low (Dolnicar & Zare, 2020).

According to Dolnicar & Zare (2020), supply will reach an upper limit regardless of demand. Since Capitalist hosts will now factor in the risk of economic super-shocks in their calculations, every time a super-shock occurs, Capitalist hosts will adjust their risk assessment and gradually shift permanently to the long-term rental market to avoid super-shock-related risks.

To respond to the change in market demand during the Pandemic, hosts and co-hosts quickly had to devise inventive ways to continue to operate. Many repositioned their properties to cater to people in self-isolation (Ham, 2020) and medical professionals. Airbnb directly set up

a space donation initiative (Zare & Dolnicar, 2021) to make accommodation available to medical staff for free or at a reduced price.

More specifically, according to a study conducted by Fairley et al. (2021), because of the devastating impact Covid-19 had on hosting activities, 41% of the surveyed hosts had to take on another job, and 47% had to modify their offering to meet the changed market demand for accommodation.

The slowdown in the commercialisation and professionalisation of the platform is pushing Airbnb back to its original ethos of space sharing among ordinary people (Oskam & Boswijk, 2016). This return to its roots will be further animated by the founders' decision to pause all new projects and to focus all investments on Airbnb's original purpose.

Despite the uncertain future and the varying restrictions on travel and short-term renting, hosts and co-hosts are generally optimistic about the future, expecting business to resume quickly once Covid-19 is under control (Knezevic Cvelbar et al., 2021), and believing in their financial recovery. Some hosts are even optimistic for better opportunities once the Pandemic is resolved. This optimism however does not impede widespread anxiety among Peer-to-Peer accommodation hosts about the unpredictable effects of Covid-19 (Hossain, 2021).

Specifically, five types of hosts were identified by Farmaki et al. (2020) and categorised on a continuum (Figure 9) in accordance with their long-term market perspective (i.e., decision to continue hosting on P2P accommodation platforms) and level of practice adjustment following the Pandemic.

'Optimistic hosts' are at one end of the spectrum. They will continue to host on platforms, firmly believing that the Pandemic has brought opportunities that will positively transform the P2P accommodation sector. More specifically, they claim that the Pandemic will reinforce demand for P2P accommodation as hotels run greater risk of infection and, thus, people will prefer to stay in more isolated types of accommodation with less personal contact. Such statements counteract initial estimations by media reports that the P2P accommodation sector will be negatively affected by the Pandemic due to the lack of standardisation in host practices that reinforces concerns over health and safety criteria (Glusac, 2020). Highly aware of the shift in the way people travel and, understanding that health and safety are essential in hospitality provision, 'optimistic hosts' are willing to change their practices to meet the evolving needs.

Moving towards a more negative market perspective, 'indolent hosts' intend to continue hosting through P2P accommodation platforms because they do not have a better alternative but are unwilling to adjust their hosting practices. The sentiments of 'indolent hosts' appear to stem from their belief that their practices are adequately responsive to health standards, or from their decision to withstand the additional pressures of platforms and guests on their practices.

On the other end of the spectrum, there are 'pessimistic hosts,' or hosts who plan to leave P2P accommodation platforms either by giving up hosting entirely or by switching to long-term renting. For these hosts, the Pandemic has exposed the vulnerable aspects of the P2P accommodation sector, threatening its existence. The decision to exit the platforms seems to have been encouraged by hosts' disappointment over the minimal support received from platforms during the Pandemic, with platforms seeming to be exhibiting a "pro-guest" mentality that victimises hosts. Pessimistic hosts also claim that tourists would choose hotels over P2P accommodation in the current situation, because of the standardisation in hotel sanitisation practices. Moving toward a more positive market perspective, 'cautious hosts' prefer to exit the platforms temporarily as a reaction to the current situation or to maintain both short-term and long-term rentals, with the objective of maximising their feeling of security.

'Ambivalent hosts', instead, fall in the middle of the continuum. These hosts are unsure about how they will respond to the Pandemic, preferring to wait for the situation to play out before making any decisions.

Figure 9: Continuum of host Pandemic responses.
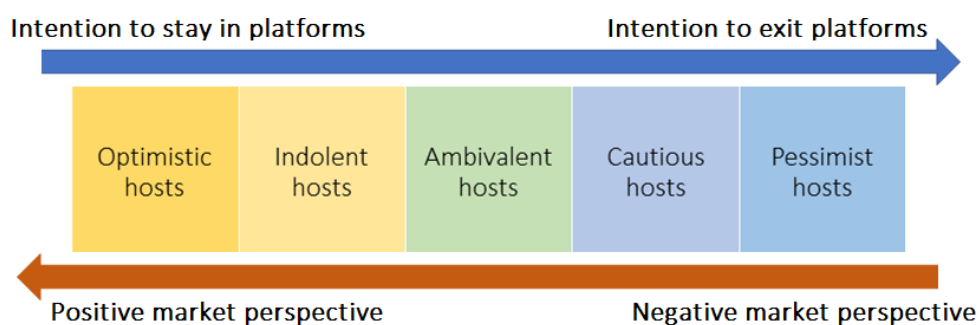
Source: Farmaki et al., 2020.

2.2. The responses to the Pandemic

2.2.1. Airbnb's response to the Pandemic

"2020 was a year when nearly everything changed: the way we live, the way we work, and the way we travel. Airbnb changed as well. We started 2020 by preparing for our IPO, only to have to put on hold once the world went into lockdown. But then, in the face of the biggest crisis the travel industry has ever seen, our business proved to be resilient, and our model was able to adapt. Through the crisis, we also sharpened our focus. We made many difficult decisions while staying true to our core principles and we became a stronger company as a result. And we succeeded in going public after all."

- Brian Chesky - Co-Founder, Chairman & Chief Executive Officer, Airbnb, Inc.

Covid-19 abruptly shook the travel industry globally and, as a result, Airbnb's business. When borders were closed and travel was halted, within 8 weeks, the company lost 80% on a gross bookings value basis, prior to cancellations and alterations, (Airbnb, 2021b) of what it took 12 years to build. Suddenly there was this sense of everything breaking at the same time.

2.2.1.1. A more focused and efficient company

In this moment of crisis, as the business was plummeting, Airbnb realised it could not focus on everything. In a capital-constrained environment, the company needed to establish clear priorities and find more efficient ways to allocate resources. Prior to Covid-19, Airbnb was already on its way to becoming a more efficient and disciplined company, but the Pandemic accelerated its efforts significantly.

Before Covid-19 hit, the company was growing rapidly. With the billions of dollars raised, Airbnb could afford starting new projects and experimenting on new ideas. However, when the Pandemic happened, since not all projects could be kept, the company immediately had to decide what its priorities were and what it was going to focus on (Yahoo Finance, 2020).

Airbnb was forced to fundamentally rethink its positioning. *What did it want to become? What did it want to hold on to? What did it care about? What did it stand for? What was the reason why people would still want the company to exist?*

There was something special that distinguished the company when it all started. It was not only about people finding a place to stay, but it was also about connecting people. Airbnb was intended to be small, selective, curated, for the right people who had hosting in their blood, who wanted to encourage others to visit their community, to live like locals (Yahoo Finance, 2020). Those were its roots and, when Covid-19 hit, the company decided to get back to them. In this moment of introspection, the founders realised that the company had evolved so much from its original concept that it had lost its main points of differentiation. Airbnb was slowly becoming indistinguishable from online travel agencies (Dolnicar, 2021) as the original concept of sharing was being replaced by the notion of professionalisation and commercialisation.

The company hence decided to focus on what had made it unique – its host community, ordinary people who host their homes and offer experiences – and scaled back numerous investments that did not directly support this. Covid-19 has disrupted the disruptor or, more specifically, the company's business operations.

Simultaneously, the company conducted an internal review of its cost structure and rapidly made changes, including material reductions to discretionary spending, suspension of performance marketing, and a reduction in its workforce (Airbnb, 2021b). In its refocusing efforts, the company was putting the very best people on the most important problems (Airbnb, 2021c). This not only allowed the company to save money, but it also fuelled additional growth. As Gossling et al. (2021) concluded, the Pandemic serves as an opportunity to review the current growth-based tourism strategy in favour of one that is more oriented towards sustainable development.

In terms of Airbnb's marketing strategy, the company has pulled back from all marketing, including performance marketing (Airbnb, 2021b), but will continue to focus on it where it makes economic sense to do so. Remarkably, even before Airbnb resumed its marketing spend, its traffic levels had returned to 95% of what they had been in 2019 (Airbnb, 2021c). This revealed that the Airbnb brand is inherently strong and that the company should significantly decrease the amount of money spent on advertising. For this reason, Airbnb will almost certainly not return to the 2019 levels in terms of sales and marketing expenses, both as a percentage of revenue and in absolute dollars (Airbnb, 2021c). The company will also expect a higher rate of return on the performance marketing spend.

The company is now undertaking a full funnel marketing strategy, with public relations at the top (Airbnb, 2021c). In 2020, with 0.5 million articles, Airbnb had as much share of voice as most of the other major travel companies combined (Airbnb, 2021c). In this way the company truly established its brand. In addition to this, Airbnb has decided to invest in a global brand marketing campaign – Made Possible by Hosts.

Made Possible by Hosts was Airbnb's first large-scale marketing campaign in five years (Airbnb, 2021c). The company wanted to make a long-term investment in educating guests on the benefits of being hosted and how this is unique to Airbnb, with the ultimate goal of mainstreaming hosting and attracting a large number of users to the platform. The campaign depicts with authenticity what the experience of being hosted feels like. Its deeply emotional, nostalgic tone speaks directly to the need for connection people all over the world are experiencing after being isolated for nearly a year (Airbnb, 2021c). Simultaneously, the campaign will raise awareness around the idea of becoming a host by making it more mainstream and aspirational. The campaign proved to be successful, with overall traffic increasing almost 20% in Q4 2021 compared to Q4 2019, in the seven countries where Airbnb ran the campaign, significantly ahead of non-campaign countries (Airbnb, 2022d).

In parallel, Airbnb has launched a companion campaign called Made Possible by Hosting to highlight all the advantages of hosting. Realising that many people begin hosting at the start of a life change, it has targeted people in this phase of their lives - people whose children have recently moved out and have extra available space, people who have recently lost their job and are looking for a source of revenue, or people who have decided to live more remotely and keep their home frequently unoccupied (Airbnb, 2021c). Airbnb was founded during the 2008 recession, a time when many people turned to Airbnb for income. Given the current economic situation, Airbnb believes that hosting is as appealing as it has ever been.

The company felt that reducing the workforce was necessary as part of its expense-cutting process. As a result, it initiated a 25% layoff of its staff, disproportionately laying off non-technical, and hence non-engineering, personnel (Yahoo Finance, 2020).

Excluding the impact of stock-based compensation and stock-settlement obligations incurred as a result of Airbnb's IPO, operating expenses decreased year-over-year in all categories,

including cost of revenue, operations and support costs, product development expenses, sales and marketing expenses, and general and administrative costs (Airbnb, 2021b).

Aside from registering significant improvements in its variable costs, Airbnb also made substantial reductions in its fixed costs by streamlining its organisation. Rather than relying on business units with some overlapping support functions, it transitioned to a centralised structure, minimising redundant efforts and expenses. More specifically, it transitioned from a divisional business unit structure to a functional organisation, becoming more efficient and responsive (Airbnb, 2021c). The company believes it will not have to add back fixed costs to support a business that will approach 2019 levels and beyond (Airbnb, 2021c).

Going forward, Airbnb will continue to be judicious in spending while investing where it sees opportunities for long-term growth. The expense rationalisation process has proven to be and will continue being extremely beneficial to the company when dealing with the rebound. The obtained levels of efficiency, in addition to the model's inherent adaptability, has formed the foundation of the recovery that started taking place towards the end of 2020. The considerable margin expansion recorded in 2021 was made possible by the slower increase year-over-year in all operating expense line-items (excluding the impact of stock-based compensation expense) except in sales and marketing, with respect to revenue (Airbnb, 2022d).

2.2.1.2.   Combination between a resilient model and relentless innovation

Airbnb's inherently adaptable model combined with its relentless innovation, allowed the company to meet the changing demand.

As the business began to recover faster than anyone had anticipated, the company's asset-light business model proved to be resilient and naturally adaptable to the changing world. Even though the Pandemic drastically altered travel patterns, having millions of Hosts who offer nearly all types of homes and experiences all over the world, Airbnb was able to adapt to the new use cases guests desired. The areas of resilience identified by Airbnb were North America, domestic travel, nearby travel, long-term stays, and stays in less densely populated areas (Airbnb, 2021b).

Travel patterns seem to have changed. People will get in their cars and travel nearby, dispersing to thousands of smaller cities, towns, and rural communities, making tourism a critical

component of how local economies recover (Yahoo Finance, 2020). It is for this reason that countries with very strong domestic travel are more resilient than those that are dependent on cross-border travel. On a regional scale, North America has been the most stable region for Airbnb during the Pandemic (Airbnb, 2021b). The strength of bookings in the region, caused Average Daily Rates (ADRs) to be higher than in other parts of the world. Conversely, Airbnb's business was most affected in Europe, Middle East, and Africa (EMEA), particularly in those countries with lockdowns and cross-border travel restrictions, and which have historically relied more heavily on cross-border travel (Airbnb, 2021b).

With millions of guests booking stays closer to home, domestic travel quickly rebounded on Airbnb worldwide. People are effectively seeking out nearby locations that are less exposed to cross-border travel restrictions and easily accessible by car. In terms of travel distance, the growth of nights booked, prior to cancellations and alterations, was the strongest for people travelling for less than 50 miles to their destination (Airbnb, 2021b). This figure was also high for people travelling between 50 and 300 miles (Airbnb, 2021b). Demand was also supported by people seeking to travel to less densely populated locations, to avoid crowded areas.

Because technology has digitised so much of the world, we can now do things remotely we could not do before and, as people continue to live and travel more flexibly, Airbnb is seeing steady growth in its long-term stays[9] (Airbnb, 2021b).

As the model adapts, retention becomes stronger as people discover new reasons to use Airbnb in addition to the old ones (Airbnb, 2021c). This shift in demand was effectively an excellent opportunity for the company to introduce itself to a number of new guests and to become more of a mainstream opportunity.

Airbnb has been innovating relentlessly, introducing more than 150 upgrades and innovations across every aspect of the service provided, to support the new way of travelling. Among the various initiatives undertaken, the company has introduced I'm Flexible, a new way to search for accommodation on Airbnb when guests are flexible about where or when to travel. Airbnb

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[9] Stays of at least 28 nights.

also created a one-to-one support system, called Ask a Superhost[10], so that new hosts can get advice directly from the company's Superhosts. Among other innovations, Airbnb has also launched AirCover, a top-to-bottom protection, available for all hosts.

2.2.1.3. Preparing for the travel rebound

It has been two years since the world went into lockdown, and Airbnb believes people are yearning for what has been taken away from them: travel and human connection (Yahoo Finance, 2020). Airbnb anticipates a significant increase in travel as restrictions are gradually lifted and borders are opened. However, when travel does resume, it will not be the same as it was before the Pandemic. Airbnb (2021c) conducted a survey of American travellers to better understand how travel will change, which led to a few findings.

First, people miss travelling more than any other out-of-home activity, including going to bars and restaurants and attending sporting or other live events. They, however, do not miss all kinds of travelling. People do not miss business travel as much, and they generally do not miss mass tourism. The form of travel that people miss the most is spending meaningful time with the people they care about. When travel returns, it will be all about connection. The type of travel Airbnb offers, homes, allows people to gather with their family and friends and spend meaningful quality time together.

Second, the majority of those surveyed stated that they intend to travel soon and will do so as soon as they feel safe to. Travel patterns have completely changed, and travel as we used to know it pre-Pandemic will probably not return in the short term.

The travel rebound, which will be dominated by domestic and non-business travel, represents a huge opportunity for Airbnb. People will travel by car to smaller communities, where they will stay in homes. Homes will most likely be popular not only because they allow people to spend meaningful time with their loved ones in a safe way, but also because demand will be redistributed to some smaller communities that may not even have hotels (Airbnb, 2021c).

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[10] Airbnb recognises Superhosts based on a set of criteria relating to host services and commitment. Please refer to https://www.airbnb.com/superhost for the criteria to determine a Superhost.

In 2021, travel has been less about where you go and when you go, and more about who you are with and what you can do together. There has been a shift away from mass travel and toward meaningful travel. And, as more people work from home, they have more flexibility in terms of where and when to travel.

Airbnb's single priority in 2021 was to prepare for the upcoming travel rebound. The company believes it is uniquely positioned to capitalise on the new forms of travelling and living. To make the most of the imminent return to travel, the company has devised a plan centred on four key elements: educate the world about hosting, recruit more hosts and set them up for success, simplify the guest experience, and deliver world-class service (Airbnb, 2021b).

First, the company is educating the world about what makes Airbnb unique: hosting. Airbnb's marketing and communications efforts are aimed at informing guests that being hosted is a better way to travel and at inspiring more people to become Hosts.

Second, to ensure that there are enough high-quality homes on the platform, Airbnb is recruiting more hosts and preparing them for success.

The majority of Airbnb hosts come from word-of-mouth, or because they were prior guests. In 2019, 23% of Airbnb hosts were effectively guests first (Airbnb, 2021c), and the company aims to increase this conversion rate. Since the easier the process is and the more support people have, the more likely it is they are going to get through the conversion funnel, the company is focusing on simplifying the onboarding process. As a result, Airbnb is simplifying the process to become a host, lowering the average time it takes to list a property on the website to less than 10 minutes (Airbnb, 2021c) and reconducting the process to 10 simple steps (Airbnb, 2022d). To attract hosts, the company has also invested in the Made Possible by Hosting campaign, which complements the main brand campaign Made Possible by Hosts, which is more focused on guests. The campaign proved to be very successful, with traffic to the hosting landing page in campaign countries increasing nearly 40% in Q4 2021, compared to Q4 2019.

Apart from recruiting more hosts, the company wants to ensure that hosts are well-prepared for success. And, because hosts are evaluated after the stay, they must provide excellent experiences to succeed. Platforms need to adopt a more targeted approach in the development of their crisis management policies and strategies as well as their overall support

measures to hosts. Otherwise, they run the risk of losing members, especially individual hosts who tend to share their space and are often unable to meet the increasing needs of guests (Farmaki and Kaniadakis, 2020).

To better serve hosts, the company is improving its tools and support system (Airbnb, 2021c). The company is investing in pricing tools to help hosts price their listings, as well as calendar tools. In addition to this, Airbnb is updating the way information is collected to be able to provide useful feedback to hosts and tips for ensuring better experiences. The Host advisory board is a component of the company's support system. It will specifically advise on features that the company develops to assist hosts in becoming successful. In parallel, Airbnb is increasing the contact between new and existing hosts and is scaling customer service ahead of demand to further help hosts along the journey. Airbnb intends to keep its processes efficient by lowering contact rates, reducing the need for people to call or message when they have a problem, and by making its agents more responsive in the event that people need to contact customer service anyway.

Airbnb sees itself as more than just a distribution platform; rather, it considers itself as an enablement platform (Airbnb, 2021c). As a result, the company believes it is its responsibility to build all the tools, services, and educational materials that hosts require to be successful.

Third, to make it easier for guests to find the ideal stay, Airbnb is simplifying and perfecting every aspect of the guest experience, as well as improving its search functionality to accommodate more flexible travel patterns. The company is focusing on redesigning the entire end-to-end experience to make it even easier to book on Airbnb by significantly reducing the steps required to log in, sign in, get verified, and find a place to stay.

Finally, Airbnb must provide world-class service whenever hosts or guests require it. To accomplish this, the company is actively addressing product issues that drive community contact, scaling operations to meet demand, and continuously improving its service. In November 2021, the platform introduced AirCover, a top-to-bottom protection, which includes USD $1 million liability insurance and USD $1 million damage protection with new coverage for pet damage, deep cleaning and more (Airbnb, 2022d). In addition to this, to further help hosts, Airbnb launched the Ask a Superhost feature in September 2021, a

dedicated support system which connects new host with the most experienced ones (Airbnb, 2022d).

2.2.1.4. Changes in the Airbnb platform

Many changes in the Airbnb platform were triggered by the Pandemic, including the introduction of the I'm Flexible feature, the transition from Experiences to Online Experiences and the scaling back of investments in hotels.

2.2.1.4.1. I'm Flexible feature

Travel will return. However, when travel resumes, it will not be the same as before. The most noticeable difference is probably flexibility. As the lines between travelling and living are blurring, fewer people are tied to a permanent destination. In a Zoom-enabled world, more people can work from home, and this means any home. And this is most likely a permanent change.

As more people work from home, they have more freedom in terms of when and where they travel. As a result, Airbnb is seeing a change in the way users search on the platform. In Q1 2021, nearly 40% of people searching on Airbnb were flexible in terms of the date or location of their stay (Airbnb, 2021b). This represents a major change in the search paradigm in travel.

To reflect this new world of travel we live in, Airbnb recently launched I'm Flexible, a flexible dates search feature (Airbnb, 2021c). This feature allows guests to search for homes in a completely new way, giving them more options and freedom as they plan their next getaway. Rather than having to select exact dates for their trip, guests can conduct broader searches, keeping dates flexible and browsing more options. People are also likely to search for something that is unique and special.

A number of new use cases are emerging. People are living more nomadically. Some people use Airbnb for longer-term stays, renting for one or two months at a time. Not required to be in a physical office, some people are taking extended three-day or four-day weekends, or many weekends in a row (Yahoo Finance, 2020). Many are also snowbirding, or temporarily relocating to a warmer climate (Airbnb, 2021c).

As people are more open-minded, Airbnb can direct demand to areas where it has supply. The company can actually elevate not just destinations, but unique homes that can become the

destination. Airbnb predicts that the occupancy of flexible properties is likely to rise over time (Airbnb, 2021c).

2.2.1.4.2. Experiences

The company's long-term strategy was to expand its offer to tourism services other than accommodation and to build "an end-to-end travel platform". This was only partially realised by adding the "Experiences" and "Restaurants" products (Adamiak, 2021). Even though the crisis moved the platform's attention away from this expansion to new tourism services, Airbnb remained focused on Experiences, a critical product for Airbnb, as it represents one of the purest manifestations of hosting and connection the company has. Airbnb has discovered that statistically guests on Airbnb prefer Experiences over homes: more guests leave a five-star review after their experience than they do after their stay for a home (Airbnb, 2021c). Prior to the Pandemic, the company anticipated that 2019 would be a breakout year for Experiences, but the opposite happened.

Because of social distancing, the original product had to be put on hold and was pivoted to create online experiences (Airbnb, 2021c). People were able to participate in interactive one-hour activities from the comfort of their own homes by connecting online. These online activities grew in popularity as many people felt isolated and wanted to connect with hosts and other guests.

Airbnb expects Experiences to be very successful as the world begins to open up again, as the general consensus is that when people travel, they will want to do very interesting activities that will allow them to fully emerge in the environment. People will want to get out of their homes, meet new people, and try something new, so experiences will likely become popular even among people in their own city.

2.2.1.4.3. Hotel investment reduction

Before the Pandemic outbreak, Airbnb focused on developing the hotel and professional hosts' offer to expand to profitable segments of business and luxury travel (Dogru et al., 2019). The company acquired other platforms, created customised brands (e.g., Airbnb for Work, Airbnb Plus), and modified platform mechanisms to better suit professional users. This trend was confirmed by the disproportionally rapid growth in non-individual hosts' offers. It is for this

reason that investment in hotels was reduced during the Pandemic (Airbnb, 2021c). Airbnb began prioritising individual hosts because they typically offer what guests seek: something that is one of a kind. Today, of the 4 million hosts which represent Airbnb's community, 90% are individuals (Airbnb, 2021c). Nevertheless, hotels play a crucial role in filling network gaps and meeting the needs of all potential customers and should therefore not be completely disregarded.

2.2.1.5. Guest refunds

When the Pandemic hit, the main challenges Airbnb had to face were related to the financial situation of hosts, the reimbursement for cancelled bookings and the responsibility of the platform in managing the crisis (Gyódi, 2021).

The major controversy stemmed from Airbnb's failure to respect cancellation policies, as hosts with strict cancellation policies, who typically receive 50% of the booking amount in the event of cancellation, were forced to provide a 100% refund (Farmaki et al., 2020). Hosts can choose between a strict, a moderate, or a flexible cancellation policy, each with advantages and disadvantages. For example, if a strict cancellation policy is chosen, the demand will most likely be lower than if a more flexible cancellation policy is chosen, but a portion of the payment will be secured in the event of cancellation. Hosts saw Airbnb's decision as a betrayal since hosts with strict cancellation policies had compromised with fewer bookings to secure some funds.

Concerns have also been expressed more generally by P2P accommodation hosts, who struggled financially during the Pandemic due to the loss of reservations (Johnson & Davis, 2020) and felt largely unsupported by local governments despite their important role in assisting the hospitality sector to recover. Operating in an unregulated context, governments deem P2P accommodation as a non-essential business (Evans, 2020), and grant no financial support to companies.

Given the unregulated environment of Peer-to-Peer accommodation which fostered a lack of governmental support towards hosts during the Pandemic, the stepping up of the platforms themselves to ensure responsibility towards their members proved crucial (Farmaki et al., 2020).

It is for this reason that Airbnb launched a USD $250 million fund to support hosts with strict cancellation policies (Rodriguez, 2020). The company gave hosts 25% of what they should have received as cancellation fee (Rodriguez, 2020). According to a study conducted by Farmaki et al. (2020), some hosts believed that the manner in which Airbnb announced and led the 'help scheme for hosts' was misleading. For example, when lockdowns began, some hosts with strict cancellation policies cancelled all their bookings and immediately returned the money to guests. This, however, prevented them from receiving financial assistance from Airbnb. Many hosts believe that Airbnb is becoming more guest focused (Farmaki & Kaniadakis, 2020), with its primary strategy being "to grow its clientele". Unsurprisingly, many hosts expressed dissatisfaction, claiming that the platform was not treating them as partners. Many hosts believed that the platforms were not supportive during the Pandemic. Nonetheless, some participants felt that platforms were communicative and did their best given the unprecedented situation, believing that it was only fair that guests be refunded given the circumstances of superior force.

2.2.1.6. Airbnb's rebound

As a consequence of the successful response to the Pandemic, Airbnb has already returned to strong growth, achieving the best year in the company's history despite still being amidst the health crisis.

More specifically, total revenue of USD $6.0 billion in 2021, was up 77% year-over-year and exceeded the USD $4.8 billion figure of 2019 by 25% (Table 6, Figure 10), demonstrating the resiliency of the business.

Table 6: 2019, 2020, & 2021 - Yearly Revenue (USD $M)

	Revenue (USD $M)
2019	4,805
2020	3,378
2021	5,991

Source: Own elaboration based on data retrieved from Airbnb, 2021b, and Airbnb, 2022d.

Figure 10: 2019, 2020, & 2021 - Quarterly Revenue (USD $M)

	Q1	Q2	Q3	Q4
2019	$839,000,000	$1,214,000,000	$1,646,000,000	$1,106,000,000
2020	$842,000,000	$335,000,000	$1,342,000,000	$859,000,000
2021	$887,000,000	$1,335,000,000	$2,237,000,000	$1,532,000,000
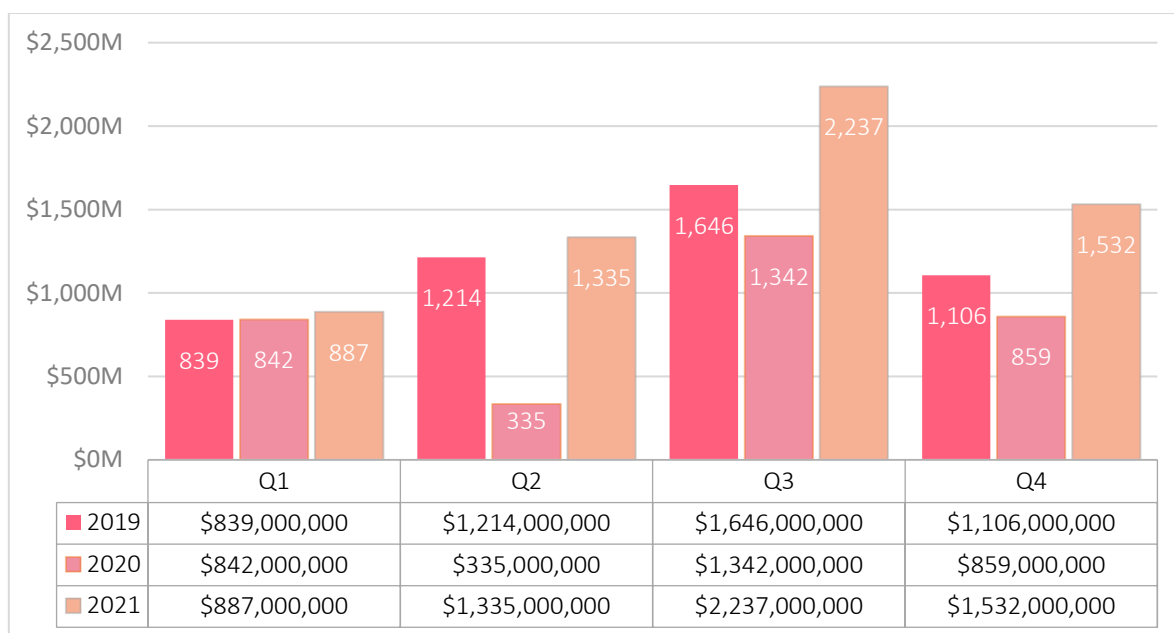
Source: Own elaboration based on data retrieved from Airbnb, 2021b, and Airbnb, 2022d.

Net losses were of USD $674 million in 2019 and USD $352 million in 2021 (Table 7, Figure 11), representing a net loss margin of 14% and 6% respectively (Airbnb, 2022d).

Table 7: 2019, 2020, & 2021 - Yearly GAAP Net Income/(Loss) (USD $M)

	GAAP Net Income/(Loss) (USD $M)
2019	(674)
2020	(4,586)
2021	(352)

Source: Own elaboration based on data retrieved from Airbnb, 2021b, and Airbnb, 2022d.

Figure 11: 2019, 2020, & 2021 - Quarterly GAAP Net Income/(Loss) (USD $M)

	Q1	Q2	Q3	Q4
2019	-$292,000,000	-$297,000,000	$267,000,000	-$352,000,000
2020	-$341,000,000	-$576,000,000	$219,000,000	-$3,888,000,000
2021	-$1,172,000,000	-$68,000,000	$834,000,000	$55,000,000
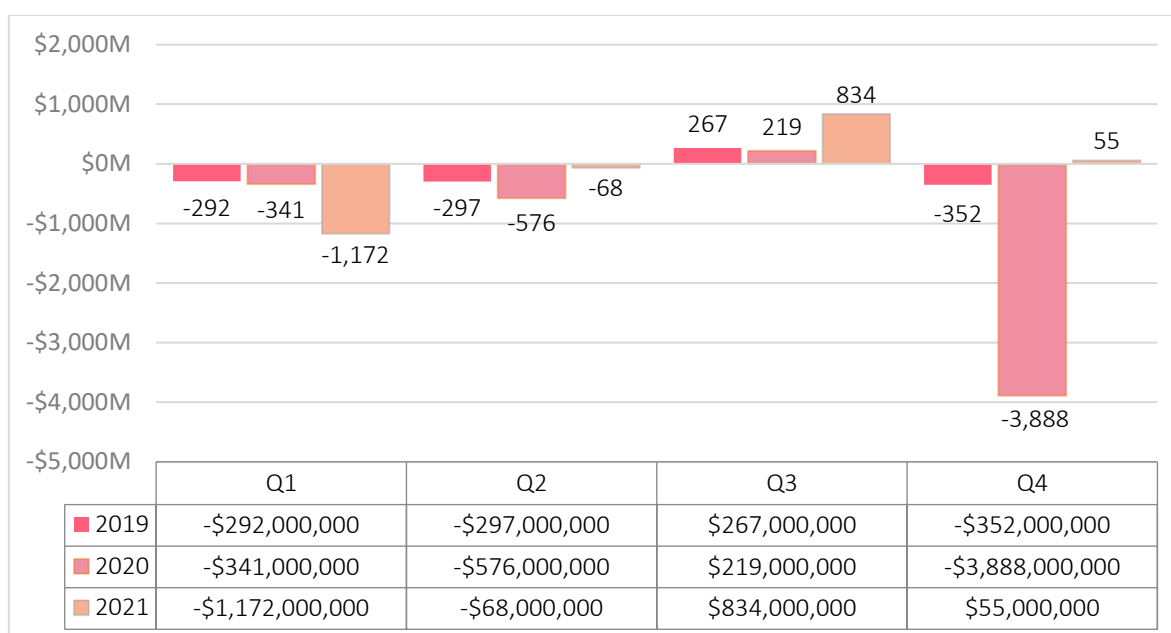
Source: Own elaboration based on data retrieved from Airbnb, 2021b, and Airbnb, 2022d.

The Adjusted EBITDA of USD $1.6 billion in 2021, was positive and the highest ever recorded by Airbnb (Table 8, Figure 12). The Adjusted EBITDA margin expanded from -5% in 2019 to +27% in 2021 (Airbnb, 2022d). Airbnb estimates that approximately 75% of this expansion was driven by the company's financial discipline and optimised marketing strategy, and the remaining 25% depended on the higher Average Daily Rates registered in 2021 (Airbnb, 2022d).

Table 8: 2019, 2020, & 2021 – Yearly Adjusted EBITDA (USD $M)

	Adjusted EBITDA (USD $M)
2019	(253)
2020	(251)
2021	1,592

Source: Own elaboration based on data retrieved from Airbnb, 2021b, and Airbnb, 2022d.

Figure 12: 2019, 2020, & 2021 – Quarterly Adjusted EBITDA (USD $M)

	Q1	Q2	Q3	Q4
2019	-$248,000,000	-$43,000,000	$314,000,000	-$276,000,000
2020	-$334,000,000	-$397,000,000	$501,000,000	-$21,000,000
2021	-$59,000,000	$217,000,000	$1,101,000,000	$333,000,000
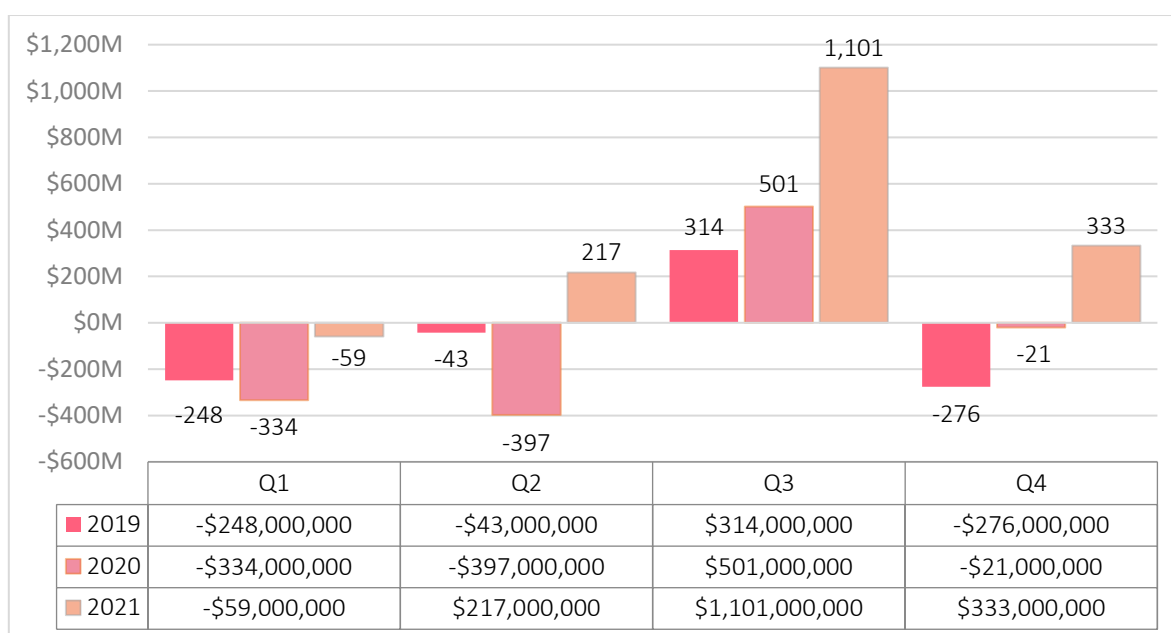
Source: Own elaboration based on data retrieved from Airbnb, 2021b, and Airbnb, 2022d.

2.2.2. Change in demand and corresponding change in supply

2.2.2.1. Demand

On a global scale, Airbnb's demand growth has been almost linear over the last five years, with both the Number of Nights and Experiences Booked (Figure 13) and Gross Booking Value (GBV) (Figure 14) increasing more than fourfold between 2015 and 2019. Unsurprisingly, 2020 has proven to be a difficult year for the company, as bookings plummeted at the start of the Pandemic. Net of cancellations and alterations, the company recorded a total of 193.2 million nights and experiences booked in 2020, resulting in a 41% drop on a year-over-year basis (Figure 13), and generated gross bookings for a value of USD $23.9 billion, resulting in a 37% drop with respect to the year prior (Figure 14). Thanks to its adaptability and continuous innovation, Airbnb has returned to strong growth, rebounding quickly from the impacts of the Pandemic. With a total of 300.6 million nights and experiences booked, the company has witnessed a 56% year-over-year growth, only 8% shy of 2019 levels (Figure 13). The combination of the strong recovery in Nights and Experiences booked, combined with the higher Average Daily Rates, has led the Gross Booking Value to increase by 96% in 2021 with respect to 2020 and by 23% with respect to 2019, thus reaching the highest levels ever recorded (Figure 14).

Figure 13: Airbnb Annual Nights and Experiences Booked
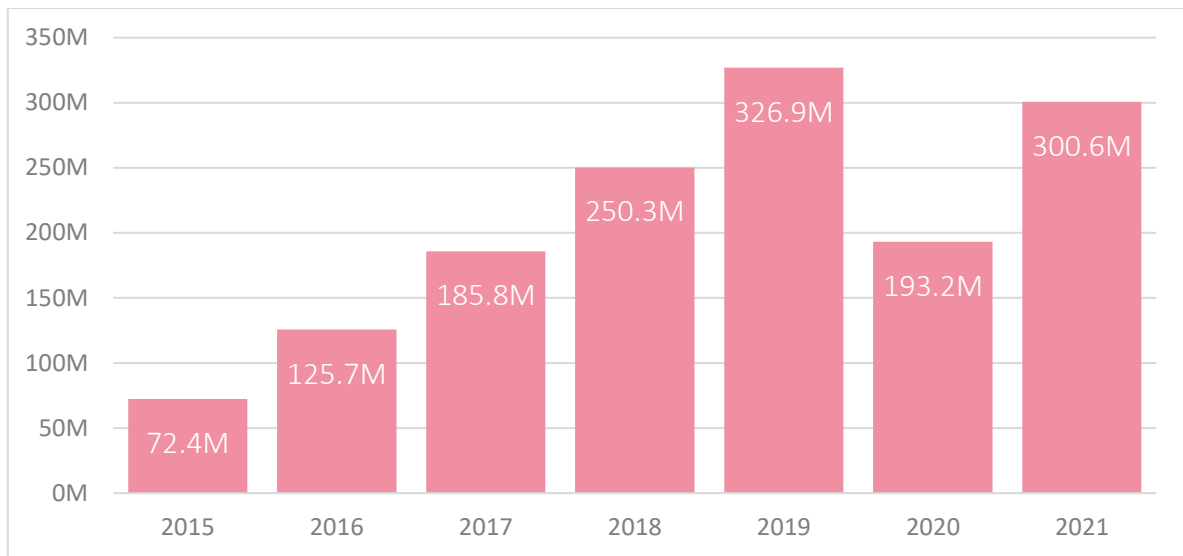
Sources: Own elaboration based on Statista, 2020, Airbnb, 2021b, and Airbnb, 2022d.

Figure 14: Airbnb Gross Booking Value
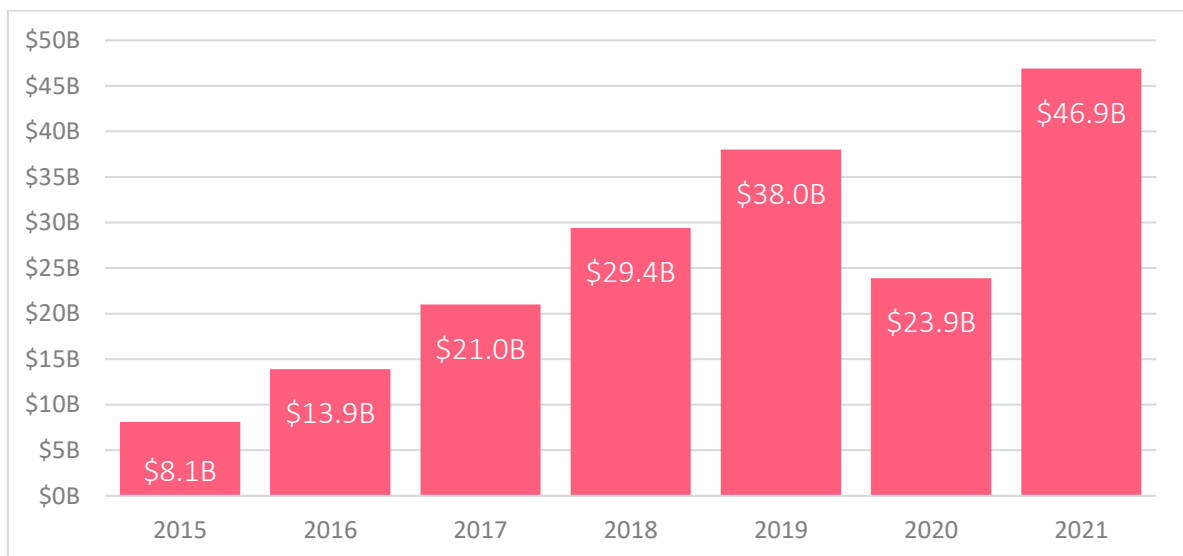
Sources: Own elaboration based on WallStreetZen, 2021e, Airbnb, 2021b, and Airbnb, 2022d.

Considering the demand on a regional basis (Figure 15), Europe, Middle East, and Africa (EMEA) was the region that generated the highest demand in 2019, with 139M Nights and Experiences Booked. However, seeing a percentage change in demand of c.a. -51% on a year-over-year basis, it was overtaken by North America in 2020, whose demand only decreased by about 21%, falling from 95.8M in 2019 to 75.5M in 2020. In every region, the number of Airbnb nights occupied was lower in 2020 than it was in 2019, as the short-term rental markets felt the

impact of Covid-19 throughout the majority of 2020. In the latter half of the year however, a strong recovery in demand was recorded (AllTheRooms, 2022).

Figure 15: Airbnb Annual Nights and Experiences Booked by region with percentage changes

	2019	2020	% Change
Europe, Middle East & Africa	139.0M	67.7M	-51%
North America	95.8M	75.5M	-21%
Asia Pacific	58.2M	27.6M	-53%
Latin America	33.9M	22.4M	-34%
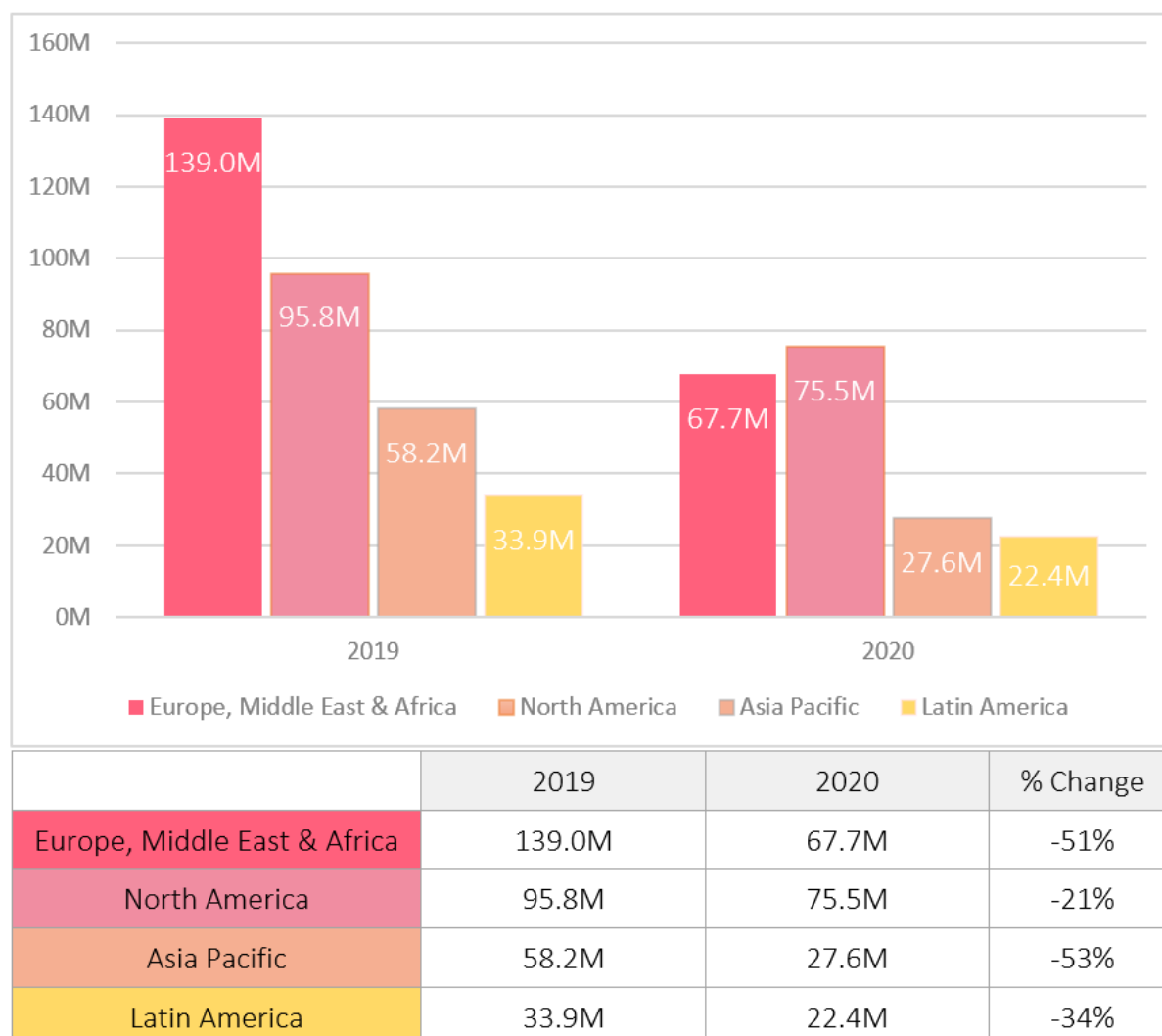
Source: Own elaboration based on WallStreetZen, 2021g.

Even with a higher demand, the total Gross Booking Value generated by the EMEA region in 2019 was lower than that generated by North America (Figure 16). This is linked to the higher average prices for the rental of accommodation and for experiences (Figure 17).

In 2020, following the Pandemic, the average unit prices decreased in EMEA and further increased in North America (Figure 17). The price inflation and the higher demand registered for North America in 2020, caused a significant difference in Gross Booking Value between EMEA and North America in 2020 (Figure 16).

Figure 16: Airbnb Gross Booking Value by region with percentage changes

	2019	2020	% Change
Europe, Middle East & Africa	$14.6B	$6.6B	-55%
North America	$15.8B	$13.2B	-16%
Asia Pacific	$4.9B	$2.4B	-51%
Latin America	$2.7B	$1.7B	-37%
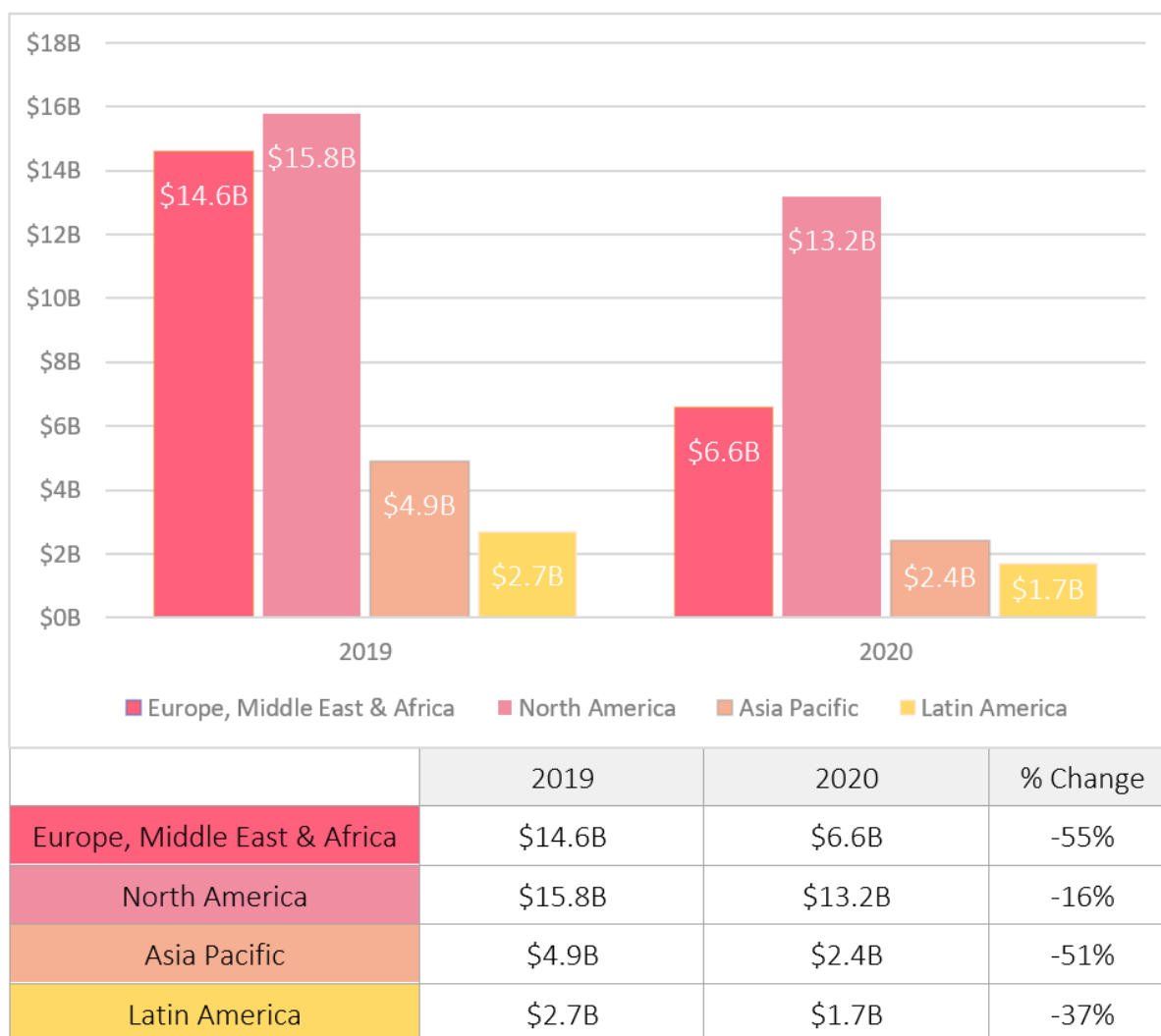
Source: Own elaboration based on WallStreetZen, 2021d.

Figure 17: Airbnb Gross Booking Value per Night and Experience Booked by Region

	2019	2020	% Change
Europe, Middle East & Africa	$104.97	$98.41	-6.25%
North America	$164.86	$174.43	+5.80%
Asia Pacific	$84.83	$85.83	+1.18%
Latin America	$78.12	$75.74	-3.05%
Total	$116.14	$123.69	+6.50%
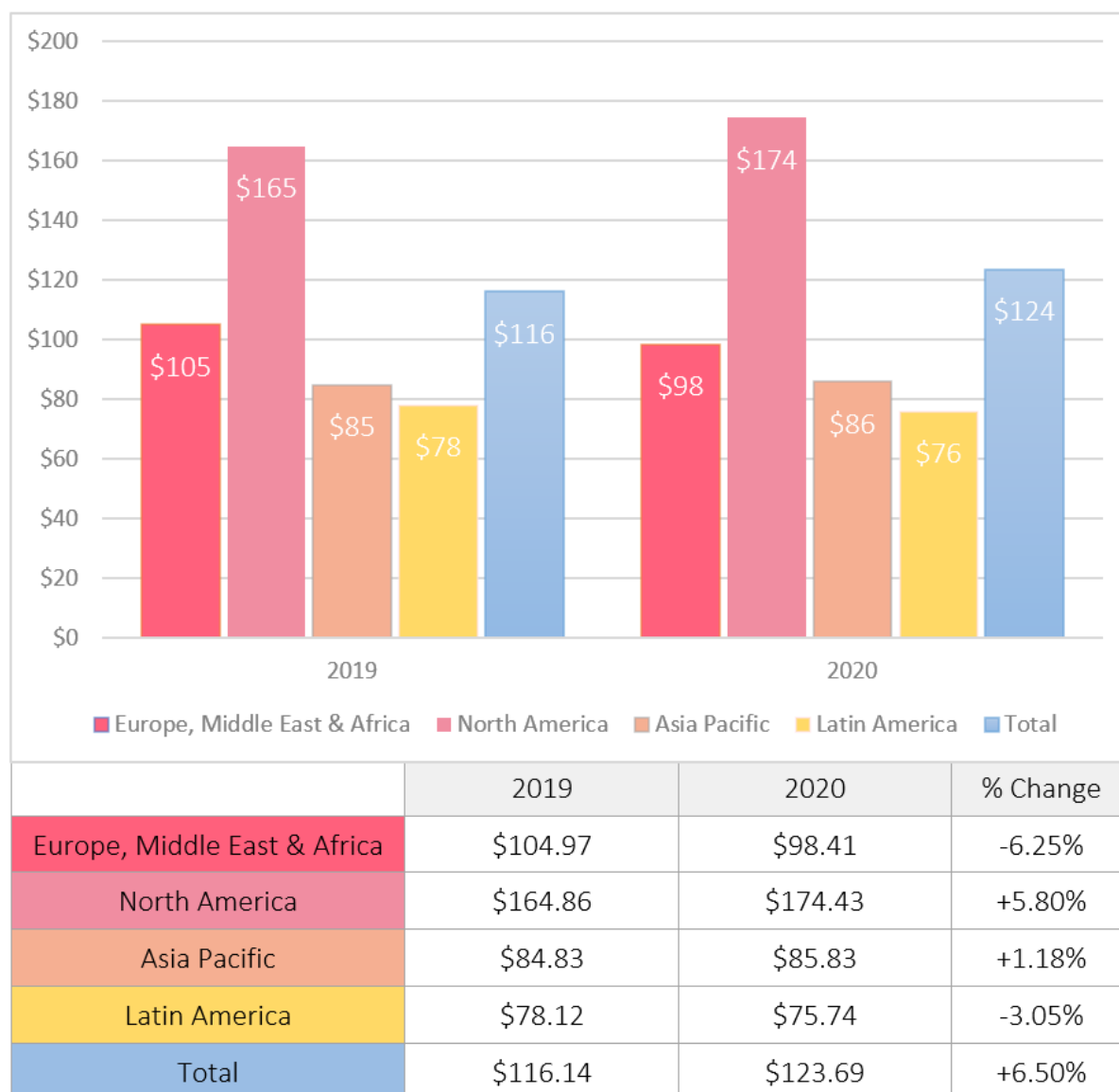
Source: Own elaboration based on WallStreetZen, 2021c.

The Average Daily Rate of USD $154 in Q4 2021, represented a 20% increase with respect to Q4 2020, and a 36% rise compared to Q4 2019. This increase in ADR for nearly all listing types, was determined by mix shift and price appreciation (Airbnb, 2022d). More specifically, demand shifted towards bookings in North America, entire homes, and non-urban destinations, all of which tend to have a higher ADR. The price appreciation instead was driven by a general strong demand in Q4 2021 and by the hospitality sector-wide price appreciation (Airbnb, 2022d). The company expects 2022 ADR to remain higher than 2019 levels, but below 2021 figures, anticipating a shift back towards lower ADR regions, cities and listing types (Airbnb, 2022d).

In the years, Airbnb has also grown in terms of users, with active users rapidly increasing from being 6 million in 2012 to 150 million in 2018 (Table 9). Even though it is not possible to know the exact number of active users today since Airbnb has not updated these values since 2018, they have probably not surpassed the 200 million figure (BusinessOfApps, 2022).

Table 9: Numbers of active users

YEAR	USERS
2012	6 million
2014	50 million
2016	100 million
2018	150 million

Source: Own elaboration based on BusinessOfApps, 2022.

The Airbnb guest demographics, based on 2020 bookings, are shown in Figure 18. The largest demographic for Airbnb guests is between the 20-30 years of age – this age range represents 32% of overall guests. The percentage of guests belonging to each age group gradually diminishes as the age increases. Although it may seem as though the platform gears towards Millennial and Gen Z users, Airbnb has recently celebrated the growth of its senior citizen population as both guests and hosts (Airbnb, 2020c).

Figure 18: Airbnb guest demographic
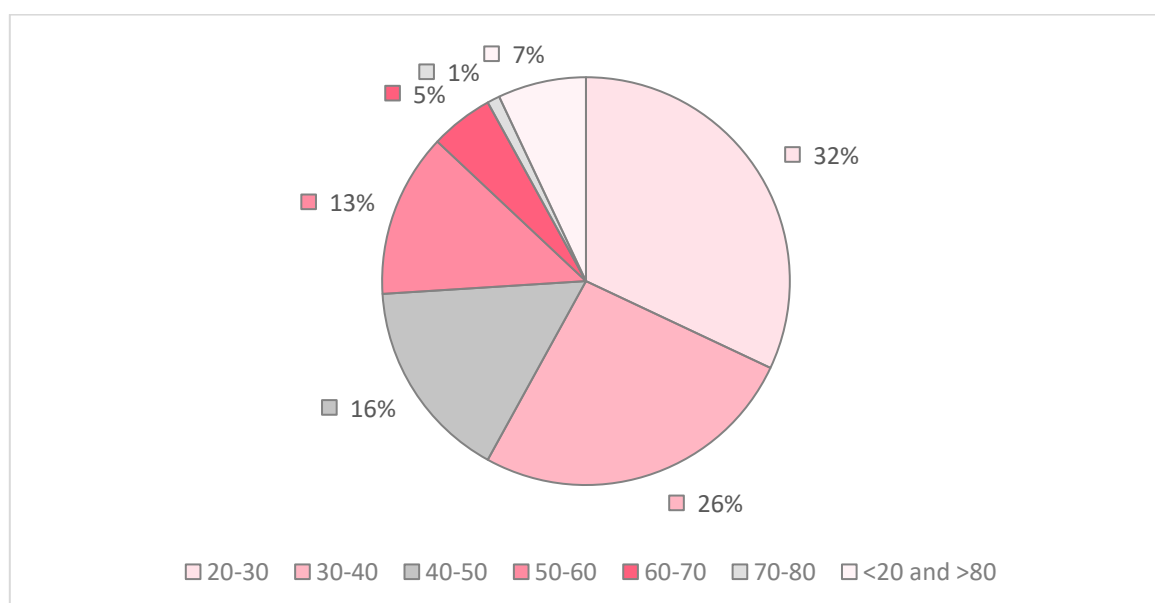
Source: Own elaboration based on AllTheRooms, 2022.

2.2.2.2. Supply

Moving from a demand analysis to a supply analysis, as of June 30, 2021, a total of more than 5.6 million listings worldwide have been registered, put on the platform by a total of over 4 million hosts (Airbnb, 2021). As depicted in Figure 19, the dynamic growth of the overall accommodation supply, registered from 2015 to 2019, suddenly halted, when, in 2020, the number of active listings, instead of increasing, fell with respect to the previous year. Nevertheless, the company ended 2021 with 6 million active listings, the highest number of listings ever achieved (Airbnb, 2022d). Growth in host supply has hence followed the rebound in guest demand, with global total active listings growing consistently in each quarter since Q1 2021 (Airbnb, 2022d).

Figure 19: Number of Airbnb Active Listings
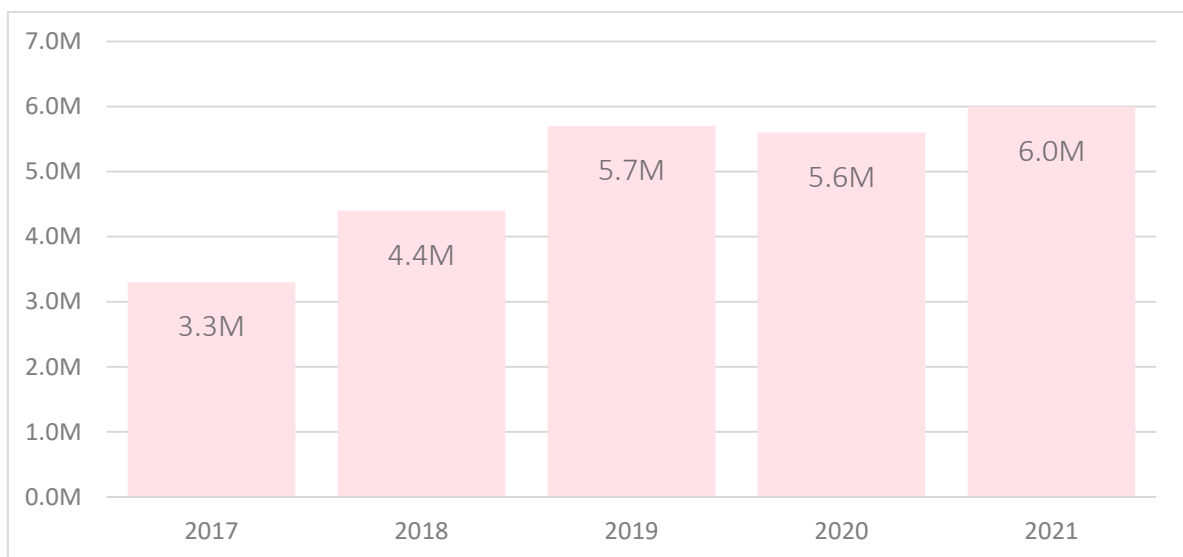
Source: Own elaboration based on WallStreetZen, 2021a, and Airbnb, 2022d.

According to a study conducted by Adamiak (2021), the fall during the Pandemic varied across countries. In most countries, like the United States, France and the United Kingdom, the number of listings with at least one review fell relative to 2019, but not below the 2018 level. In some countries instead, like Italy and Spain, there were fewer listings at the end of 2020 than in 2018. This drop in supply was not recorded in a few growing markets, like Brazil and Russia, where the rental offer size continued to increase during 2020 despite Covid-19. The geographic decentralisation from the United States and South-Western Europe to less

saturated national markets was a trend that was already visible pre Covid-19, but that became even more evident with the ongoing Pandemic.

As shown in Figure 20, also the number of hosts was on a rising trend, increasing from 2.7M in 2017 to 4.0M in 2019. This growth was interrupted by the Pandemic, with 2020 and 2021 seeing the same number of hosts as 2019.

Figure 20: Number of Active Hosts
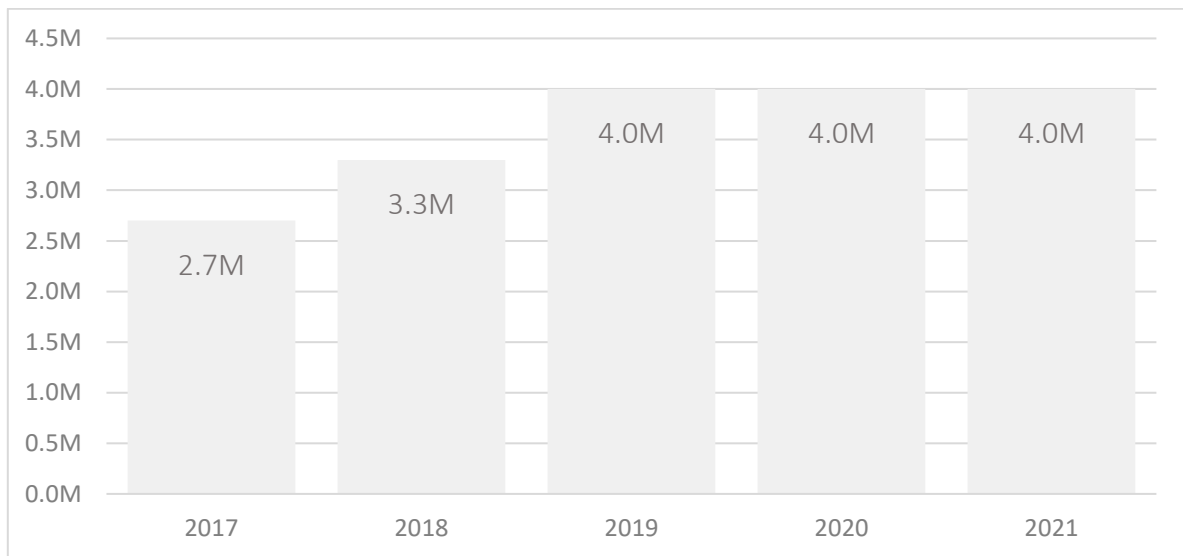
Source: Own elaboration based on WallStreetZen, 2021f, and Airbnb, 2022d.

Airbnb believes it has only scratched the surface in expanding the Host community. Throughout 2022, the company wants to focus on addressing all obstacles, myths, and misconceptions there are to becoming a host, with the objective of attracting many other potential hosts and expand the available supply (Airbnb, 2022d).

2.2.2.3. Shifts in travel patterns

The Pandemic has devastated economies around the world disrupting life in ways that were before unimaginable. The Pandemic has not only put a halt on all types of international travel, but it has also changed people's mindset. Travel patterns have altered shifting from business to leisure, from international to domestic, and from urban to rural.

2.2.2.3.1. From business travel to leisure travel

The Pandemic has had an impact on more than just passenger numbers and hotel occupancy, it has also restructured the entire industry. The demand profile has shifted fundamentally –

and in some ways permanently – as businesses around the world realise that employees can be just as productive virtually as they are in-person. To cut down on costs, business travel will be kept to a minimum. The travel market has now effectively become less for business and more for leisure.

Apart from being a structurally smaller market than airlines and hotel companies are used to, the leisure market has always been a secondary focus for many travel companies (Accenture, 2021). Most travel business models have been primarily focused on the business customer first and foremost, leaving leisure customers to pick up what was left over (unless they were willing to commit earlier or pay a little more). This structural shift alters how those businesses must attract, convert, and retain customers. It also implies that they must think creatively about what to do with underutilised assets in order to maintain profitability high.

2.2.2.3.2. From international to domestic travel

We are witnessing a shift from international travel to domestic travel for two underlying reasons. First, people prefer to avoid using public transportation, such as planes, to prevent possible contamination. Second, since the travel rules and regulations linked to the spread of the Covid-19 Pandemic keep evolving, people prefer not to make any commitments by paying in advance, fearing possible travel cancellations. Private vehicles are the preferred mode of transportation, as they permit social distancing and render people not dependent on any travel company. As a consequence, Airbnb is seeing a much better occupancy and recovery for drive-to destinations. People who would have never considered taking domestic vacations before are now enjoying exploring destinations close to home. According to data registered by the company, people are prepared to travel up to 300 miles.

Tourism recovery typically begins locally. As stated by Elizabeth Monahan, spokesperson for Tripadvisor.com: *"Travellers tend to first venture out closer to home, and visit their local eateries, stay local for a weekend getaway or travel domestically before a robust demand for international travel returns."* (Kiesnoski, 2020). When people get more comfortable, they will continue to go further away from home, starting with domestic and then moving to international in the long-term.

We can see this shift from international to domestic travel by analysing the gathered data. According to Airbnb (2021d), in January 2020, before the Pandemic was declared and most

travel restrictions were enacted, roughly 50% of nights booked on Airbnb were domestic travel. In Q1 2021, this figure rose to roughly 80%. In addition, in January 2020, roughly 30% of nights booked were within 300 miles. In 2021, this figure increased to an average of 45%. This figure differs according to the country considered (Figure 21).

Figure 21: Nearby travel[11], share of 2021 nights booked
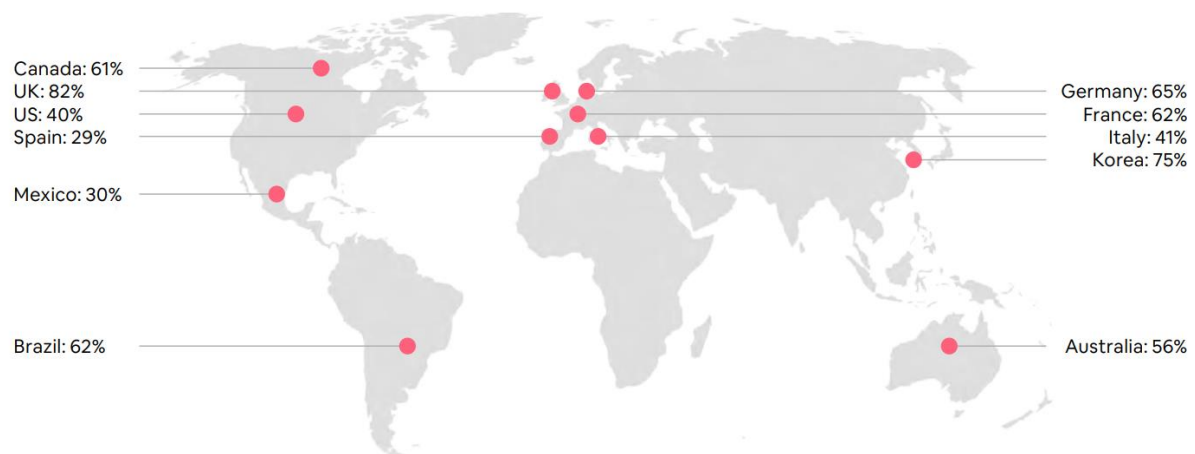
Source: Airbnb, 2021d.

Despite domestic and short-distance travel continuing to be more popular than 2019 levels, with a large part of the population being vaccinated and with the easing up of travel restrictions, both longer-distance and cross-border travel has started to recover throughout 2021. More specifically, cross-border travel has accelerated each quarter in 2021, growing from 20% of global gross nights booked in Q1 2021 to 35% in Q4 2021 and recovering to 76% of 2019 levels in Q4 2021, up from 33% of 2019 levels in Q1 2021 (Airbnb, 2022d).

2.2.2.3.3. From urban to rural destinations

While urban Airbnb hosts have suffered heavily along with traditional hotels and travel companies, Airbnb hosts in rural areas[12] are seeing huge surges in business. These rural Airbnb accommodations for local getaways are much sought after as people jump at opportunities to escape the confines of their homes and the stress of the ongoing Pandemic seeking more out-of-the-way places. When business travel was dominant, the most popular destinations were

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[11] Within 300 miles

[12] Rural areas are defined as areas with less than 100 inhabitants per square kilometre.

big cities or industrialised areas, but with people now travelling mainly for leisure and wanting to avoid crowded destinations, tourism is moving toward more rural and remote settings (Yahoo Finance, 2020). Travel has spread more diffusely over the past several years as it has become less about the same places and more about people and connection, to the benefit of more communities and to those who live there (Airbnb, 2021d). The fact that people are dispersing to more remote areas is a game changer for the health of the travel industry, as the burden on popular destinations is lessened and the economic benefits of tourism are more broadly distributed. Mass tourism will probably always exist, but it has become much less popular as people seek natural outdoor authentic experiences in local communities (Yahoo Finance, 2020).

While in 2015, rural travel accounted for less than 10% of nights booked globally on Airbnb, in 2021 this figure rose to 22% (Airbnb, 2021d). This percentage was even higher in many countries, including Canada (43%), France (45%), the UK (48%), Australia (42%), and the US (28%) (Figure 22). Non-urban gross nights booked were up 45% in 2021 compared to Q4 2019 (Airbnb, 2022d).

Figure 22: Share of nights booked in rural destinations by country
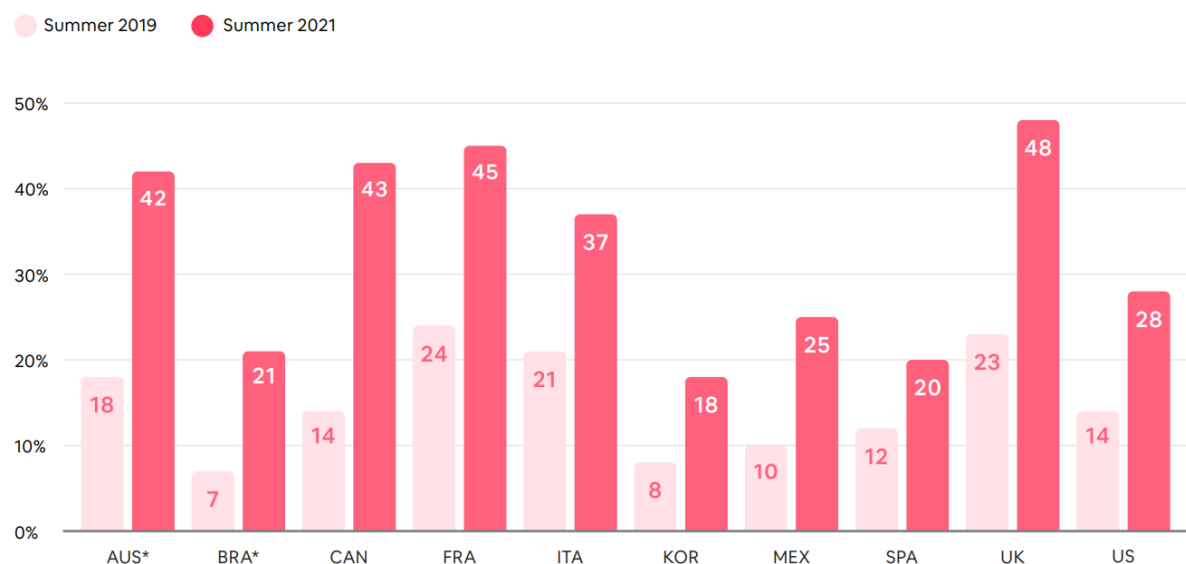
* Dates are June 1 through August 31 (which is not summertime in Australia or Brazil).

Source: Airbnb, 2021d.

Historically, the most common type of summer travel[13] on Airbnb used to be one or two guests visiting big cities (Airbnb, 2021d). But in summer 2021, the most popular type of travel booked on Airbnb were families flocking to remote and smaller destinations leaving big cities behind. In fact, family travel[14] has spiked from 27% of overall nights booked in summer 2019 to 33% in summer 2021 globally (Airbnb, 2021a); and of that family travel, 47% of bookings were within 300 miles or less, up from the 33% of summer 2019 (Airbnb, 2021d), and 42% of the nights booked were in rural destinations, up from 32% of summer 2019 (Airbnb, 2021a).

While in summer 2019, all top destinations by bookings on Airbnb were major cities, in summer 2021, they transitioned from cities to coastal and other rural areas (Table 10).

Table 10: Top destinations shifting from urban to rural areas

	2019		2021
France	Paris	→	Var
Italy	Rome	→	Sardinia
South Korea	Seoul	→	Jeju
Spain	Barcelona	→	Costa Blanca
UK	London	→	Cornwall
Germany	Berlin	→	Baltic Sea Coast

Sources: Own elaboration based on Airbnb, 2021a, and Airbnb, 2021d.

In 2021 urban travel started to recover, still not reaching 2019 levels, with guests starting to return to cities, historically one of Airbnb's strongest areas of business (Airbnb, 2022d). More specifically, the growth of gross nights booked in urban destinations has witnessed a sequential acceleration during every quarter of 2021. The share of travel to high-density urban areas has increased to 49% of gross nights booked in Q4 2021 from 46% in Q3 2021 (Airbnb, 2022d).

The greatest growth in supply is recorded in conjunction with the greatest growth in demand. More specifically, growth in supply was strongest in non-urban areas throughout 2021, where guest demand was highest. In response to the increasing demand for accommodation in rural

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[13] "Summer" travel on the Airbnb platform is defined as June 1 through August 31.

[14] "Family travel" on Airbnb is defined as any reservation that includes an infant or a child, so the actual extent of family travel described may be underestimated.

areas and decreasing demand for listings in urban areas, over the last three years the share of urban listings has dropped from 53.6% in 2018 to 49.1% in 2021 (Adamiak, 2021) as rural listings have conquered a bigger share of the market. This trend, already evident before, has accelerated during the Pandemic.

2.2.2.3.4.   Increased flexibility in travel time

After more than a year of disrupted trips and evolving restrictions, flexibility has become a key requirement. According to a survey conducted by Airbnb, 77% of consumers desire the ability to cancel or change bookings at the last minute (Airbnb, 2021d). Companies have been forced to implement more accommodating cancellation policies to encourage bookings during these times of great uncertainty. Hosts on Airbnb, both to become more competitive when compared to other hosts, and to convince people to book their accommodation despite the uncertainty of travel restrictions, now tend to permit modifiable bookings. Approximately two-thirds of Airbnb listings now have cancellation policies that are flexible or moderate, as flexibility has joined affordability and safety in a trio of basic traveller needs, ranking as the third most important factor for consumers when planning a trip (Airbnb, 2021d). Throughout 2021, global cancellation rates remained higher than 2019 levels, but below 2020 levels.

The uncertainty of future travel restrictions has also led people to book much closer to the travel dates than they used to do before. In 2020, Airbnb has registered the greatest growth in booking windows between the booking and stay dates of less than 30 days (Airbnb, 2021c). Lead-times now seem to be normalising especially in the US and Europe, with lead-time for bookings made in Q1 2022 returning to pre-Pandemic levels (Airbnb, 2022d). Despite the near-term uncertainties linked to the variants and case surges, 2021 has seen evidence of strong pent-up demand, with 25% more nights booked for the summer travel season in January 2022 with respect to January 2019 (Airbnb, 2022d).

With more people working from home, there is also more flexibility in terms of when to travel and for how long. People might be confined to destinations close to home, however, with smart working they are not fixed on the exact location. More than 40% of all Airbnb searches in the month of April 2021 were flexible in terms of dates, locations, or both (Airbnb, 2021d).

Before the Pandemic, people were not constrained in where they could travel, but in when they could travel, being limited by the work week and school year. The Pandemic reversed this

for many, limiting where they could go but allowing them - through remote work and learning - to go anytime. This new way of life – characterised by the flexibility in travel time given the ability to live anywhere and consequent longer-term stays – is now part of the future travel and will have significant impacts on the growth of the accommodation sector.

2.2.2.3.5.   From short-term stays to longer-term stays

In the post-Covid-19 era, we have witnessed an increase in the average length of stay when compared to the pre-Covid-19 era. This is linked to several reasons, including the following.

Firstly, as many workers are not required to be in a physical office anymore, fewer people are tied to a permanent destination. We are seeing more people who, tired of staying in their own homes after long lockdowns, are requesting medium length stays of a couple weeks or even a couple months to work remotely. With the possibility of working remotely during the weekdays, people are also taking more extended weekends. More specifically, three and four-day weekend trips were up 70% in 2021 for April through June, compared to the same period in 2019 (Fox, 2021).

According to a survey conducted by Airbnb, in 2020, 19% of Airbnb guests who rented a home, used Airbnb to travel and work remotely (Airbnb, 2021d). In addition, 55% of Airbnb long-term stay bookers surveyed in 2021 stated that they were working or studying during their stay (Airbnb, 2021d).

Secondly, while before the onset of the global Pandemic it was easy to plan trips with multiple destinations, that consisted in guests moving continuously from one home to another, now, with all the travel restrictions, people often prefer to remain in a fixed destination.

Lastly, some people are using Airbnb accommodation to self-isolate and are thus renting for prolonged stays. Setting up their properties to cater to the self-isolation market is one of the creative strategies developed by hosts and co-hosts to continue operating during the Pandemic (Ham, 2020).

Airbnb is seeing trips lengthening overall and longer stays of at least 28 days (i.e., long-term stays) making up a growing share of booked nights. Across five countries surveyed by Airbnb, consumers' top response to how their travel habits would change if they had more flexibility

in how they work, live, and travel is that they would take more trips, while their number two response is that they would travel for a longer period of time (Airbnb, 2021d).

Globally, the average length of stay has increased from 3.5 nights per stay in 2019 to 4.1 in 2020. These values differ according to the region considered, with the biggest increases between 2019 and 2020 being registered in EMEA and North America (Figure 23). In Q4 2021, stays of more than 7 nights have represented 47% of gross nights booked (Airbnb, 2022d).

Figure 23: Airbnb Average Length of Stay by region
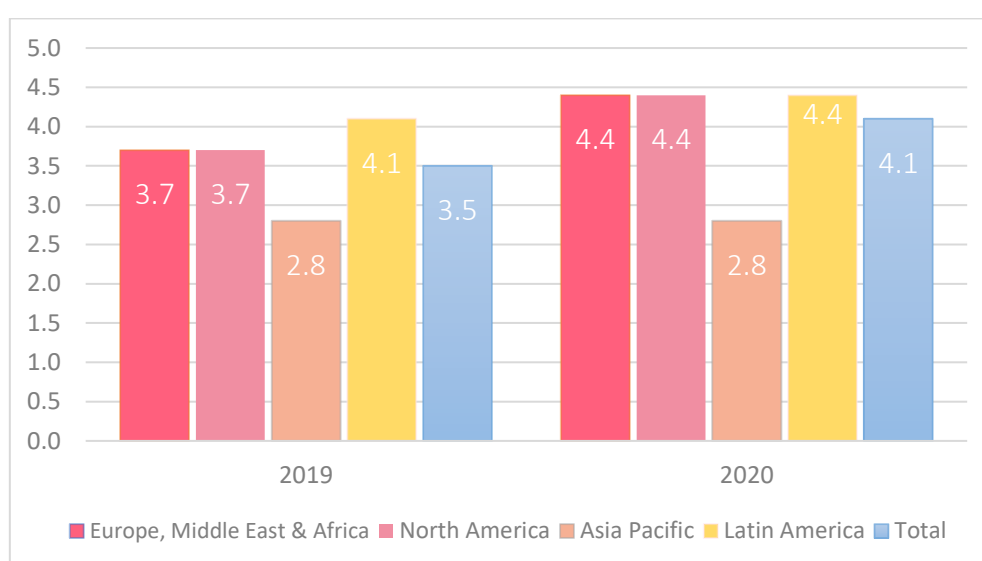
Source: Own elaboration based on WallStreetZen, 2021b.

In parallel, the percentage of long-term stays[15] on Airbnb with respect to overall nights booked almost doubled from 14% of nights booked in 2019 to 24% of nights booked in Q1 2021 (Airbnb, 2021d), hence representing Airbnb's fastest growing category by trip length (Airbnb, 2022d). Airbnb rightfully believes that the longer guests stay, the more they value the amenities and convenience of staying in a home (Airbnb, 2022d). These percentages are considerably different according to the country analysed. In Germany, long-term stays have accounted for 39% of nights booked in 2021, whereas, in Austria they only accounted for 11% of nights booked in the same year (Figure 24). These longer stays are really what allows people to live on Airbnb.

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[15] At least 28 nights

Figure 24: Percentage of long-term stays over overall nights booked in 2021.
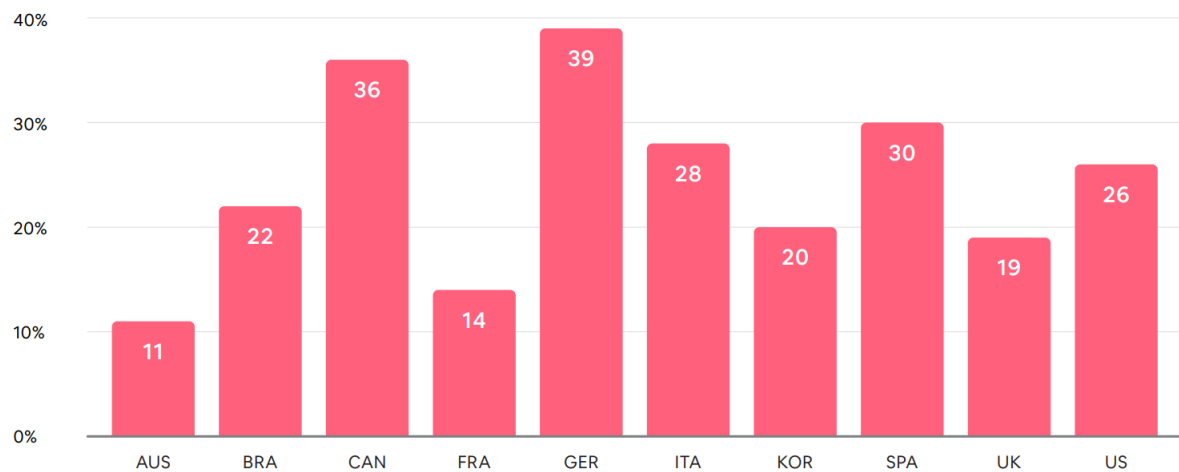
Source: Airbnb, 2021d.

Consequently, it is reasonable to expect an increase in the share of Airbnb listings offered for longer term periods. The data supports that such process is taking place: to respond to the surge in demand for longer stays, the percentage of active listings accepting stays of 28 nights or longer surpassed the 90% figure at the end of Q4 2021 (Airbnb, 2022d).

2.2.2.3.6. From hotels and shared accommodation to private homes

As stated by Adamiak (2021), data evidence shows that some processes that were evident in the platform offer prior to the Pandemic became even more visible during the current crisis.

In terms of accommodation structure, this includes the growth in dominance of entire flats and apartments. This shift was well underway before the Pandemic, but Covid-19 accelerated it and made it one of the biggest permanent travel changes. There is a decreased desire for large, crowded hotels as people prefer private accommodation where they can prepare their own food and gather with their family without encountering strangers from outside their quarantine bubble. The decrease in demand for hotels and increase in demand for private homes is also linked to the fall in business travel, as people who travel for business tend to opt for hotel accommodation.

Social distancing has also caused a decrease in demand for private or shared rooms in shared accommodation when compared to the rental of entire flats. In summer 2020, about 95% of travel on Airbnb was booked at entire homes, compared to about 80% in summer 2019 (Airbnb, 2021d).

The home, not the location, has become the destination. While social distancing may not outlast this Pandemic, the need for space and privacy could be permanent.

With supply adapting to demand, the dominant type of accommodation offered on Airbnb is the "entire place". Of total listings, its share has been growing both before the Pandemic, rising from 57% in 2012 (Ke, 2017) to 74.1% in 2019, and during the Pandemic, reaching 76.2% in 2020 (Adamiak, 2021). Conversely, the share of private rooms has declined from 26.2% in 2018 to 21.6% in 2020 (Adamiak, 2021). The remaining two types of accommodation, namely hotel rooms (introduced as a separate category in 2019) and shared rooms, represent minor proportions of listings.

2.2.2.3.7. Desire for unique experiences

With mass travel shifting towards meaningful travel, people are now seeking unique and authentic experiences.

To break up the monotony of the past year, many are turning to unique abodes like cabins, tiny homes, and treehouses, with the type of stay, not the exact location, becoming *the* destination. Benefitting from this increased interest in unique stays, hosts of unique properties have collectively earned more than USD $300 million globally since the start of the Pandemic, and this figure is bound to explode (Airbnb, 2021e).

This rising interest is evident when analysing data. 55% of Airbnb's 100 most wishlisted homes in 2020 fall into unique categories (Airbnb, 2021e). The number of searches for unique listings as of June 2021 has increased by 94% year-over-year (Airbnb, 2021e). Searches for certain types of unique homes, such as yurts, huts, and farm stays, have increased by tenfold in the last two years (YourUpdateTV, 2021). Table 11 shows the increases in the number of searches that have been recorded.

Table 11: Percentage changes in the searches for certain types of unique homes on Airbnb

Type of unique listing	% change
Yurts	+1,701%
Islands	+1,668%
Huts	+1,379%
Earth houses	+1,285%
Barns	+1,068%
Farm stays	+1,055%
Houseboats	+1,015%
Tiny homes	+791%

Source: Airbnb, 2021e.

To respond to this rising trend, the supply of unique listings has increased by 30% with respect to May 2019 (Airbnb, 2021e). Airbnb currently has over 170,000 unique properties to choose from. Table 12 portrays the number of available properties for each type of unique listing.

Table 12: Number of available properties by type of unique listing

Type of unique listing	Number
Cabins	90,000
Farms	40,000
Tiny Homes	24,000
Boats	5,600
Castles	3,500
Yurts	2,800
Treehouses	2,600
Private islands	1,600
Lighthouses	300
Igloos	140

Source: The Zebra, 2022.

The I'm Flexible tool has allowed guests who are not committed to a specific destination to search for unique stays when booking the accommodation. This innovation represents a new paradigm in the way people book and plan trips, departing from the traditional approach of

finding accommodation after having decided on the destination and travel dates, and moving towards planning trips around a unique place to stay. This tool will help to surface and drive demand for unique listings, while also distributing demand, given that many unique listings are located outside popular tourist destinations.

2.2.2.3.8.   More rigorous hygiene standards

The Pandemic has also changed guest expectations, enhancing the importance of certain factors for guest satisfaction. More specifically, the Covid-19 Pandemic has heightened the need of providing clean and tidy accommodation further, already unquestionably important pre-Pandemic, making it a key requirement and determining the sector's future.

Since accommodations which are perceived as cleaner and more isolated will find greater favour, both hotels and short-term rentals have announced extensive cleaning measures and social distancing procedures to reassure cautious travellers that it is safe to stay there during Covid-19. Many expect hotels to be cleaner, as they tend to have more strict rules in place, however, they do not allow for social distancing to the same extent as private properties do, since private vacation rentals eliminate most in-person interactions (Dubin, 2020). With private entrances and amenities such as kitchens and swimming pools, many consider private homes as a safe, healthy, and responsible way for guests to travel. In parallel to this, homes allow for more authentic experiences and provide an economic solution for hard-hit destinations as well as for the people who live there (Airbnb, 2021d).

With the general public becoming increasingly concerned about cleanliness standards and hygiene practices, Airbnb has introduced an Enhanced Cleaning protocol for ensuring clean and sanitised accommodations. By overhauling host cleaning protocols and promising to make participating listings transparent for travellers, this initiative has led to rapid recovery of entire home rentals. According to Airbnb, homes enrolled in the Enhanced Cleaning Protocol are among the most popular listings on the site and experience three times more bookings on average than other listings (Dubin, 2020).

In this effort to promote safe travel and the well-being of guests and hosts, Airbnb has now expanded its policies to require that all hosts and guests commit to following Airbnb's Covid-19 safety practices (Dubin, 2020). Wearing a mask, practicing social distancing, and committing to a five-step enhanced cleaning process, are all a part of this.

As a result, hosts have reported changes to their cleaning protocols, which in turn have led to a significant increase in the amount of time and money spent on cleaning and on managing properties (Fairley et al, 2021). The trend has also had an impact on how hosts market their rental units. Many of the hosts now include in the name of the property words like "sanitised", "highly clean", and "Covid-friendly" to signal to their customers that their location is safe (Kiesnoski, 2020).

3. Research question

With the advent of Covid-19, demand has drastically dropped with supply following the same trend but at a lower rate. The literature has so far mostly studied the platform in periods of expansion and rapid growth (e.g., Guttentag, 2015). Since the outbreak of the Covid-19 Pandemic has not only impacted demand and supply, but has also permanently modified customer needs and expectations, past studies cannot be applied to the new normal (Dolnicar & Zare, 2020). The analysis of the effects of the Covid-19 Pandemic hence responds to this gap in the literature. In addition, to the best of my knowledge, while some studies have already analysed the impact of the outbreak of the global Pandemic on the decline of overall demand (e.g., Ştiubea, 2021), supply (e.g., Adamiak, 2021), and on the evolution of demand trends (e.g., Farmaki et al., 2020), not many have focused on the response strategies adopted by hosts and on their effectiveness. For this reason, after a descriptive analysis of the London market (i.e., the context of the present study), this aspect is investigated by quantifying the causal effect directly attributable to the Pandemic on specific performance metrics and the mitigating effects of individual response strategies adopted by hosts, thereby understanding what the most effective responses to the Pandemic have been.

Having completely disrupted the travel and hospitality industries, the Covid-19 Pandemic has been defined as an economic super-shock (Dolnicar & Zare, 2020). It is therefore reasonable to presume that the advent of the health crisis caused a decrease in all performance metrics. The following hypothesis has hence been formulated:

Hypothesis 1: A drop in all analysed outputs (i.e., revenues, Revenue Per Available Night, Average Daily Rate and Occupation Rate) can be directly attributable to the outbreak of the Covid-19 Pandemic.

With demand decreasing at a higher rate with respect to supply, the competition severely increased in the market. Aside from reducing demand and supply in the tourism and hospitality industries, the Pandemic has effectively re-configured customer habits, resulting in a new segmentation of demand and new economic performances of host strategies. To avoid being crushed by the recession and to be able to extract rents in the newly reconfigured segments, hosts had to use the appropriate reservation procedures at their disposal, thereby responding to the new customer needs and expectations. Hosts have two basic tools to manage

interactions with guests during the booking process: the cancellation policy and the Instant Book option. The degrees of freedom resulting from the choice of cancellation policy and Instant Book option enable hosts to intercept different market segments, extract a higher surplus, and obtain higher economic returns. The reasons for the disparities in performance between hosts are due to differences in managerial abilities.

Hosts can determine what cancellation policy to apply to their listing, choosing between three main categories: flexible, moderate, or strict. Deciding on a cancellation policy establishes the terms and conditions under which a booking may be cancelled, as well as the possible penalties. More specifically, in case of a *flexible* cancellation policy, guests can cancel the reservation up to 24 hours before check-in for a full refund (Airbnb, 2022a). With a *moderate* cancellation policy total reimbursement is granted if guests cancel their stay up to 5 days before check-in (Airbnb, 2022a). When a *strict* cancellation policy is in place, guests must withdraw their reservation within 48 hours of booking, and the cancellation must occur at least 14 days before check-in, to receive a full refund (Airbnb, 2022a). Each cancellation policy has certain advantages and disadvantages. When a flexible cancellation policy is implemented, the initial demand (i.e., without considering possible alterations and cancellations) is likely to be higher; however, since payments are reimbursed, cancellations are more likely than when a strict cancellation policy is applied.

Empirical evidence from the literature (e.g., Benítez-Aurioles (2018), Wang and Nicolau (2017)) found that stricter cancellation policies, implemented prior to the Pandemic were associated with higher revenues and Occupation Rates.

With the increase of uncertainty around travel caused by the outbreak of the global Covid-19 Pandemic, booking flexibility has become more important. Stricter polices in the pre-Pandemic market resulted in higher economic returns. However, it is reasonable to expect that, with the Pandemic, the adoption of a flexible cancellation policy will be more effective in mitigating the negative effects of the health crisis on economic performance metrics.

The Instant Book option instead allows guests to reserve an accommodation without having to wait for host approval (Airbnb, 2022b). It is common for hosts in the Peer-to-Peer market to want to know the characteristics of their guests before accepting them into their property. This ability to review the details of individual booking requests from guests and eventually declining

them is a key difference between Airbnb and traditional accommodation providers (Fairley et al., 2021). By enabling this option, hosts provide convenience and immediacy in the reservation process, meeting the needs of last-minute travellers (Airbnb, 2022b) and increasing customer satisfaction by allowing a hassle-free booking process (iGMS, 2020). Furthermore, enabling the Instant Book option automatically improves the ranking of the listing upon search on the website, resulting in a higher number of visits and, consequently, reviews, increasing the chances of achieving Superhost status and boosting future visits (Benítez-Aurioles, 2018). However, because arrangements with guests are only made after the booking, cancellation rates may be higher than if communication was established prior to the reservation (Benítez-Aurioles, 2018). Cancellations, particularly those made close to the stay date, result in a loss in profit.

Given the widespread adoption of the Instant Book policy, even though it does not allow for the viewing of the guest profile prior to booking, it is reasonable to expect that the positive effects associated with the Instant Book option outweigh the negative effects. As a result, it is sensible to assume that the Instant Book option is associated with a higher Occupancy Rate and a better performance.

Because of the uncertainty surrounding the Pandemic's evolution, last-minute travellers have increased. According to current trends observed by Airbnb in Northern Europe, the percentage of last-minute bookings[16] has more than doubled since the emergence of Covid-19 (Airbnb, 2022c). The re-segmentation of demand has triggered the emerging need for a faster reservation process, as more people expect to be able to book at short notice. According to Airbnb, those who add the Instant Book option will earn 12% more over the next year than those who do not (Airbnb, 2022c). For the reasons stated, particularly in light of the Pandemic, it is likely that the Instant Book option will be associated with a higher Occupancy Rate and a better performance, thereby mitigating the negative effects of the Pandemic.

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[16] The accommodation is reserved less than 30 days before the stay.

On the basis of these arguments, the following hypotheses have been formulated:

Hypothesis 2: The application of a flexible cancellation policy mitigates the effects of the Covid-19 Pandemic on the Occupancy Rate to a greater extent than the application of a Moderate or Strict cancellation policy.

Hypothesis 3: The application of a flexible cancellation policy mitigates the effects of the Covid-19 Pandemic on the Revenue Per Available Night to a greater extent than the application of a Moderate or Strict cancellation policy.

Hypothesis 4: The enablement of the Instant Book option mitigates the effects of the Covid-19 Pandemic on the Occupancy Rate to a greater extent than if the Instant Book option is not enabled.

Hypothesis 5: The enablement of the Instant Book option mitigates the effects of the Covid-19 Pandemic on the Revenue Per Available Night to a greater extent than if the Instant Book option is not enabled.

4. Methodology

The methodology of this study envisages an initial descriptive analysis on the Airbnb market in London pre and post Pandemic to evaluate changes in demand, adjustments in supply and variations in various performance metrics over a two-year period (i.e., January 2019 – December 2020).

Since the observed variations in the economic results cannot be exclusively attributed to the health crisis, a first econometric model is employed to isolate the pure causal effect of the outbreak of the global Pandemic on performance metrics. Effectively, average performance results typically differ between years and according to the time of year which is considered, independently from the emergence of the Covid-19 virus. In addition, to isolate this pure causal effect, it is also necessary to control for seasonality patterns and intrinsic time-invariant property characteristics.

Only after this robust study on the effects of the health emergency on performance metrics in the London Airbnb market, this thesis focuses on the strategies adopted by hosts as response measures. Two other econometric models, applied to different sub-sets of data according to the analysed strategy (i.e., adoption of the flexible cancellation policy, or enablement of the Instant Book option), are implemented to analyse how these specific individual strategies mitigate those effects directly attributable to the Pandemic.

4.1. Data collection

4.1.1. The AirDNA dataset

The data used to perform the various analyses shown in the thesis were obtained from AirDNA, one of the most important web scraping providers of short-term rental data. By tracking the performance of listings on various platforms, including Airbnb and Vrbo, on a daily basis, AirDNA provides a comprehensive view of short-term rental market trends. Given its level of detail and accuracy, the data provided was used in the majority of the articles included in the previous review of the literature.

The empirical analysis is based on a large-scale longitudinal dataset of Airbnb listings in London at a property-by-month level (i.e., the unit of analysis), with information covering the months from January 2019 to December 2020.

More specifically, London was chosen as the context for the study, being particularly interesting for various reasons including the following:

i.   In terms of overall properties, London is, by far, the largest Airbnb market in the United Kingdom (Airbnb, 2018), one of the top ten destinations both by international tourist arrivals and by international tourism receipts (UNWTO, 2021b);

ii.   Being highly densely populated, London was hit disproportionately hard by the Covid-19 Pandemic (Statista, 2022). Focusing on the British capital hence allows for an accurate analysis on the effects of the Pandemic on the short-term accommodation market;

iii. The London market is significantly segmented both in terms of demand and supply. As far as the demand is concerned, the capital attracts a variegated segmentation of tourists, as it welcomes people who travel for leisure, for business, for educational visits and to visit family and friends. In terms of supply, being characterised by a distinct separation of social classes and multifaceted gentrification, London is divided into very diverse neighbourhoods, and thus offers a variegated range of accommodation.

Considering the unit of analysis, the property-by-month level allows to observe the effects of the Covid-19 Pandemic on demand and supply, as well as on the performance and availability of each listing, over time in a longitudinal manner. In addition, the 24-month observation period, extending from January 2019 and December 2020, enables conclusions to be drawn regarding the effects of the global Pandemic by comparing the pre-Covid-19 era and the post-Covid-19 era.

Of the original dataset, monthly observations were kept for each property if, in that specific month, the property was active on the platform[17]. More specifically, the 2019 dataset consists of 945,048 observations on 147,265 listings managed by 76,723 hosts and the 2020 dataset consists of 671,607 observations on 113,928 listings managed by 46,691 hosts.

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[17] A property is considered active on the platform in month t, if in that month $Reservation\ Days_t + Available\ Days_t > 0$.

The dataset contains information on the monthly availability and performance for each listing, on property attributes and on host characteristics. For more detailed information on the variables considered and their definitions, please refer to Attachment 1.

4.2. Methods of analysis

4.2.1. Descriptive analysis

A descriptive analysis is conducted to analyse the change of demand and supply and the evolution of performance metrics in the Airbnb market in London between January 2019 and December 2020.

In particular, the following performance metrics are evaluated:

o Revenue

The revenue is measured in USD $ for better comparison in global analyses.

o Average Daily Rate (ADR)

The Average Daily Rate (ADR) measures the average rental revenue earned for each reserved night in a given period. It can be calculated for a single listing or for a group of listings.

$$ADR = \frac{Revenue\ (USD)}{Reservation\ Days}$$

When only monthly data is used, the ADR is the best approximation of the listing price. However, unlike the price, the ADR assumes the intersection between supply and demand since the metric considers those nights in which the accommodation is effectively reserved. Hence, the average price in a given period will differ from the ADR in that same period, as the price is defined by the host ex ante and does not necessarily imply that the accommodation has been booked. To analyse the effective prices, one must consider daily data rather than data aggregated on a monthly basis.

The ADR is not solely determined by the listing price, but also by current demand and market sentiment. When the economy is doing well, it is easier for a host to raise the ADR. In contrast, during times of low demand, the ADR is likely to suffer as well.

o <u>Occupancy Rate</u>

The Occupancy Rate of a listing is a measure of how long a property was effectively booked for with respect to the total amount of time it could have been booked for in a given period. The Occupancy Rate can also be measured on a group of listings.

$$Occupancy\ Rate = \frac{Reservation\ Days}{Reservation\ Days + Available\ Days}$$

o <u>Revenue Per Available Night (RevPAN)</u>

The Revenue Per Available Room is a performance metric that is commonly used in the hotel industry (RevPAR). This metric, however, is not applicable in the context of Airbnb since each listing is rented as a single unit. Because the status of the listing can either be "booked" or "not booked" on each night, it is possible to assess the performance of a listing over time. To accomplish this, one commonly used metric in the literature (e.g., Xie et al., 2021) is the Revenue Per Available Night (RevPAN), which measures how profitable the listing was on average for each night the accommodation was effectively active on the platform.

$$RevPAN = \frac{Revenue\ (USD)}{Reservation\ Days + Available\ Days}$$

The RevPAN incorporates the information about both the average rate at which the host rented the property (i.e., the ADR) and the Occupancy in a given period, and thus provides a better indicator of overall performance than the single metrics alone.

$$RevenuePAN = ADR * Occupancy$$
$$= \frac{Revenue\ (USD)}{Reservation\ Days} * \frac{Reservation\ Days}{Reservation\ Days + Available\ Days}$$
$$= \frac{Revenue\ (USD)}{Reservation\ Days + Available\ Days}$$

When the observation period is long enough, this metric can be considered a good approximation of a host's marginal revenue for staying active on the platform for an extra day. This assumption can be made for the following reasons: i) since Airbnb does not charge a fee for being active on the platform, marginal and fixed costs for being active on Airbnb can be assumed negligeable; ii) since transaction fees are linearly

proportional to the total revenues collected during the reported month (i.e., generally equal to 3% of the booking subtotal), the variation of the RevPAN metric as a percentage is the same as the variation of the host's revenues; iii) in the analysed period (i.e., the Pandemic Era), opportunity costs of employing the asset differently (e.g., for long-term rents) are considered negligeable, since all markets were witnessing a crisis; iv) the remaining costs are either fixed costs or sunk costs. RevPAN is therefore a good approximation of a host's marginal revenue, especially since the time period of the analysis is the Pandemic Era. A host who considers the property to be an investment will thus want to maximise its value.

Stata IC was used to carry out all operations and calculations within the dataset. The obtained results were then transferred to Microsoft Excel for the creation of all relevant graphs and tables.

4.2.2. Econometric analysis

The econometric analyses, also implemented using Stata IC, employ three econometric models applied on different sub-sets of data, based on the Difference-in-Differences (DID) estimation.

More specifically, the Difference-in-Differences estimation is an econometric methodology used to estimate the true causal impact of a specific intervention or treatment on an outcome y. To do this, two groups of subjects are observed: one is exposed to the treatment (i.e., treatment group) and one is not exposed to the treatment (i.e., the control group). In addition, the two groups are observed in two periods, before and after the treatment.

The first type of model in the study considers the outbreak of the global Pandemic as the treatment and analyses its causal effect on different outcomes, including the revenue, the Revenue Per Available Night, the Average Daily Rate and the Occupancy Rate, on a linear scale. The descriptive analysis has demonstrated the drastic decline in performance measures after the Pandemic hit. It is now of interest to study how much of this change can be attributed to the health crisis exclusively, considering how the outcomes would have varied between the treatment and the control group and between the post-treatment period and the pre-treatment period had the Pandemic not happened.

The second type of model analyses the causal effect directly attributable to the Pandemic when a specific strategic action is taken forward by the host. By analysing how the effect varies according to the implementation or the non-implementation of the strategy, it is possible to determine if that strategic decision effectively mitigated the drastic effects of the Pandemic on specific performance measures. In particular, the strategic actions which are considered are both the application of a flexible cancellation policy and the acceptance of the Instant Book option, employed as responses to the drop in demand and evolution of demand trends witnessed during the Pandemic. The study analyses the causal effects of these interventions on different outcomes, including, once again, the revenue, the Revenue Per Available Night, the Average Daily Rate and the Occupancy Rate.

4.2.2.1. Model 1: Evaluation of the direct impact of the Covid-19 Pandemic on specific performance measures

It would seem natural to analyse the effects of the outbreak of the Covid-19 Pandemic (i.e., the treatment) by comparing two different cities, one severely hit by the health crisis (i.e., the treatment group) and one which was not impacted at all (i.e., the control group), and observe the two groups before the Pandemic (i.e., before March 2020) and after the Pandemic (i.e., from March 2020). This analysis is not be possible for two reasons: first of all, the whole world was impacted in some way by this global catastrophe, and second, the available dataset considers London exclusively.

To respond to this problem, and to be able to apply the Difference-in-Differences model to analyse the impact of the Pandemic on a certain outcome y, previous articles in the literature (e.g., Fang et al., 2020), have considered the treatment group comprised of all observations in 2020 and the control group formed by all observations in 2019, instead of comparing between two different cities. This thesis applies this method to be able to analyse the effects of the Pandemic on an outcome y in the Airbnb market in London.

Before running the model, which controls for seasonality and property-specific time-invariant characteristics, a series of steps were necessary to declare the panel dataset, to create the Difference-in-Differences variables, and to operationalise the dependent variables.

4.2.2.1.1. Declaration of the panel dataset

The Difference-in-Differences methodology requires data from pre- and post-intervention, such as panel data or repetitions of cross-sectional data. The database on which this study is based upon is therefore appropriate, since it contains observations for different entities (i.e., different properties) across time (i.e., the observations are taken on a monthly basis).

It was thus necessary to declare the data in memory to be a panel with panel identifier ID and with observations ordered by T. Both ID and T had been previously defined as group variables containing a unique identifier for each *propertyid* and *reportingmonth*. Considering the dataset used throughout the study, the values for the group variable ID range from 1 to 172,801, and the values for the group variable T range from 1 to 24.

The panel data is unbalanced since not all panel members have measurements in all periods. If an unbalanced panel contains N panel members and M periods, then the following strict inequality holds for the number of observations n in the dataset: $n < N * T$. However, since the observations are missing at random then this is not a problem.

4.2.2.1.2. Creation of the Difference-in-Differences variables

Once the treatment has been administered to the treatment group, we will be able to observe the output for:

i. The control group before the intervention;
ii. The treatment group before the intervention;
iii. The control group after the intervention;
iv. The treatment group after the intervention.

To consider these four possible states, two dummy variables, $TREAT$ and $POST$, are defined. Where:

- $TREAT_{it}$ is a dummy variable that assumes the value 1 for the treatment group and the value 0 for the control group. More specifically, in this study $TREAT_{it} = 1$ if the year is 2020 and $TREAT_{it} = 0$ if the year is 2019.

- $POST_{it}$ is a dummy variable that assumes the value 1 for the post-treatment period and the value 0 for the pre-treatment period. More precisely, in this study, since the

treatment is the outbreak of the global Pandemic, which became a global concern starting from the month of March, $POST_{it} = 1$ for the months of $March, April, May,$ $June, July, August, September, October, November, December,$ and $POST_{it} = 0$ for the months of $January$ and $February$.

Therefore, $TREAT_{it} * POST_{it}$ represents the interaction between the two dummy variables. It takes the value 1 in case of the treatment group after the treatment has occurred (i.e., for the March-December 2020 period). This variable allows to isolate the direct causal effect of the Pandemic on the analysed outcome.

4.2.2.1.3.   Operationalisation of the dependent variables

This study focuses on analysing the direct effect of the Pandemic on specific performance outcomes which include: the revenue on a linear scale ($revenueusd$), the Revenue Per Available Night on a linear scale ($RevPAN$), the Average Daily Rate on a linear scale (ADR), and the Occupancy Rate on a linear scale ($OccupancyRate$).

These dependent variables are defined as follows:

$$revenueusd = revenueusd$$

$$RevPAN = \frac{revenueusd}{reservationdays + availabledays}$$

$$ADR = \frac{revenueusd}{reservationdays}$$

$$OccupancyRate = \frac{reservationdays}{reservationdays + availabledays}$$

4.2.2.1.4.   Model definition

The regression model takes the following form:

$$y_{it} = \beta_0 + \beta_1 * TREAT_{it} + \beta_2 * POST_{it} + \gamma * POST_{it} * TREAT_{it} + T_t + \alpha_i + \varepsilon_{it}$$

Where:

- i indexes the property, with $i \in [1, 172801]$

- t indexes the month, with $t \in [1, 24]$

- y_{it} is the outcome. Results are monthly since the data is on a property-by-month level.

- The intercept β_0 represents the outcome in the absence of the effects derived from the regression (i.e., the effects of being in 2020 with respect to 2019, the effects of being in the March-December period with respect to the January-February period, the effects directly attributable to the outbreak of the Covid-19 Pandemic, and the seasonality effect).

- The coefficient β_1 captures the possible a priori differences between the treatment group and the control group. It absorbs the effect of all those time constant differences between the year 2020 and the year 2019.

- The coefficient β_2 captures the possible a priori differences between the post-treatment period and the pre-treatment period. It absorbs all those changes that effect the treatment group and the control group equally between the March-December period and the January-February period.

- The coefficient γ is the average treatment effect: it expresses the causal effect of the treatment on the treatment group in the post-treatment period on the average outcome y. This effect is the result of a difference between two differences (Table 13). More specifically:

$$\gamma = \left(\bar{y}_{TREAT,POST} - \bar{y}_{TREAT,\overline{POST}}\right) - \left(\bar{y}_{\overline{TREAT},POST} - \bar{y}_{\overline{TREAT},\overline{POST}}\right)$$
$$= \left(\bar{y}_{TREAT,POST} - \bar{y}_{\overline{TREAT},POST}\right) - \left(\bar{y}_{TREAT,\overline{POST}} - \bar{y}_{\overline{TREAT},\overline{POST}}\right)$$

The change in the outcome variable in the treatment group between the post-treatment and the pre-treatment period compared to the change in the outcome

variable in the control group between the post-treatment and the pre-treatment period gives a measure of the treatment effect.

In the same way, the impact of the treatment can be computed as the difference in outcomes between the treatment group and control group, after the treatment is implemented, subtracting those pre-existing differences in outcomes between the two groups which were present before the treatment was implemented.

Table 13: Coefficient γ – result of a difference between differences

$\bar{y}$	Post-treatment ($POST = 1$)	Pre-treatment ($POST = 0$)	Post-treatment - Pre-treatment
Treatment group ($TREAT = 1$)	$\beta_0 + \beta_1 + \beta_2 + \gamma + T_t$	$\beta_0 + \beta_1 + T_t$	$\beta_2 + \gamma$
Control group ($TREAT = 0$)	$\beta_0 + \beta_2 + T_t$	$\beta_0 + T_t$	β_2
Treatment group – Control group	$\beta_1 + \gamma$	β_1	γ

- T_t is a set of dummies that identifies the month of the year.

- α_i is the portion of error that is systematic and idiosyncratic (i.e., it is present for each property and it varies from property to property).

- ε_{it} is the observation error.

The Difference-in-Differences method eliminates biases in post-intervention period comparisons between the treatment and control groups that could result from permanent differences between those groups (e.g., intrinsic growth between the outcomes of two subsequent years), as well as biases from comparisons over time in the control group and in the treatment group that may result from trends of the outcome.

Group-specific means might differ in the absence of a treatment. However, the Difference-in-Differences approach relies on the *Parallel Trend Assumption,* according to which, in the absence of treatment, the differences in the outcome between treatment and control groups are constant over time.

4.2.2.1.5. Controlling for seasonality patterns and time-invariant intrinsic property characteristics

For an accurate analysis, it is critical to control for both the seasonality and property-specific time-invariant characteristics.

Since it is reasonable to expect that the main output variables are time variant, a set of dummy variables that identify the month of the year are included in the regression to control for seasonal patterns in the data. The idea is to capture differences in the outcome that vary across time periods but not across individuals. This allows to observe the effect of the Pandemic independently from the month of observation.

Operationally, to control for seasonality, the group variable T_t, defined as a set of dummy variables that identify the month of the year, is created and included in the regression as a control variable. When running the model, one of the values representing one month will be omitted because of collinearity.

In addition, each property i has certain intrinsic characteristics, which are either unobservable, unmeasurable, or not contained in the dataset and which could be correlated with the explanatory variables x_{it}, other than with the outcome y, thus returning a biased estimate (i.e., there would be an omitted variable bias). These characteristics could be directly linked to the property or to the host who is listing the property. Examples may include the location of the accommodation, the listing type, the property type, the dimension of the rentable space, the positivity of reviews, the application of the Superhost status and the host's experience on the platform.

To take into account possible endogeneity concerns that would arise due to the omitted variables and to improve model robustness, the intrinsic property characteristics, assumed to be time-invariant, are controlled for by employing a fixed effects model. This allows to observe the effects of the Pandemic independently from the time-invariant intrinsic characteristics of the property.

To do this, the error term u_{it} is broken down into α_i and ε_{it}. α_i is the unobserved time-invariant individual effect, namely that portion of systematic and idiosyncratic error that depends on the entity i (i.e., in this study the property), but which is independent of time. This

error is hence cross-sectional. ε_{it} is the observation error. The fixed effects model, applicable to a panel dataset, intends to eliminate the intercept shifter α_i with the data-demeaning procedure, a procedure which consists in subtracting each variable from the group mean of each property and in estimating the model without the intercept using the pooled OLS estimator. Since the α_i error term is constant over time, the difference $(\alpha_i - \bar{\alpha}_i)$ is zero. Since this error term is cancelled, there will no longer be a correlation between the variables and this portion of error.

Operationally, the **fe** option is added on Stata to the **xtreg** command, to employ the fixed effects model. In addition, to account for the problem of heteroscedasticity and provide a more accurate measure of the true standard error of a regression coefficient, robust standard errors are used by including the command **robust** to the regression.

4.2.2.2. Model 2: Assessment of the impact of the strategies put in place by hosts to respond to the Covid-19 Pandemic on specific performance measures

4.2.2.2.1. Model 2A: Assessment of the mitigating effect of the flexible cancellation policy on specific performance measures, following the outbreak of the Covid-19 Pandemic.

A very similar model to the one described above is used to determine which cancellation policy mitigates the negative effects attributable to the Pandemic to the greatest extent. In particular, the database is split into two with the objective of performing two regression analysis, one on all observations with a flexible cancellation policy and the other on all observations with a moderate or strict cancellation policy. The original database is hence split into two sub-databases using the **keep if cancellationpolicy=="Flexible"** command to generate the first and the **keep if cancellationpolicy=="Moderate" || cancellationpolicy=="Strict"** command to generate the second. Those observations which do not include the information regarding the cancellation policy are thus discarded.

The reasoning behind the application of the two regression analyses is the following. Since the coefficient of the interaction between the Treat and Post dummy variables represents the effect directly attributable to the Pandemic on a specific outcome y, if this coefficient is higher in the regression analysis relative to the flexible cancellation policy compared to the regression

analysis performed on those observations with a moderate or strict cancellation policy, this would imply that the negative effects of the Covid-19 Pandemic on a specific outcome y are less severe in case of a flexible cancellation policy. In other words, the application of a flexible cancellation policy would mitigate the effects directly attributable to the Pandemic on that outcome to a greater extent than the application of a moderate or strict cancellation policy. The objective of this analysis is to see whether this is true, or whether the opposite result stands, where the negative effects of the Pandemic are less severe if the moderate or strict cancellation policies are applied.

This study focuses on assessing which of the cancellation policies mitigates the negative effects caused by the outbreak of the Covid-19 pandemic to a greater extent on the following performance metrics: the revenue on a linear scale ($revenueusd$), the revenue on a logarithmic scale ($lnREVENUES$), the Revenue Per Available Night on a linear scale ($RevPAN$), the Revenue Per Available Night on a logarithmic scale ($lnRevPAN$), the Average Daily Rate on a linear scale (ADR), the Average Daily Rate on a logarithmic scale ($lnADR$), and the Occupancy Rate on a linear scale ($OccupancyRate$).

These dependent variables are defined as follows:

$$revenueusd = revenueusd$$

$$lnREVENUES = \ln(1 + revenueusd)$$

$$RevPAN = \frac{revenueusd}{reservationdays + availabledays}$$

$$lnRevPAN = \ln(1 + RevPAN)$$

$$ADR = \frac{revenueusd}{reservationdays}$$

$$lnADR = \ln(1 + ADR)$$

$$OccupancyRate = \frac{reservationdays}{reservationdays + availabledays}$$

Since the $revenueusd, RevPAN$ and ADR are often null, and since $\ln(0)$ does not exist, the solution of adding one unit to the argument of the logarithm was implemented.

In addition, it did not prove useful to consider the Occupancy Rate on a logarithmic scale, with results being interpreted as percentage variations, since the metric is already expressed as a percentage and the interpretation of the result would not have an interesting meaning.

4.2.2.2.2. Model 2B: Assessment of the mitigating effect of the Instant Book option on specific performance measures, following the outbreak of the Covid-19 Pandemic.

With the same reasoning as the one applied for the cancellation policy, to determine if the effects of the Pandemic are mitigated to a greater extent when the Instant Book option is enabled compared to when it is not, two regression analyses are performed on two distinct sub-databases. More specifically, the original database is split into two with the idea of performing one regression analysis on those observations for which the Instant Book option is enabled and another regression analysis on those observations for which the option is not enabled. The **keep if instantbookenabled=="True"** command is used to generate the first sub-database and the **keep if instantbookenabled=="False"** command is used to generate the second. Those observations which do not include the information on the enablement of the Instant Book option are thus discarded.

It is possible to understand which of the two strategies is most successful in mitigating the negative effects of the global Pandemic by analysing the coefficient of the interaction between the Treat and the Post dummy variables in both cases for a given outcome y. This coefficient represents the effects directly attributable to the Pandemic on the outcome y. If the coefficient of the interaction is higher when the Instant Book option is enabled with respect to when it is not on a given outcome, then the negative effects of the Pandemic are less severe in this case, demonstrating that the enablement of the Instant Book option allows for better performance results. The objective of this analysis is to see whether this is true, or whether the opposite result stands, where the negative effects of the Pandemic are less severe if the Instant Book option is not enabled.

This study focuses on assessing whether it is better to enable or not to enable the Instant Book option to mitigate the negative effects caused by the outbreak of the Covid-19 Pandemic , by analysing the following performance metrics: the revenue on a linear scale ($revenueusd$), the

Revenue Per Available Night on a linear scale ($RevPAN$), the Average Daily Rate on a linear scale (ADR), and the Occupancy Rate on a linear scale ($OccupancyRate$).

These dependent variables are defined as follows:

$$revenueusd = revenueusd$$

$$RevPAN = \frac{revenueusd}{reservationdays + availabledays}$$

$$ADR = \frac{revenueusd}{reservationdays}$$

$$OccupancyRate = \frac{reservationdays}{reservationdays + availabledays}$$

5. Results and discussion

5.1. Descriptive analysis

5.1.1. Comparison of the London Airbnb market pre and post Pandemic

The Covid-19-induced Pandemic has had drastic effects on the global tourism industry, severely impacting the short-term accommodation market. In the United Kingdom the decline in tourist arrivals was further affected by Brexit. However, since the end of the transition period[18] occurred on December 31, 2020, and because the following analysis is based on data relative to 2019 and 2020, the analysed effects can be primarily attributed to the health crisis.

With international travel being severely affected during the Pandemic, and with domestic travel shifting from urban to rural, London witnessed massive drops in tourism.

Considering the London Airbnb market, total revenues witnessed a 67.75% drop in 2020 with respect to 2019, decreasing from USD $1,552 million to $501 million (Table 14). Since the Pandemic effectively became a global concern in March 2020, a more precise analysis of the effects of the Pandemic considers exclusively March to December 2020 with respect to the same period of the previous year. When the pre-Covid months are excluded, the fall is even more significant: Specifically, a decline of 77.74% was recorded, with revenue falling from USD $1,381 million to $307 million (Table 15).

Table 14: Total Revenues in 2019 and 2020

Total Revenues		
2019	1,552,107,136.00	
2020	500,567,552.00	-67.75%

Source: Own elaboration based on data retrieved from AirDNA (2019–2020).

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[18] "The Brexit transition is the period agreed in the UK–EU Withdrawal Agreement in which the UK is no longer a member of the EU but remains a member of the single market and customs union" (The Institute for Government, 2020).

Table 15: Total Revenues in March-December 2019 and 2020

Total Revenues		
Mar-Dec 2019	1,380,721,152.00	
Mar-Dec 2020	307,370,688.00	-77.74%

Source: Own elaboration based on data retrieved from AirDNA (2019–2020).

This decline in revenues can be attributed to a drastic fall in demand. More precisely, the overall demand, defined as the total number of nights which were effectively reserved throughout the year in the whole city, registered a drop of 64.46% in 2020 year-over-year (Table 16). The decline was even more dramatic when the months of January and February are excluded, with a drop of 74.73% in 2020 with respect to the same period in 2019 (Table 17).

Table 16: Total Reservation Days in 2019 and 2020

Reservation Days		
2019	10,016,231	
2020	3,559,775	-64.46%

Source: Own elaboration based on data retrieved from AirDNA (2019–2020).

Table 17: Total Reservation Days in March-December 2019 and 2020

Reservation Days		
Mar-Dec 2019	8,818,548	
Mar-Dec 2020	2,228,766	-74.73%

Source: Own elaboration based on data retrieved from AirDNA (2019–2020).

In line with government guidance, Airbnb effectively blocked all calendars from receiving new bookings in the UK, unless they were for key workers or other types of essential stays starting from April 9, 2020, until July 3, 2020 (Airbnb, 2020b). Whereas a significant percentage of bookings for April 2020 were likely to have been already made pre-Pandemic, since there is commonly a lead time between the booking and the actual stay, June 2020 was too far down the line to have numerous bookings pre-Pandemic. This limitation imposed by the platform severely affected the months of April 2020 and May 2020 in terms on demand, with new

bookings being almost completely impeded. However, June 2020 was hit even harder, with demand being almost completely nullified (Table 18, Figure 25).

Table 18: Monthly demand in 2019 and 2020

2019		2020	
Reporting month	Demand	Reporting month	Demand
2019-01-01	635,124	2020-01-01	663,074
2019-02-01	562,559	2020-02-01	667,935
2019-03-01	693,538	2020-03-01	487,405
2019-04-01	787,714	2020-04-01	321,449
2019-05-01	827,941	2020-05-01	186,078
2019-06-01	954,828	2020-06-01	5,432
2019-07-01	1,029,333	2020-07-01	232,349
2019-08-01	914,436	2020-08-01	241,959
2019-09-01	936,931	2020-09-01	223,617
2019-10-01	847,056	2020-10-01	204,005
2019-11-01	788,908	2020-11-01	151,476
2019-12-01	1,037,863	2020-12-01	174,996

Source: Own elaboration based on data retrieved from AirDNA (2019–2020).

Figure 25: Monthly demand in 2019 and 2020

Source: Own elaboration based on data retrieved from AirDNA (2019–2020).

As with demand, the Occupancy Rates were higher in 2020 only for the pre-Covid months of January and February and witnessed a decline year-over-year for all remaining months (Table 19). This can be considered as a demonstration of the fact that travel was on a growth trend before the Pandemic which completely reversed the pattern. The decrease recorded during the Pandemic is a consequence of demand dropping at a higher rate than supply.

Table 19: Monthly Occupancy Rate in 2019 and 2020

2019		2020	
Reporting month	Occupancy rate	Reporting month	Occupancy rate
2019-01-01	30.56%	2020-01-01	32.18%
2019-02-01	31.11%	2020-02-01	34.85%
2019-03-01	34.43%	2020-03-01	24.93%
2019-04-01	39.41%	2020-04-01	31.61%
2019-05-01	40.00%	2020-05-01	24.99%
2019-06-01	47.50%	2020-06-01	1.07%
2019-07-01	48.96%	2020-07-01	16.03%
2019-08-01	43.06%	2020-08-01	16.47%
2019-09-01	48.49%	2020-09-01	17.15%
2019-10-01	44.05%	2020-10-01	14.68%
2019-11-01	40.45%	2020-11-01	11.63%
2019-12-01	45.36%	2020-12-01	12.84%

Source: Own elaboration based on data retrieved from AirDNA (2019–2020).

With no entry costs[19], Airbnb is characterised by the ability to scale instantaneous supplies. When demand is very high and prices are inflated, with perceived monetary benefits outweighing the opportunity cost of hosting, more listings become available on the platform. As prices rise, hosts with increasingly higher switching costs are drawn to the platform. Following the same reasoning, the immediate conclusion is that when demand is very low and prices deflate, fewer listings tend to be available on the platform. In the short-term accommodation market, it is reasonable to expect the supply to rise when demand increases

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[19] Airbnb does not charge fees for being active on the platform.

and to fall when demand drops but at a lower rate of change, resulting in a price inflation when demand grows and in a price reduction when demand lowers.

Effectively, the overall supply in London, when defined as the total number of nights the property was either reserved or available for reservation but not reserved, recorded a significant drop, but not as substantial as the drop in demand. More specifically, a drop of 32.19% was recorded in 2020 year-over-year (Table 20). When the months of January and February are excluded, the fall amounts to 38.76% (Table 21).

Table 20: Total Reservation Days and Available Days in 2019 and 2020

Reservation Days + Available Days		
2019	24,299,872	
2020	16,478,193	-32.19%

Source: Own elaboration based on data retrieved from AirDNA (2019–2020).

Table 21: Total Reservation Days and Available Days in March-December 2019 and 2020

Reservation Days + Available Days		
Mar-Dec 2019	20,413,002	
Mar-Dec 2020	12,501,137	-38.76%

Source: Own elaboration based on data retrieved from AirDNA (2019–2020).

With the uncertainties concerning the long-term effects of the Covid-19 Pandemic on travel, many owners have decided to withdraw their accommodation from the short-term rental market to move to the long-term rental market, choosing stability over a possible higher return. The drop in supply in April, May and June (Table 22, Figure 26), corresponding to those months in which Airbnb severely restricted new bookings in the UK, demonstrates this shift from the short-term to the long-term. The fall in supply was more substantial in London than in Rome (Buzzacchi et al., 2021), where the lockdowns and travel restrictions severely affected demand, but no measures were put in place by the platform to block all new reservations.

Table 22: Monthly supply in 2019 and 2020

2019		2020	
Reporting month	Supply	Reporting month	Supply
2019-01-01	2,078,346	2020-01-01	2,060,443
2019-02-01	1,808,524	2020-02-01	1,916,613
2019-03-01	2,014,456	2020-03-01	1,955,445
2019-04-01	1,999,019	2020-04-01	1,016,770
2019-05-01	2,069,887	2020-05-01	744,645
2019-06-01	2,009,993	2020-06-01	505,584
2019-07-01	2,102,432	2020-07-01	1,449,843
2019-08-01	2,123,669	2020-08-01	1,469,493
2019-09-01	1,932,142	2020-09-01	1,303,878
2019-10-01	1,923,102	2020-10-01	1,390,062
2019-11-01	1,950,251	2020-11-01	1,302,979
2019-12-01	2,288,051	2020-12-01	1,362,438

Source: Own elaboration based on data retrieved from AirDNA (2019–2020).

Figure 26: Monthly supply in 2019 and 2020
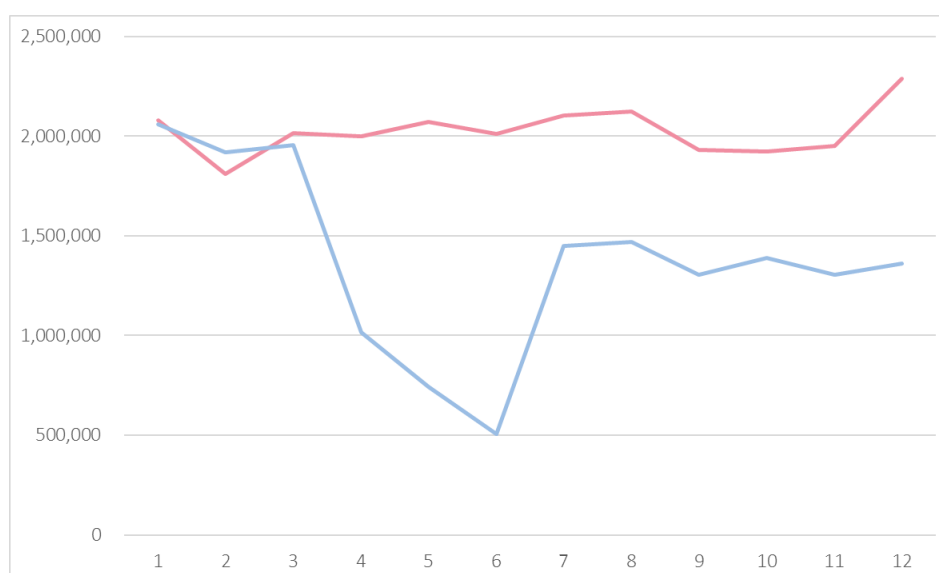
Source: Own elaboration based on data retrieved from AirDNA (2019–2020).

In 2020, the number of properties which were active for at least one month on the platform, dropped by 22.64% with respect to the year prior, decreasing from 147,265 properties in 2019 to 113,928 properties in 2020. When the months of January and February are excluded, the

decline was of 26.39% year-over-year, with the number of properties dropping from 137,005 to 100,848.

The drop in prices can be approximately evaluated by analysing the Average Daily Rate. Considering the London market as a whole, the Average Daily Rate in 2020 was lower than that of 2019, for all months except January 2020 (i.e., pre-Pandemic month) and November 2020 (Table 23, Figure 27). The drop in value is a consequence of the rapid fall in demand characteristic of the Pandemic months and a corresponding lowering of prices deemed necessary to attract guests in the more competitive environment.

Table 23: Monthly Average Daily Rate in 2019 and 2020

2019		2020	
Reporting Month	Average Daily Rate	Reporting Month	Average Daily Rate
2019-01-01	143.06	2020-01-01	150.55
2019-02-01	143.14	2020-02-01	139.79
2019-03-01	148.01	2020-03-01	126.31
2019-04-01	157.15	2020-04-01	107.96
2019-05-01	147.62	2020-05-01	119.36
2019-06-01	162.04	2020-06-01	133.16
2019-07-01	162.26	2020-07-01	160.91
2019-08-01	158.10	2020-08-01	150.27
2019-09-01	145.22	2020-09-01	138.87
2019-10-01	149.83	2020-10-01	148.30
2019-11-01	152.29	2020-11-01	158.54
2019-12-01	175.97	2020-12-01	166.31

Source: Own elaboration based on data retrieved from AirDNA (2019–2020).

Figure 27: Monthly Average Daily Rate in 2019 and 2020
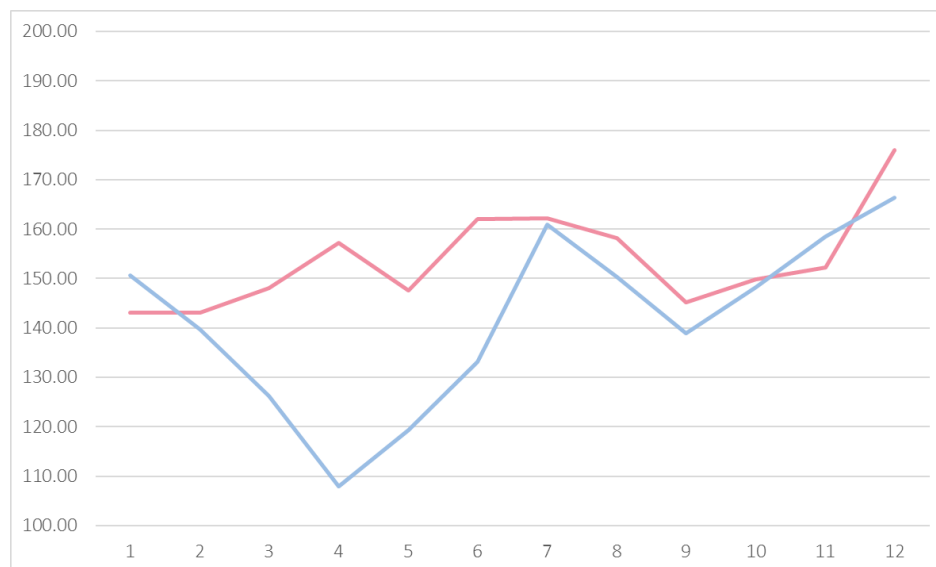
Source: Own elaboration based on data retrieved from AirDNA (2019–2020).

A more detailed analysis, that considers the London neighbourhoods separately, shows that, while most neighbourhoods recorded a drop in the annual Average Daily Rate in the March-December 2020 period year-over-year, some saw an increase (Table 24). When referring to a map, it becomes evident that the neighbourhoods in the outskirts are those that registered a rise, whereas the central neighbourhoods saw a decline (Figure 28). The reason underlying is linked to the diverse perception of risk. Highly dense populated areas, characterised by a more rapid diffusion of the virus, were considered more dangerous and therefore were more affected by the shock, registering a more significant decrease in bookings with respect to 2019. The higher drop in demand likely caused a more significant decrease in prices than the more demanded listings in less crowded areas.

Table 24: Average Daily Rate by neighbourhood in March-December 2019 and 2020

Neighbourhood	2019	2020	% change
Barking and Dagenham	67.63	71.01	4.99%
Barnet	91.37	97.19	6.37%
Bexley	78.07	74.26	-4.88%
Brent	101.75	92.85	-8.75%
Bromley	77.80	82.30	5.78%
Camden	183.15	151.30	-17.39%
City of London	222.44	169.72	-23.70%
Croydon	71.82	77.07	7.30%
Ealing	97.65	92.30	-5.48%
Enfield	83.27	93.96	12.84%
Greenwich	112.13	111.11	-0.91%
Hackney	122.70	122.06	-0.53%
Hammersmith and Fulham	152.24	142.84	-6.18%
Haringey	103.17	95.21	-7.71%
Harrow	74.38	78.74	5.87%
Havering	80.71	79.65	-1.31%
Hillingdon	78.22	79.14	1.19%
Hounslow	102.50	107.07	4.46%
Islington	148.06	134.77	-8.97%
Kensington and Chelsea	265.99	204.77	-23.01%
Kingston upon Thames	91.70	96.27	4.99%
Lambeth	125.23	123.36	-1.49%
Lewisham	84.60	81.11	-4.13%
Merton	111.48	102.61	-7.96%
Newham	106.18	102.47	-3.49%
Redbridge	71.21	75.73	6.36%
Richmond upon Thames	140.70	140.20	-0.35%
Southwark	133.45	127.19	-4.69%
Sutton	66.28	73.05	10.21%
Tower Hamlets	119.23	113.75	-4.60%
Waltham Forest	80.89	79.29	-1.98%
Wandsworth	140.63	136.99	-2.59%
Westminster	246.92	203.02	-17.78%

Source: Own elaboration based on data retrieved from AirDNA (2019–2020).

Figure 28: London neighbourhoods marked in green if the annual Average Daily Rate increased in March-December 2020 year-over-year and in red if it decreased

Overall, the significant fall in total revenues, the decline in demand and resulting drop in supply, and the reduction of Occupancy Rates seem to be confirming that the Covid-19 induced Pandemic can be effectively considered an economic super-shock (Dolnicar & Zare, 2020). However, before confirming *Hypothesis 1,* namely that the health emergency directly caused a drop in the various outcomes, it is necessary to isolate the causal effect of the Pandemic. This econometric analysis is taken forward with Model 1, with results shown in Section 5.2.1.

When managing the interactions with guests during the booking process, hosts must make decisions regarding the cancellation policy they wish to apply and whether to enable the Instant Book option.

As far as the cancellation policy is concerned, during the Pandemic, a higher percentage of listings started offering a flexible or moderate cancellation policy. More specifically, considering the March-December 2019 period, 15.80% of the properties which were active for at least one month during the analysed period were offering a flexible cancellation policy, and 7.18% a moderate cancellation policy (Table 25). These figures increased to 30.23% and 25.19% respectively in the March-December 2020 period (Table 25). Conversely, the strict

cancellation policy became less popular among listings, with figures dropping from 77.02% in March-December 2019 to 44.58% in March-December 2020 (Table 25).

Table 25: Percentage of properties active for at least one month in March-December 2019 and 2020 that offered a flexible, moderate or strict cancellation policy

Cancellation policy	2019	2020	% change
Flexible	15.80%	30.23%	91.35%
Moderate	7.18%	25.19%	250.70%
Strict	77.02%	44.58%	-42.12%

Source: Own elaboration based on data retrieved from AirDNA (2019–2020).

This phenomenon occurred as a response to the change in customer needs. As lockdowns and restrictions imposed by the Pandemic caused great uncertainty in terms of travelling, demand moved towards those listings that were offering the possibility to cancel bookings with no additional costs until a few days before the stay, when it would have been clearer if it was possible to travel or not. This is evident when analysing the Occupancy Rate. The Occupancy Rate for listings which offered a flexible cancellation policy increased in 2020 in all months year-over-year, except for June 2020, which was severely impacted by the block of all new bookings imposed by Airbnb in the UK, and July 2020 (Table 26). Listings with a moderate cancellation policy saw some months with a higher Occupancy Rate year-over-year and some other months with a lower Occupancy Rate year-over-year (Table 27), beating the values relative to the strict cancellation policy in all months. The Occupancy Rate instead fell for accommodations offering a strict cancellation policy for all months in 2020 excluding the pre-Pandemic period of January and February 2020 (Table 28).

Table 26: Monthly Occupancy Rate for listings offering a flexible cancellation policy in 2019 and 2020 with percentage changes

Cancellation Policy = FLEXIBLE				
2019		2020		
Reporting Month	Occupancy Rate	Reporting Month	Occupancy Rate	% change
2019-01-01	12.10%	2020-01-01	35.32%	191.96%
2019-02-01	10.90%	2020-02-01	36.04%	230.79%
2019-03-01	11.95%	2020-03-01	27.48%	130.04%
2019-04-01	14.50%	2020-04-01	51.80%	257.25%
2019-05-01	14.82%	2020-05-01	44.58%	200.86%
2019-06-01	17.77%	2020-06-01	1.68%	-90.55%
2019-07-01	18.33%	2020-07-01	16.62%	-9.35%
2019-08-01	14.69%	2020-08-01	17.04%	16.00%
2019-09-01	14.69%	2020-09-01	17.81%	21.27%
2019-10-01	10.28%	2020-10-01	13.81%	34.43%
2019-11-01	4.94%	2020-11-01	10.77%	118.15%
2019-12-01	4.75%	2020-12-01	11.63%	144.98%

Source: Own elaboration based on data retrieved from AirDNA (2019–2020).

Table 27: Monthly Occupancy Rate for listings offering a moderate cancellation policy in 2019 and 2020 with percentage changes

Cancellation Policy = MODERATE				
2019		2020		
Reporting Month	Occupancy Rate	Reporting Month	Occupancy rate	% change
2019-01-01	25.73%	2020-01-01	43.15%	67.71%
2019-02-01	24.66%	2020-02-01	43.75%	77.39%
2019-03-01	25.99%	2020-03-01	33.33%	28.26%
2019-04-01	31.12%	2020-04-01	48.50%	55.87%
2019-05-01	30.98%	2020-05-01	45.08%	45.53%
2019-06-01	36.97%	2020-06-01	2.92%	-92.10%
2019-07-01	36.15%	2020-07-01	19.63%	-45.69%
2019-08-01	28.88%	2020-08-01	18.82%	-34.82%
2019-09-01	26.63%	2020-09-01	20.16%	-24.29%
2019-10-01	20.50%	2020-10-01	18.03%	-12.05%
2019-11-01	11.19%	2020-11-01	15.33%	37.03%
2019-12-01	9.88%	2020-12-01	16.60%	68.14%

Source: Own elaboration based on data retrieved from AirDNA (2019–2020).

Table 28: Monthly Occupancy Rate for listings offering a strict cancellation policy in 2019 and 2020 with percentage changes

Cancellation Policy = STRICT				
2019		2020		
Reporting Month	Occupancy rate	Reporting Month	Occupancy rate	% change
2019-01-01	36.81%	2020-01-01	43.05%	16.97%
2019-02-01	37.87%	2020-02-01	43.31%	14.34%
2019-03-01	41.60%	2020-03-01	30.98%	-25.54%
2019-04-01	46.48%	2020-04-01	38.65%	-16.83%
2019-05-01	46.93%	2020-05-01	32.82%	-30.07%
2019-06-01	55.23%	2020-06-01	1.52%	-97.26%
2019-07-01	56.45%	2020-07-01	18.07%	-67.98%
2019-08-01	49.52%	2020-08-01	18.16%	-63.32%
2019-09-01	56.25%	2020-09-01	17.58%	-68.74%
2019-10-01	51.33%	2020-10-01	14.77%	-71.23%
2019-11-01	46.98%	2020-11-01	10.97%	-76.65%
2019-12-01	50.94%	2020-12-01	11.96%	-76.52%

Source: Own elaboration based on data retrieved from AirDNA (2019–2020).

Furthermore, the monthly Revenue Per Available Night, which intrinsically considers the Occupancy Rate and the Average Daily Rate, exhibited a similar pattern (Table 29, Table 30, Table 31), with performance improving in all months, except for June 2020, for listings with a flexible cancellation policy, and declining in all Pandemic months in case of listings with a strict cancellation policy.

Table 29: Monthly Revenue Per Available Night for listings offering a flexible cancellation policy in 2019 and 2020 with percentage changes

Cancellation Policy = FLEXIBLE				
2019		2020		
Reporting Month	Revenue Per Available Night	Reporting Month	Revenue Per Available Night	% change
2019-01-01	12.23	2020-01-01	43.33	254.26%
2019-02-01	10.85	2020-02-01	43.74	303.31%
2019-03-01	12.32	2020-03-01	30.13	144.59%
2019-04-01	15.98	2020-04-01	49.12	207.34%
2019-05-01	15.78	2020-05-01	46.07	191.92%
2019-06-01	20.89	2020-06-01	2.23	-89.33%
2019-07-01	21.30	2020-07-01	21.94	3.00%
2019-08-01	16.83	2020-08-01	22.25	32.23%
2019-09-01	15.84	2020-09-01	20.92	32.06%
2019-10-01	11.90	2020-10-01	16.96	42.48%
2019-11-01	9.73	2020-11-01	13.58	39.53%
2019-12-01	6.87	2020-12-01	15.89	131.28%

Source: Own elaboration based on data retrieved from AirDNA (2019–2020).

Table 30: Monthly Revenue Per Available Night for listings offering a moderate cancellation policy in 2019 and 2020, with percentage changes

Cancellation Policy = MODERATE				
2019		2020		
Reporting Month	Revenue Per Available Night	Reporting Month	Revenue Per Available Night	% change
2019-01-01	32.49	2020-01-01	68.02	109.36%
2019-02-01	31.73	2020-02-01	61.51	93.85%
2019-03-01	35.69	2020-03-01	42.00	17.67%
2019-04-01	45.73	2020-04-01	53.17	16.27%
2019-05-01	45.27	2020-05-01	54.57	20.54%
2019-06-01	59.18	2020-06-01	3.81	-93.56%
2019-07-01	56.29	2020-07-01	32.61	-42.06%
2019-08-01	43.27	2020-08-01	29.08	-32.80%
2019-09-01	38.33	2020-09-01	30.07	-21.56%
2019-10-01	29.64	2020-10-01	30.34	2.34%
2019-11-01	17.77	2020-11-01	28.29	59.16%
2019-12-01	20.22	2020-12-01	31.49	55.71%

Source: Own elaboration based on data retrieved from AirDNA (2019–2020).

Table 31: Monthly Revenue Per Available Night for listings offering a strict cancellation policy in 2019 and 2020 with percentage changes

Cancellation Policy = STRICT				
2019		2020		
Reporting Month	Revenue Per Available Night	Reporting Month	Revenue Per Available Night	% change
2019-01-01	54.67	2020-01-01	67.67	23.77%
2019-02-01	56.01	2020-02-01	62.40	11.39%
2019-03-01	63.36	2020-03-01	41.05	-35.21%
2019-04-01	75.07	2020-04-01	43.62	-41.90%
2019-05-01	70.77	2020-05-01	41.05	-42.00%
2019-06-01	91.34	2020-06-01	2.00	-97.81%
2019-07-01	93.56	2020-07-01	31.23	-66.62%
2019-08-01	79.68	2020-08-01	28.93	-63.69%
2019-09-01	82.71	2020-09-01	25.71	-68.91%
2019-10-01	77.57	2020-10-01	22.45	-71.06%
2019-11-01	71.16	2020-11-01	17.95	-74.78%
2019-12-01	89.44	2020-12-01	20.57	-77.00%

Source: Own elaboration based on data retrieved from AirDNA (2019–2020).

These results seem to be confirming *Hypothesis 2* and *Hypothesis 3,* according to which listings for which the flexible cancellation policy is applied mitigate the effects of the Covid-19 Pandemic on the Occupancy Rate (i.e., *Hypothesis 2*) and Revenue Per Available Night (i.e., *Hypothesis 3*) to a greater extent with respect to those listings for which a moderate or strict cancellation policy is applied. However, a more detailed analysis, which compares the isolated effect of the Pandemic on the Occupancy Rates and Revenue Per Available Night when a flexible cancellation policy is applied and when a moderate or strict cancellation policy is applied, is necessary. With this objective in mind, the Econometric Model 2A is applied, with results described in Section 5.2.2.1.

Considering the Instant Book option, the percentage of overall properties active on the platform for at least one month of the year which were offering the option to book immediately remained essentially stable, decreasing only very slightly between 2019 and 2020 (Table 32, Table 33).

On one hand, during the Pandemic, the Instant Book option had the advantage of attracting last-minute travellers by providing convenience and immediacy in the reservation process, in

addition to improved customer satisfaction by allowing a hassle-free booking process. In parallel to this, if the Instant Book option is enabled, the listing will have a better ranking, entering a virtuous cycle of increasing number of visits and of reviews. On the other hand, cancellations have proven to be more probable when communication begins after the reservation. With the Pandemic, another cost can be associated to the enablement of the Instant Book option, since, with the spread of the Covid-19 virus, hosts have become more interested in monitoring certain guest characteristics, such as the country of origin, in an attempt to avoid coming into close contact with travellers from areas where the virus had already diffused.

Properties that can be booked instantly have effectively shown higher Occupancy Rates and better performances both before the Pandemic and during the Pandemic with respect to those properties that do not allow this option (Table 34, Table 35, Table 36, Table 37). Effectively there are many advantages that come with the enablement of the Instant Book option including the possibility for last-minute travellers to reserve the accommodation, the prospect for customers to avoid a more complex booking procedure, and the higher ranking on the Airbnb platform. The disadvantages for hosts are the higher cancellation rates which are typically associated with this option and the impossibility to view guest characteristics before allowing them into their property. As expected, with results being consistently better, both pre and post Pandemic, for those properties which have enabled the Instant Book option compared to those properties which have not, the advantages of allowing the option seem to outweigh its disadvantages.

Table 32: Percentage of active properties offering the Instant Book option in 2019 and 2020

Percentage of properties	IB=TRUE	IB=FALSE
2019	42.88%	57.12%
2020	42.32%	57.68%

Source: Own elaboration based on data retrieved from AirDNA (2019–2020).

Table 33: Percentage of active properties offering the Instant Book option in March-December 2019 and 2020

Percentage of properties	IB=TRUE	IB=FALSE
Mar-Dec 2019	42.90%	57.10%
Mar-Dec 2020	42.10%	57.90%

Source: Own elaboration based on data retrieved from AirDNA (2019–2020).

Table 34: Revenue Per Available Night of active properties enabling and not enabling the Instant Book option in 2019 and 2020

Revenue Per Available Night	IB=TRUE	IB=FALSE
2019	76.09	54.66
2020	39.58	31.15
% change	-47.98%	-43.02%

Source: Own elaboration based on data retrieved from AirDNA (2019–2020).

Table 35: Revenue Per Available Night of active properties enabling and not enabling the Instant Book option in March-December 2019 and 2020

Revenue Per Available Night	IB=TRUE	IB=FALSE
Mar-Dec 2019	79.55	58.50
Mar-Dec 2020	31.67	25.22
% change	-60.19%	-56.89%

Source: Own elaboration based on data retrieved from AirDNA (2019–2020).

Table 36: Occupancy Rate of active properties enabling and not enabling the Instant Book option in 2019 and 2020

Occupancy Rate	IB=TRUE	IB=FALSE
2019	46.12%	37.53%
2020	27.91%	22.51%
% change	-39.47%	-40.01%

Source: Own elaboration based on data retrieved from AirDNA (2019–2020).

Table 37: Occupancy Rate of active properties enabling and not enabling the Instant Book option in March-December 2019 and 2020

Occupancy Rate	IB=TRUE	IB=FALSE
Mar-Dec 2019	47.72%	39.73%
Mar-Dec 2020	22.81%	18.48%
% change	-52.21%	-53.49%

Source: Own elaboration based on data retrieved from AirDNA (2019–2020).

However, if we notice the percentage changes of the Revenue Per Available Night, it seems that this performance metric has a more significant drop for those properties that have enabled the Instant Book option with respect to those properties which have not enabled this option. This result is opposite to what was expected. In light of Airbnb's expectations, according to which those who add the Instant Book option will earn 12% more over the next year than those who do not (Airbnb, 2022c), it was sensible to assume better performances, and therefore a reduced drop in the Revenue Per Available Night, for those properties which had enabled this option. In addition, with the percentage of last-minute bookings[20] more than doubling in the North of Europe since the emergence of Covid-19 (Airbnb, 2022c), it was reasonable to expect a bigger difference between the drop in the occupancy rate for those properties which do not allow last-minute bookings and those that do.

Following this descriptive analysis, *Hypothesis 4* seems to be confirmed and *Hypothesis 5* seems to be disproved. According to these two hypotheses, after the outbreak of the Covid-19 Pandemic, the enablement of the Instant Book option mitigates the negative effects directly attributable to the health crisis on the Occupancy Rate (i.e., *Hypothesis 4*) and on the Revenue Per Available Night (i.e., *Hypothesis 5*) to a greater extent than if this option is not enabled. However, for a correct analysis, it is necessary to isolate the causal effects linked to Covid-19 on performance measures when the option is applied and when it is not applied, controlling for a series of other effects (e.g., property attributes and seasonality effects). With this objective in mind, the Econometric Model 2B is applied. Results are shown in Section 5.2.2.2.

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[20] The accommodation is reserved less than 30 days before the stay.

Since the Revenue Per Available Night is the result of the product between the Occupancy Rate and the Average Daily Rate, a higher drop in this performance metric observed for those properties which have enabled the Instant Book option, could also be linked to a rapid drop in the Average Daily Rate. In other words, from this descriptive analysis, contrary to expectations, it seems that the effects of the Pandemic on the Revenue Per Available Night were worse for those properties which had enabled the Instant Book option. This could be linked to a more precipitous fall in the Average Daily Rate for those properties which did apply this option.

The Average Daily Rate effectively decreases much more during Covid-19 for those properties which have enabled the Instant Book option with respect to those properties which have not (Table 38, Table 39).

Table 38: Average Daily Rate of active properties which have enabled and which have not enabled the Instant Book option in 2019 and 2020

Average Daily Rate	IB=TRUE	IB=FALSE
2019	164.99	145.66
2020	141.80	138.35
% change	-14.05%	-5.02%

Source: Own elaboration based on data retrieved from AirDNA (2019–2020).

Table 39: Average Daily Rate of active properties which have enabled and which have not enabled the Instant Book option in March-December 2019 and 2020

Average Daily Rate	IB=TRUE	IB=FALSE
Mar-Dec 2019	166.71	147.23
Mar-Dec 2020	138.87	136.45
% change	-16.70%	-7.32%

Source: Own elaboration based on data retrieved from AirDNA (2019–2020).

5.2. Econometric analysis

5.2.1. Model 1: Evaluation of the direct impact of the Covid-19 Pandemic on specific performance measures

Table 40 reports the results of the Difference-in-Differences fixed effects model described in Section 4.2.2.1., developed with the objective of evaluating the direct impact of the Covid-19 Pandemic on various performance metrics including Revenues, the Revenue per Available Night, the Average Daily Rate and the Occupancy Rate, on a linear scale.

Table 40: The effects of the outbreak of the Covid-19 Pandemic on performance metrics

	(1) Revenues LIN	(2) RevPAN LIN	(3) ADR LIN	(4) OccupancyRate LIN
Treat	-438.730***	-19.812***	10.234***	-0.125***
	(9.191)	(0.423)	(0.635)	(0.001)
Post	481.386***	9.344***	22.879***	-0.010***
	(9.349)	(0.388)	(0.607)	(0.001)
Treat*Post	-1133.554***	-34.107***	-8.116***	-0.190***
	(9.654)	(0.391)	(0.590)	(0.001)
Constant	1523.934***	65.358***	154.948***	0.430***
	(6.881)	(0.335)	(0.520)	(0.001)
Month controls	yes	yes	yes	yes
Individual fe	yes	yes	yes	yes
N	1,616,655	1,616,655	936,683	1,616,655
N Individuals	172,801	172,801	139,913	172,801
Robust SE	yes	yes	yes	yes
F	2,316.071	1,915.026	555.168	7,519.694
Overall R2	0.040	0.028	0.004	0.061
Within R2	0.106	0.081	0.014	0.170
Between R2	0.002	0.004	0.003	0.008

The econometric analyses were run on a final database composed of 1,616,655 observations on a total of 172,801 different properties.

Revenues is the dependent variable in Column (1). We find that the Treat coefficient is negative and statistically significant at a 99.9% confidence level, which implies that the revenues in 2020 are lower than those of 2019, controlling for the effect of the Pandemic, the period of the year considered, seasonality effects and the property attributes. More specifically, isolating from all other effects, revenues in 2020 are lower by $438.73 each month. The coefficient of the Post variable is positive and statistically significant, also at a 99.9% confidence level. This indicates

that the March-December period tends to have higher revenues than the January-February period, of USD $481.39 each month, controlling for all other effects. The coefficient of Treat*Post is negative and statistically significant at a 99.9% confidence interval, indicating that a decrease in revenues can be directly attributed to the outbreak of the global Pandemic. The outbreak of the Covid-19 Pandemic alone has caused an estimated drop in revenues of USD $1,133.56 each month.

The Revenue Per Available Night is the dependent variable in Column (2). All coefficients are significant at a 99.9% confidence level. By analysing the coefficient of Treat, it is possible to observe that in 2020, controlling for all other effects, the Revenue Per Available Night is lower by USD $19.81 with respect to 2019. The coefficient of Post indicates that in the March-December period, the metric increases by USD $9.34. The causal effect which can be directly attributed to the health crisis is an estimated drop in the Revenue Per Available Night of USD $34.11.

The Average Daily Rate is the dependent variable in Column (3). An analysis of the coefficients, all significant at a 99.9% confidence level follows. The Average Daily Rate in 2020, controlling for all other effects, is USD $10.23 higher than in 2019. The positive coefficient relative to the Post dummy variable, indicates that the March-December period tends to have a higher Average Daily Rate of USD $22.88. Additionally, a fall in the Average Daily Rate of USD $8.12 can be attributed to the outbreak on the Covid-19 Pandemic alone.

The Occupancy Rate is the dependent variable in Column (4). All coefficients are significant at a 99.9% confidence level. Isolating from all other effects, the Occupancy Rate in 2020 is lower with respect to 2019 by 12.5%. The March-December period, when controlling for all other effects, has an Occupancy Rate which is lower by 1.0% when compared to the January-February period. When the causal effects of the outbreak of the Covid-19 Pandemic are analysed, a drop in the Occupancy Rate of 19.0% can be directly attributed to the health emergency.

This first econometric model was used to determine the causal effect directly attributable to the Pandemic on revenues, on the Revenue Per Available Night, on the Average Daily Rate and on the Occupancy Rate. As expected, isolating for all other effects, and controlling for seasonality patterns and property attributes, the Pandemic caused all outcomes to significantly

decrease, thus confirming *Hypothesis 1*. Considering that market trends have permanently changed with the health emergency, these results confirm that the Covid-19 induced Pandemic can be effectively categorised as an economic super-shock (Dolnicar & Zare, 2020).

5.2.2. Model 2: Assessment of the impact of the strategies put in place by hosts to respond to the Covid-19 Pandemic on specific performance measures

5.2.2.1. Model 2A: Assessment of the mitigating effect of the flexible cancellation policy on specific performance measures, following the outbreak of the Covid-19 Pandemic

The objective of the following analysis is to see whether the impacts of the Pandemic are less severe when the flexible cancellation policy is applied with respect to when a moderate or strict cancellation policy is applied. In other words, the aim of the study is to see whether the strategy of implementing a flexible cancellation policy mitigates those causal effects directly attributable to the outbreak of the global Pandemic. To do this, it is essential to analyse the coefficient of Treat*Post and its confidence interval, since its value isolates those effects attributable to the health crisis.

Two analyses are performed. The first, with results recorded in Table 41, is conducted on all those observations for which the cancellation policy is flexible. The second, with results recorded in Table 42, is conducted instead on all those observations for which the cancellation policy is either moderate or strict.

By applying the model illustrated in Section 4.2.2.2.1., it is possible to appropriately analyse those effects linked to the change in year, to the time period considered and those effects directly attributable to the Pandemic, controlling for property-specific characteristics and seasonality effects.

Table 41: Effects of the outbreak of the Covid-19 Pandemic on performance measures when a flexible cancellation policy is applied

	(1) Revenues LIN	(2) Revenues LOG	(3) RevPAN LIN	(4) RevPAN LOG	(5) ADR LIN	(6) ADR LOG	(7) OccupancyRate LIN
Treat	-84.470*	-0.943***	-9.148***	-0.565***	13.760***	0.070***	-0.104***
	(40.040)	(0.098)	(1.580)	(0.054)	(3.492)	(0.012)	(0.009)
Post	-348.481***	-2.256***	-16.186***	-1.211***	22.050***	0.124***	-0.193***
	(12.198)	(0.029)	(0.650)	(0.016)	(1.659)	(0.005)	(0.003)
Treat*Post	-442.144***	-0.611***	-7.889***	-0.278***	-7.853***	-0.054***	-0.023***
	(14.248)	(0.028)	(0.580)	(0.016)	(0.979)	(0.004)	(0.003)
Constant	898.017***	4.525***	38.762***	2.408***	117.402***	4.487***	0.342***
	(21.615)	(0.054)	(0.881)	(0.030)	(2.469)	(0.008)	(0.005)
Month controls	yes	yes	yes	yes	yes	yes	yes
Individual fe	yes	yes	yes	yes	yes	yes	yes
N	300,091	300,091	300,091	300,091	123,755	123,755	300,091
N Individuals	50,850	50,850	50,850	50,850	35,426	35,426	50,850
Robust SE	yes	yes	yes	yes	yes	yes	yes
F	264.119	983.559	265.512	1,007.220	82.439	230.744	1,005.919
Overall R2	0.000	0.001	0.000	0.000	0.006	0.013	0.004
Within R2	0.032	0.095	0.022	0.099	0.018	0.058	0.108
Between R2	0.007	0.049	0.004	0.031	0.005	0.013	0.004

Source: Own elaboration based on data retrieved from AirDNA (2019–2020).

Table 42: Effects of the outbreak of the Covid-19 Pandemic on performance measures when a moderate or strict cancellation policy is applied

	(1) Revenues LIN	(2) Revenues LOG	(3) RevPAN LIN	(4) RevPAN LOG	(5) ADR LIN	(6) ADR LOG	(7) OccupancyRate LIN
Treat	-433.496***	-0.585***	-20.143***	-0.392***	11.317***	0.047***	-0.102***
	(12.820)	(0.015)	(0.586)	(0.009)	(0.759)	(0.001)	(0.002)
Post	618.711***	0.021	13.216***	0.004	23.695***	0.123***	0.012***
	(11.229)	(0.014)	(0.461)	(0.008)	(0.670)	(0.001)	(0.002)
Treat*Post	-1345.969***	-2.594***	-40.559***	-1.452***	-7.918***	-0.059***	-0.227***
	(12.070)	(0.016)	(0.490)	(0.010)	(0.675)	(0.002)	(0.002)
Constant	1698.493***	5.565***	72.841***	3.146***	159.399***	4.769***	0.461***
	(8.405)	(0.011)	(0.408)	(0.006)	(0.581)	(0.001)	(0.001)
Month controls	yes	yes	yes	yes	yes	yes	yes
Individual fe	yes	yes	yes	yes	yes	yes	yes
N	1,219,009	1,219,009	1,219,009	1,219,009	801,235	801,235	1,219,009
N Individuals	135,932	135,932	135,932	135,932	117,138	117,138	135,932
Robust SE	yes	yes	yes	yes	yes	yes	yes
F	1,832.115	5,754.145	1,476.159	5,067.858	508.555	1,871.475	5,316.242
Overall R2	0.038	0.062	0.026	0.058	0.004	0.005	0.066
Within R2	0.104	0.171	0.080	0.167	0.015	0.051	0.158
Between R2	0.004	0.001	0.004	0.003	0.002	0.002	0.017

Source: Own elaboration based on data retrieved from AirDNA (2019–2020).

Comparing Table 41 and Table 42, it is possible to notice that the coefficients of Treat*Post, always significant at a 99.9% confidence level, are consistently higher in the case of a flexible cancellation policy with respect to the case of a moderate or strict cancellation policy, independently from the output considered in the analysis. Other than examining the mean value, to be able to state that the effects of the Pandemic are statistically different when a flexible cancellation policy is applied with respect to when a moderate or strict cancellation

policy is applied, it is essential to compare the confidence intervals of the Treat*Post coefficient for the two regression analyses. It is necessary to make sure that the two confidence intervals do not overlap (Table 43).

More specifically, when revenues are considered as the dependent variable (Column (1)), it is possible to directly attribute to the Covid-19 Pandemic a drop in the outcome of USD $442.14 in case of a flexible cancellation policy (Table 41) and of USD $1345.97 in case of a moderate or strict cancellation policy (Table 42). When a logarithmic transformation on revenues is performed (Column (2)), the drop in the outcome which can be associated to the health crisis directly is of 45.72%[21] in case of a flexible cancellation policy (Table 41) and of 92.53%[22] in case of a moderate or strict cancellation policy (Table 42). The confidence intervals of the Treat*Post coefficient when the flexible cancellation policy is applied and when a moderate or strict cancellation policy is applied do not overlap at a 99.9% confidence level, both when considering revenues as the dependent variable and its logarithmic transformation (Table 43). This signifies that, at a 99.9% confidence level, the causal effects of the Pandemic on revenues both on a linear and logarithmic scale are significantly different when a flexible cancellation policy is applied and when a stricter cancellation policy is applied. Therefore, the causal effect attributable to the health crisis is effectively less substantial on revenues and on lnRevenues when a flexible cancellation policy is employed with respect to a moderate or strict cancellation policy.

When the Revenue Per Available Night is taken as a dependent variable (Column (3)), the drop in outcome that can be directly attributed to the Covid-19 Pandemic is of USD $7.89 in case of a flexible cancellation policy (Table 41) and of USD $40.56 in case of a moderate or strict cancellation policy (Table 42). Considering the logarithmic transformation on the Revenue Per Available Night (Column (4)), it is possible to attribute to the Pandemic alone a drop in the

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[21] $\left(1 - e^{\widehat{\beta}}\right) = (1 - e^{-0.611}) = (1 - 0.5428) = 0.4572 = 45.72\%$. In the log-linear model, the literal interpretation of the estimated coefficient $\widehat{\beta}$ is that a one-unit increase in X will produce an expected increase in $logY$ of $\widehat{\beta}$ units. In terms of Y itself, this means that the expected value of Y is multiplied by $e^{\widehat{\beta}}$. For small values of $\widehat{\beta}$, approximately $e^{\widehat{\beta}} \approx 1 + \widehat{\beta}$. In this case, $100 * \widehat{\beta}$ can be approximately considered as the percentage change in Y for a unit increase in X.

[22] $\left(1 - e^{\widehat{\beta}}\right) = (1 - e^{-2.594}) = (1 - 0.0747) = 0.9253 = 92.53\%$

outcome of 24.27%[23] in case of a flexible cancellation policy (Table 41) and of 76.59%[24] in case of a moderate or strict cancellation policy (Table 42). The 99.9% confidence intervals calculated for the two regression analyses do not overlap, both when the RevPAN and its logarithmic transformation are taken as the dependent variable (Table 43). Hence, the effects directly attributable to the Pandemic on the two outcomes are significantly different, with 99.9% confidence, when a flexible and when a moderate or strict cancellation policy is applied. Considering the mean value and the confidence intervals of the Treat*Post coefficient for the two regression analyses, it is possible to conclude that the consequences of the health crisis on RevPAN and on lnRevPAN are effectively less severe when a flexible cancellation policy is applied with respect to a stricter cancellation policy.

Selecting the Average Daily Rate as the dependent variable (Column (5)), it is reasonable to attribute to the advent of the Pandemic alone, a fall of USD $7.85 when a flexible cancellation policy is associated to the property (Table 41) and a decline of USD $7.92 when a moderate or strict cancellation policy is applied (Table 42). When a logarithmic transformation of the Average Daily Rate is performed (Column (6)), the isolated effects of the health crisis are represented by a decrease in the outcome by 5.26%[25] in case of a flexible cancellation policy (Table 41) and by 5.73%[26] in case of a moderate or strict cancellation policy (Table 42). In this case, the confidence intervals of the Treat*Post coefficient calculated for the two regression analyses overlap even at a 90% confidence interval, both when the ADR and the lnADR are taken as dependent variables (Table 43). Therefore, the effects of the Pandemic on these outcomes are not significantly different when the flexible cancellation policy is applied and when the moderate or strict cancellation policy is applied.

The Occupancy Rate is lastly considered as the dependent variable (Column (7)). A fall of 2.3% in case of the flexible cancellation policy (Table 41) and of 22.7% in case of the moderate or strict cancellation policy (Table 42), can be ascribed to the health emergency alone. Since the

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[23] $\left(1 - e^{\hat{\beta}}\right) = (1 - e^{-0.278}) = (1 - 0.7573) = 0.2427 = 24.27\%$

[24] $\left(1 - e^{\hat{\beta}}\right) = (1 - e^{-1.452}) = (1 - 0.2341) = 0.7659 = 76.59\%$

[25] $\left(1 - e^{\hat{\beta}}\right) = (1 - e^{-0.054}) = (1 - 0.9474) = 0.0526 = 5.26\%$

[26] $\left(1 - e^{\hat{\beta}}\right) = (1 - e^{-0.059}) = (1 - 0.9427) = 0.0573 = 5.73\%$

99.9% confidence intervals of the two regression analyses do not overlap (Table 43), the effects of the Pandemic are significantly different, with 99.9% confidence, when a flexible cancellation policy is applied and when a moderate or strict cancellation policy is applied. It is possible to conclude that the consequences of the global emergency on the Occupancy Rate are effectively less severe when a flexible cancellation policy is applied with respect to a moderate or strict cancellation policy.

Table 43: 99.9% and 90% Confidence Intervals of the Treat*Post coefficient

	99.9% Confidence Interval		90% Confidence Interval	
	Flexible	Moderate or Strict	Flexible	Moderate or Strict
revenueusd	[-489.028, -395.259]	[-1385.686, -1306.252]	[-465.580, -418.708]	[-1365.822, -1326.116]
lnREVENUES	[-0.704, -0.518]	[-2.647, -2.541]	[-0.658, -0.565]	[-2.620, -2.568]
RevPAN	[-9.796, -5.981]	[-42.171, -38.948]	[-8.842, -6.935]	[-41.365, -39.754]
lnRevPAN	[-0.330, -0.225]	[-1.484, -1.421]	[-0.304, -0.251]	[-1.468, -1.436]
ADR	[-11.076, -4.629]	[-10.138, -5.697]	[-9.464, -6.242]	[-9.028, -6.808]
lnADR	[-0.067, -0.041]	[-0.064, -0.054]	[-0.060, -0.047]	[-0.061, -0.056]
OccupancyRate	[-0.033, -0.013]	[-0.233, -0.221]	[-0.028, -0.018]	[-0.230, -0.224]

Source: Own elaboration based on data retrieved from AirDNA (2019–2020).

As we can observe from the obtained results, the direct causal effect which can be attributed to the outbreak of the Covid-19 Pandemic, is systematically lower on all outputs when a flexible cancellation policy is applied with respect to a moderate or strict cancellation policy. This confirms both *Hypothesis 2* and *Hypothesis 3*, according to which the application of the flexible cancellation policy mitigates the effects of the Covid-19 Pandemic on the Occupancy Rate (i.e., *Hypothesis 2*) and on the Revenue Per Available Night (i.e., *Hypothesis 3*) to a greater extent than if a moderate or strict cancellation policy is applied.

This does not necessarily mean that the overall outcomes, during the health crisis were necessarily better in case of a flexible cancellation policy instead of a moderate or strict cancellation policy. Effectively, if we predict the outcomes in case of a flexible cancellation policy and in case of a moderate or strict cancellation policy, the results obtained are lower in the first scenario with respect to the second scenario for all outputs. This is consistent with the findings of the descriptive analysis, which demonstrates that in times of Covid-19 listings with a moderate cancellation policy had the best performances.

For a robustness check, another econometric model was developed, similar to the previous, but with the added interaction term: $POST_{it} * TREAT_{it} * FLEX\_CP_{it}$. In particular, $FLEX\_CP_{it}$ is a dummy variable that assumes the value 1 if a flexible cancellation policy is applied for the property i at time t and the value 0 if a moderate or strict cancellation policy is applied. The model hence assumes the following form:

$$y_{it} = \beta_0 + \beta_1 * TREAT_{it} + \beta_2 * POST_{it} + \gamma * POST_{it} * TREAT_{it} + \varphi * POST_{it} * TREAT_{it} * FLEX\_CP_{it} + T_t + \alpha_i + \varepsilon_{it}$$

The coefficient φ represents the additional effect on the output attributable to the outbreak of the global Pandemic when a flexible cancellation policy is applied (i.e., $FLEX_{CP_{it}} = 1$). If the term is positive, the application of a flexible cancellation policy mitigates those effects directly attributable to the Pandemic, if the term is negative, it enhances its drastic causal effects.

The results which are found by running the model are shown in Table 44.

Table 44: Robustness check

	(1) Revenues LIN	(2) Revenues LOG	(3) RevPAN LIN	(4) RevPAN LOG	(5) ADR LIN	(6) ADR LOG	(7) OccupancyRate LIN
Treat	-440.575***	-0.597***	-20.406***	-0.399***	11.013***	0.046***	-0.104***
	(12.730)	(0.015)	(0.582)	(0.009)	(0.751)	(0.001)	(0.002)
Post	549.975***	-0.101***	11.761***	-0.055***	23.292***	0.121***	0.002
	(10.148)	(0.013)	(0.428)	(0.008)	(0.634)	(0.001)	(0.001)
Treat*Post	-1344.622***	-2.598***	-40.522***	-1.454***	-7.722***	-0.058***	-0.227***
	(11.998)	(0.016)	(0.487)	(0.010)	(0.670)	(0.002)	(0.002)
Treat*Post*FlexCP	588.675***	0.558***	23.211***	0.403***	-6.101***	0.002	0.072***
	(21.161)	(0.023)	(0.830)	(0.014)	(0.864)	(0.003)	(0.003)
Constant	1558.928***	5.300***	66.278***	2.967***	154.886***	4.735***	0.437***
	(8.793)	(0.014)	(0.411)	(0.008)	(0.566)	(0.001)	(0.001)
Month controls	yes	yes	yes	yes	yes	yes	yes
Individual fe	yes	yes	yes	yes	yes	yes	yes
N	1,519,100	1,519,100	1,519,100	1,519,100	924,990	924,990	1,519,100
N Individuals	171,542	171,542	171,542	171,542	139,161	139,161	171,542
Robust SE	yes	yes	yes	yes	yes	yes	yes
F	1,610.617	5,448.911	1,342.163	4,914.897	441.477	1,576.513	5,165.787
Overall R2	0.043	0.058	0.027	0.055	0.006	0.007	0.069
Within R2	0.105	0.170	0.078	0.166	0.014	0.049	0.159
Between R2	0.007	0.000	0.007	0.002	0.006	0.008	0.021

Source: Own elaboration based on data retrieved from AirDNA (2019–2020).

This model effectively shows that, as expected, the Flexible cancellation policy has a mitigating effect on the Revenues and on the Revenue Per Available Night both on a linear and a logarithmic scale, and on the Occupancy Rate on a linear scale. This model seems to indicate that the application of a Flexible cancellation policy further reduces the expected Average Daily Rate. In addition, the coefficient of the Treat*Post*Flex_CP interaction term, is not statistically significant. These coefficients must be read keeping in mind that the comparison of the

Confidence Intervals already demonstrated that the effects of the Pandemic on the Average Daily Rate and its logarithmic transformation are not significantly different when the flexible cancellation policy and when the moderate or strict cancellation policy is applied. This robustness check further proves that both *Hypothesis 2* and *Hypothesis 3* are valid.

5.2.2.2. Model 2B: Assessment of the mitigating effect of the Instant Book option on specific performance measures, following the outbreak of the Covid-19 Pandemic

The following analysis seeks to determine whether the impacts of the Pandemic are less critical when the Instant Book policy is enabled versus when it is not enabled. In other words, the goal is to understand whether the strategy of accepting the Instant Book option mitigates the causal effects attributable to the outbreak of the global Pandemic. To isolate the impacts directly linked to the health crisis, it is necessary to analyse the coefficient of the interaction between the two dummy variables Treat and Post, namely the coefficient of Treat*Post, other than its confidence interval.

Two regression analyses are undertaken. The first is performed on all observations for which the Instant Book option is enabled. Results are noted in Table 45. The second, with results shown in Table 46, is run on all observations that do not have the Instant Book option activated.

By applying the model illustrated in Section 4.2.2.2.2., it is possible to adequately analyse those effects associated to the change in year, to the time period considered, and those causal effects directly attributable to the Pandemic, controlling for property-specific characteristics and seasonality effects.

Table 45: Effects of the outbreak of the Covid-19 Pandemic on performance measures when the Instant Book option is enabled

	(1) Revenues LIN	(2) RevPAN LIN	(3) ADR LIN	(4) OccupancyRate LIN
Treat	-706.722***	-33.527***	12.960***	-0.152***
	(25.536)	(1.206)	(1.512)	(0.003)
Post	450.683***	6.927***	25.890***	-0.047***
	(18.957)	(0.834)	(1.277)	(0.002)
Treat*Post	-1327.903***	-34.896***	-10.153***	-0.187***
	(18.968)	(0.781)	(1.187)	(0.003)
Constant	2019.644***	83.689***	161.272***	0.507***
	(16.543)	(0.836)	(1.161)	(0.002)
Month controls	yes	yes	yes	yes
Individual fe	yes	yes	yes	yes
N	638,426	638,426	412,292	638,426
N Individuals	79,755	79,755	65,017	79,755
Robust SE	yes	yes	yes	yes
F	743.170	569.669	260.692	2,514.296
Overall R2	0.034	0.022	0.004	0.055
Within R2	0.092	0.069	0.012	0.157
Between R2	0.009	0.008	0.002	0.018

Source: Own elaboration based on data retrieved from AirDNA (2019–2020).

Table 46: Effects of the outbreak of the Covid-19 Pandemic on performance measures when the Instant Book option is not enabled

	(1) Revenues LIN	(2) RevPAN LIN	(3) ADR LIN	(4) OccupancyRate LIN
Treat	-327.803***	-13.874***	9.230***	-0.106***
	(9.668)	(0.395)	(0.443)	(0.002)
Post	464.975***	9.895***	21.632***	0.005**
	(9.934)	(0.386)	(0.520)	(0.002)
Treat*Post	-1070.217***	-34.301***	-6.374***	-0.196***
	(11.097)	(0.445)	(0.508)	(0.002)
Constant	1308.519***	57.241***	148.389***	0.402***
	(6.542)	(0.278)	(0.360)	(0.001)
Month controls	yes	yes	yes	yes
Individual fe	yes	yes	yes	yes
N	882,134	882,134	512,897	882,134
N Individuals	101,858	101,858	82,597	101,858
Robust SE	yes	yes	yes	yes
F	1,528.185	1,329.213	387.145	3,684.047
Overall R2	0.035	0.023	0.005	0.042
Within R2	0.104	0.077	0.020	0.143
Between R2	0.003	0.003	0.004	0.005

Source: Own elaboration based on data retrieved from AirDNA (2019–2020).

When comparing Table 45 and Table 46, it is possible to notice that when the Instant Book option is enabled, the coefficients of Treat*Post, significant at a 99.9% confidence level, are consistently lower for all outputs except for the Occupancy Rate. As for the cancellation policy, other than analysing the mean value, it is essential to compare the confidence intervals of the Treat*Post coefficient for the two regression analyses to be able to state that the effects of the Pandemic are statistically different when a flexible cancellation policy is applied and when a moderate or strict cancellation policy is applied. It is essential to make sure that the two confidence intervals do not overlap (Table 47).

When revenues are considered as the dependent variable (Column (1)), the Covid-19 Pandemic is directly linked to a revenue loss of USD $1327.90 when the Instant Book option is selected (Table 45), and a decline of USD $1070.22 when it is not (Table 46). Since the 99.9% confidence intervals of the Treat*Post coefficient when the Instant Book option is enabled and when it is not enabled do not overlap (Table 43), it is possible to state that the causal effects of the Pandemic on revenues are significantly different in these two circumstances. More precisely, it is possible to state that, as a consequence of the onset of the global health crisis, the application of the Instant Book option caused revenues to further drop. This could be explained by the higher drop in the Average Daily Rate (i.e., good approximation of price) witnessed during the Pandemic when the Instant Book option was enabled compared to when it was not enabled.

When the Revenue Per Available Night is selected as a dependent variable (Column (2)), the drop in outcome that can be directly attributable to the Covid-19 Pandemic is of USD $34.90 when the Instant Book option is enabled (Table 45) and of USD $34.30 when it is not enabled (Table 46). In this case, the confidence intervals of the Treat*Post coefficient calculated for the two regression analyses overlap even at a 90% confidence interval (Table 46). The effects of the Pandemic on this outcome are hence not significantly different when the Instant Book option is applied and when it is not.

Taking the Average Daily Rate as the dependent variable (Column (3)), it is reasonable to attribute to the health crisis a fall of USD $10.15 when the Instant Book option is active, and a decline of USD $6.37 when the Instant Book option is disabled. When the ADR is taken as the dependent variable, the 97% confidence intervals calculated for the two regression analyses do not overlap (Table 43). Hence, the effects directly attributable to the Pandemic on the

outcome are significantly different, with 97% confidence, when the Instant Book option is applied and when it is not applied. Therefore, the causal effects on the ADR attributable to the Pandemic are effectively less severe when the Instant Book option is not applied compared to when it is.

Finally, the Occupancy Rate is considered as the dependent variable (Column (4)). A decline of 18.7% and a fall of 19.6% in the Occupancy Rate can be attributed respectively to the circumstance in which the Instant Book option is enabled (Table 45) and to the case in which it is not enabled (Table 46). Since the 94% confidence intervals of the Treat*Post coefficient in the two regression analyses do not overlap (Table 46), the effects of the Pandemic are significantly different, at a 94% confidence level, when the Instant Book option is enabled and when it is not enabled. With this level of confidence, it is possible to state that the Pandemic caused a lower drop in the Occupancy Rate when the Instant Book option was applied.

Table 46: 99.9%, 97%, 94% and 90% Confidence Intervals of the Treat*Post coefficient

	99.9% Confidence Interval		97% Confidence Interval	
	IB = True	IB = False	IB = True	IB = False
revenueusd	[-1390.319, -1265.488]	[-1106.734, -1033.7]	[-1369.065, -1286.741]	[-1094.299, -1046.134]
RevPAN	[-37.466, -32.326]	[-35.766, -32.837]	[-36.591, -33.201]	[-35.267, -33.335]
ADR	[-14.058, -6.248]	[-8.047, -4.701]	[-12.728, -7.578]	[-7.477, -5.271]
OccupancyRate	[-0.196, -0.179]	[-0.203, -0.190]	[-0.193, -0.182]	[-0.201, -0.192]
	94% Confidence Interval		90% Confidence Interval	
	IB = True	IB = False	IB = True	IB = False
revenueusd	[-1363.578, -1292.229]	[-1091.089, -1049.345]	[-1359.103, -1296.704]	[-1088.471, -1051.963]
RevPAN	[-36.365, -33.427]	[-35.138, -33.464]	[-36.181, -33.611]	[-35.033, -33.569]
ADR	[-12.385, -7.921]	[-7.330, -5.418]	[-12.105, -8.201]	[-7.210, -5.538]
OccupancyRate	[-0.1922, -0.1824]	[-0.2002, -0.1926]	[-0.192, -0.183]	[-0.200, -0.193]

Source: Own elaboration based on data retrieved from AirDNA (2019–2020).

The direct causal effect on the Occupancy Rate that can be linked to the onset of the Covid-19 Pandemic is smaller when the Instant Book option is activated compared to when it is not enabled. This supports *Hypothesis 4*, according to which enabling the Instant Book option mitigates the effects of the Pandemic on the Occupancy Rate more than if the if the Instant Book option is disabled.

When the Revenue Per Available Night is evaluated, if the mean values are compared it seems that the consequences of the Pandemic are more severe when the Instant Book option is activated compared to when it is not. However, the more precise analysis of the confidence intervals shows that the effects of the Pandemic on the output are not significantly different when the Instant Book option is applied and when it is not. *Hypothesis 5*, according to which enabling the Instant Book option mitigates the impacts of the Covid-19 Pandemic on the Revenue Per Available Night to a greater extent than if the Instant Book option is not applied is thus rejected.

As can be observed from the coefficients of the Treat*Post interaction, the outbreak of the Pandemic causes a more significant reduction in the Average Daily Rate when the Instant Book policy is applied. This was already apparent in the descriptive analysis found in Section 5.1.1. According to the descriptive analysis, the Average Daily Rate, a good approximation of price, has consistently been lower for those properties that do not enable the Instant Book option compared to those that do, both before and after the Covid-19 Pandemic outbreak, despite properties with the Instant Book option being more requested than properties without. To capture demand in the extremely competitive environment characteristic of the Pandemic era, the prices of the instantly bookable properties had to drop at a faster rate to match the prices of those properties that did not allow the Instant Book option.

The faster drop of the Average Daily Rate witnessed because of the Pandemic when the Instant Book option was enabled compared to when it was not explains the more significant drop in revenues.

The two factors which constitute the Revenue Per Available Night, namely the Average Daily Rate and the Occupancy Rate, move in opposite directions. The effect of the Pandemic on these two factors is significantly different when the Instant Book option is enabled and when it is not enabled. However, since these two metrics move in opposite directions, the two forces seem to neutralise each other. It is for this reason that the overall effect (i.e., the effect on the Revenue Per Available Night) turns out to be not significantly different when the Instant Book option is applied and when it is not applied.

Final outcomes are not solely determined by the Pandemic's direct causal effects. As a result, even in cases where the effects of the Pandemic on that output are less severe, final outputs

may be lower. The two regression analyses show that, following the outbreak of the Covid-19 Pandemic, the predicted output is higher for all outputs when the Instant Book option is enabled.

6. Concluding remarks

This thesis presents the results of a study designed to effectively understand how platform participants (i.e., hosts) adjust their strategic positioning in response to an exogenous demand shock (i.e., the Covid-19 Pandemic) (Porter & Rivkin, 2000). The ultimate goal of the work was to see if incorporating certain strategies would lessen the severity of those effects directly attributable to the Pandemic. In particular, the two strategies which were studied were the application of the Instant Book policy and the implementation of a flexible cancellation policy, both strategies which influence the booking process.

The study focused on the travel and hospitality industry, notably the Airbnb platform, since it has been severely impacted by the numerous restrictions and regulations put in place by governments throughout the world to contain the spread of the virus. More precisely, the study's specific context was the London Airbnb market. Aside from ranking among the top ten destinations for both international tourist arrivals and international tourism receipts (UNWTO, 2021b), London was disproportionately impacted by the Covid-19 Pandemic (Statista, 2022), due to its dense population. Furthermore, because of its extensive demand and supply segmentation, London was able to adapt to a variety of customer needs and expectations that emerged throughout the health crisis.

Operations were severely impacted, with demand[27] falling by 74.73% year-over-year in the March-December period and supply[28] registering a 38.76% decrease. This situation, with supply dropping but not as much as demand, caused an increase in market competition, and the necessity to implement the right strategic decisions to attract the fewer customers. An initial study, focused on the change in demand trends, revealed that, given the significant uncertainties associated with the Pandemic, customers expected to be able to receive reimbursement if forced to cancel the reserved accommodation and to be able to book at the last minute with an efficient and rapid booking process.

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[27] Defined as the total number of nights which were effectively reserved throughout the year in the whole city.

[28] Defined as the total number of nights the property was either reserved or available for reservation but not reserved throughout the year in the whole city.

In accordance with the new needs emerged, flexible (+91.35%) and moderate (+250.70%) cancellation policies effectively became more popular among listings, while strict cancellation policies (-42.12%) became less common. In terms of the Instant Book option, the percentage of properties[29] with the option enabled remained relatively stable, and even slightly decreased (from 42.90% of total properties to 42.10%), despite an increase in last-minute travellers who demanded a rapid booking process. Many hosts were concerned about the traveller's country of origin to avoid meeting people from areas where the virus was widely spread, and thus wanted to monitor certain guest characteristics before confirming the reservation. Despite the clear shift in customer requirements, not all hosts converged on the adoption of those strategies that mostly closely mirrored customer requirements.

After a descriptive analysis of the London Airbnb market, an econometric analysis followed. Three models were employed. The objective of the first model was to isolate those effects directly attributable to the Pandemic on various performance metrics. The other two models were employed to assess the mitigating the effects of the two booking strategies (i.e., implementing a flexible cancellation policy and enabling the Instant Book option), on the same performance measures.

In the first model (i.e., Model 1), the Difference-in-Differences estimation allowed to separate those effects directly attributable to the Pandemic from the effects linked to being in 2020 versus 2019 and to being in the March-December period with respect to the January-February period, other than from seasonality effects. Furthermore, by applying a fixed effects model, it was possible to control for those time-invariant property-specific characteristics that could have an effect both on the independent variables and on the dependent variable. This model not only demonstrated that all outputs (i.e., revenues, Revenue Per Available Night, Average Daily Rate and Occupancy Rate) were negatively affected by the Pandemic, but also quantified these effects.

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[29] Percentage of overall properties active on the platform for at least one month of the year which were offering the Instant Book option.

Two similar models, also based on the Difference-in-Differences estimation and using fixed effects, were then implemented (i.e., Model 2A and Model 2B) to analyse the mitigating effects of the two booking strategies.

The results demonstrated that the flexible cancellation policy mitigated the drastic effects of the Pandemic to a greater extent than the moderate or strict policies on all outcomes, even though the end results were not always better for properties with a flexible cancellation policy compared to properties with a moderate or strict policy. Before the Pandemic, properties with a moderate and strict cancellation policy outperformed those with a flexible cancellation policy (e.g., Benítez-Aurioles (2018), Wang and Nicolau (2017)). With the Pandemic, the performance measures for these listings fell more abruptly than the performance measures for listings with a flexible cancellation policy, with final outcomes nearly coinciding.

Results confirm that activating the Instant Book option mitigated the effects of Covid-19 on the Occupancy Rate. Properties which have enabled the Instant Book option can effectively attract the growing population of last-minute travellers. However, contrary to expectations, the strategy of enabling the Instant Book option did not mitigate those effects attributable to the Pandemic on the Revenue Per Available Night as no significant differences were recorded with respect to those properties which did not allow this option. In addition, the health crisis caused a more rapid drop in the Average Daily Rate (i.e., good approximation of price), factor of the Revenue Per Available Night, for those instantaneously bookable properties. To become more competitive and respond to the fall in demand, all properties lowered their prices. In particular, since properties with the Instant Book option typically had higher prices before the onset of Covid-19, the Average Daily Rate dropped rapidly to reach the lower prices characteristic of those properties which could not be booked instantaneously. The more rapid drop in the Average Daily Rate caused by the Pandemic for the instantly bookable properties also caused revenues to drop more substantially for these listings. Overall, all expected outputs were higher in the Pandemic-era for those properties which had the Instant Book option enabled.

The study has both theoretical and practical implications. On one hand, it provides insights into the variation in demand, in supply and into the evolution of demand trends in Peer-to-Peer accommodation. On the other hand, understanding how to respond to emerging needs and

expectations, as well as realising what the most effective responses to the Pandemic have been, may lead to improved crisis management strategies.

7. Limitations and future research

The study is not without limitations, which may help pave the way for future improvements and developments in the analysed topic.

Limitations stem primarily from data availability. In particular, the context of the research is restricted to the London market and the timeframe is limited to the January 2019 – December 2020 period.

As far as the context is concerned, this study drew from a London context only. While London is a major Airbnb market, the findings may not be applicable to other cities, regions or countries. As a result, it is recommended that future research investigates hosts' perceptions and responses to pandemics in other cultural settings, exploring in which contexts the crisis was managed more effectively. Further validation on multiple markets could also help to corroborate or expand the findings.

The novelty of the research, which is characteristic of all studies conducted after the onset of the health crisis, suggests the need for future robustness checks of the obtained results over a longer time period, namely, a period that includes also the year 2021 and possibly 2022, also deeply affected by the Pandemic. An extension to a longer interval will also allow researchers to analyse further evolutions in market trends and in strategic decisions arisen since. Two years after the lockdown was implemented in Italy, the future of the sector remains uncertain.

Consequently, further research could be conducted using Airbnb data covering more recent time periods and a broader geographic region, with the ultimate goal of improving the generalisability of the findings and analysing new market evolutions.

Next efforts could also investigate other strategic choices which may have been adopted by hosts to respond to the Covid-19 Pandemic, by examining them both individually and in combination. Researchers may also conduct a comparative study of crisis management strategies used in P2P accommodation and mainstream hospitality to identify areas of convergence and divergence, as well as best practices.

Finally, this study has opened up new opportunities for further investigation into how to establish the optimum pricing levels to maximise the mitigating effects that arise from adopting a flexible cancellation policy. It could be interesting to investigate if enabling the Instant Book

option would have had mitigating effects not only on the Occupancy Rate, but also on the Revenue Per Available Night, if the optimum prices had been chosen.

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9. Appendix

Attachment 1: Definition and description of each variable in the dataset

METRIC	DEFINITION/DESCRIPTION
Property ID	Unique id assigned by AirDNA for each vacation rental listing
Reporting Month	07/01/2017 = vacation rental performance during July 2017
Revenue (USD)	Total revenue (in US dollars) earned during the reporting period. Includes the advertised price from the time of booking, as well as cleaning fees.
Number of Reservations	Number of unique reservations during the last twelve months
Reservation Days	Total number of listing calendar days that were classified as reserved during the reporting period. Each calendar day is classified as either A = available, B = blocked, or R = reserved.
Available Days	Total number of listing calendar days that were classified as available during the reporting period. Each calendar day is classified as either A = available, B = blocked, or R = reserved.
Blocked Days	Total number of listing calendar days that were classified as blocked during the reporting period. Each calendar day is classified as either A = available, B = blocked, or R = reserved.
Year	Year of the observation
Property Type	Types of accommodations
Listing Type	Three vacation rental listing types: Entire Home, Private Room, and Shared Room
Created Date	The date the vacation rental listing was created
Country	Country where the vacation rental property is located
Latitude	Latitude of the vacation rental property
Longitude	Longitude of the vacation rental property
City	City where the vacation rental property is located
Neighborhood	Neighborhood where the vacation rental property is located, where available
Bedrooms	Number of bedrooms in a vacation rental listing
Bathrooms	Number of bathrooms in a vacation rental listing
Max Guests	The maximum number of guests the vacation rental property can accommodate
Calendar Last Updated	The last time the host updated their calendar
Response Rate	The percentage of new inquiries and reservation requests a host responds to (by either accepting/pre-approving or declining) within 24 hours
Airbnb Superhost	True or False depending if the host is a Superhost on Airbnb
HomeAway Premier Partner	True or False depending if the HomeAway host is a Premier Partner
Cancellation Policy	Cancellation policy for the vacation rental listing
Security Deposit (USD)	Security deposit in US dollars
Cleaning Fee (USD)	Cleaning fee charged per reservation in US dollars
Extra People Fee (USD)	Extra people fee in US dollars
Published Monthly Rate (USD)	The monthly price in USD if specified by the host
Published Weekly Rate (USD)	Default weekly rate for a vacation rental listing in USD
Check-in Time	Check-in time for the vacation rental listing
Checkout Time	Check-out time for the vacation rental listing
Minimum Stay	The default minimum night stay required by host
Number of Reviews	Total number of vacation rental listing reviews
Number of Photos	Number of photos in a vacation rental listing
Instantbook Enabled	True = the vacation rental property can be booked without any host/guest communication
Overall Rating	Guest rating on a scale of 1-5
Airbnb Host ID	Unique Airbnb host ID (https://www.airbnb.com/users/show/(hostID) will bring up the host profile
HomeAway Property ID	Unique HomeAway property ID http://HomeAway.com/vacation-rental/p/(propid) will bring up the HomeAway listing

Source: AirDNA (2019–2020).