

Birenboim, Amit; Wang, Li Min; Zuckerman Farkash, Michal; Shane, Rachel

Article

The differential impact of crises on tourism

Annals of Tourism Research Empirical Insights

Provided in Cooperation with:

Elsevier

Suggested Citation: Birenboim, Amit; Wang, Li Min; Zuckerman Farkash, Michal; Shane, Rachel (2023) : The differential impact of crises on tourism, Annals of Tourism Research Empirical Insights, ISSN 2666-9579, Elsevier, Amsterdam, Vol. 4, Iss. 2, pp. 1-4, <https://doi.org/10.1016/j.annale.2023.100108>

This Version is available at:

<https://hdl.handle.net/10419/337776>

Standard-Nutzungsbedingungen:

Die Dokumente auf EconStor dürfen zu eigenen wissenschaftlichen Zwecken und zum Privatgebrauch gespeichert und kopiert werden.

Sie dürfen die Dokumente nicht für öffentliche oder kommerzielle Zwecke vervielfältigen, öffentlich ausstellen, öffentlich zugänglich machen, vertreiben oder anderweitig nutzen.

Sofern die Verfasser die Dokumente unter Open-Content-Lizenzen (insbesondere CC-Lizenzen) zur Verfügung gestellt haben sollten, gelten abweichend von diesen Nutzungsbedingungen die in der dort genannten Lizenz gewährten Nutzungsrechte.

Terms of use:

Documents in EconStor may be saved and copied for your personal and scholarly purposes.

You are not to copy documents for public or commercial purposes, to exhibit the documents publicly, to make them publicly available on the internet, or to distribute or otherwise use the documents in public.

If the documents have been made available under an Open Content Licence (especially Creative Commons Licences), you may exercise further usage rights as specified in the indicated licence.



<https://creativecommons.org/licenses/by-nc-nd/4.0/>

Contents lists available at [ScienceDirect](https://www.sciencedirect.com)

Annals of Tourism Research Empirical Insights

journal homepage: www.sciencedirect.com/journal/annals-of-tourism-research-empirical-insights

The differential impact of crises on tourism

Amit Birenboim^{*}, Li Min Wang, Michal Zuckerman Farkash, Rachel Shane

Department of Geography, The Hebrew University of Jerusalem, Mt Scopus, 919051 Jerusalem, Israel

ARTICLE INFO

Editor: Masiero Lorenzo

Keywords:

Airbnb performance
 COVID-19
 Flexible supply
 Crisis response
 Socio-geographical factors
 Ethnicity

The COVID-19 pandemic has brought about significant health risks, leading governments to implement strict social distancing measures such as lockdowns, and travel restrictions. The tourism industry, including the growing peer-to-peer accommodation sector, has been particularly impacted by these measures (Dogru et al., 2023). However, Peer-to-peer platforms such as an Airbnb provided flexibility during the crisis, allowing property owners to adopt various coping strategies, including returning to long-term rentals. This increased resilience compared to traditional accommodation models (Gyódi, 2022), resulting in rapidly changing supply patterns in cities.

Notably, coping strategies have been differential and dependent on various factors, including the characteristics and preferences of hosts, such as whether they are professional or non-professional hosts (Dolnicar & Zare, 2020); demand factors such as the perceived threat of COVID-19, and visitors' travel motivation (e.g., business, leisure) (Jang et al., 2021); type of accommodation (Dogru et al., 2023); and location factors. The latter, geographical location factors have been considered a major determinant of performance also prior to the pandemic (Sainaghi & Chica-Olmo, 2022). However, during the pandemic, the effect of location had changed. For example, city centers that previously saw high demand for short-term rentals due to their proximity to tourist attractions have been disproportionately affected, witnessing a drastic decline in host income (Kourtit et al., 2022), with some reports indicating drops of up to 80% (Chen et al., 2022). Beach areas and other attractive destinations experienced similar declines in income. Conversely, less

densely populated areas that are commonly more remote from the center have seen a more moderate impact, with some even experiencing growth following the first shock of the pandemic (Jang et al., 2021). However, these effects were not always consistent (Dogru et al., 2023; Jang & Kim, 2022), possibly due to the fact that business tourists, who are often concentrated in urban centers, perceived the pandemic as less threatening, and thus their travel choices were less affected by it (Jang et al., 2021).

By evaluating the impact of the initial and late stages of COVID-19 on Airbnb listings performance in Jerusalem, this study examines the response to crisis situations in the context of flexible (peer-to-peer) accommodation models. Particularly, we focus on distinct spatial patterns of the pandemic's effects and how socio-geographical factors moderated its impact.

Following previous studies (Chen et al., 2022; Kourtit et al., 2022), we hypothesize (H1) that properties near the tourist center will demonstrate reduced performance and availability during COVID-19 due to lower demand for leisure-oriented listings. Similarly (H2), we posit that in Jerusalem, Arab neighborhoods and neighborhoods of lower socioeconomic status that are distant from the center and are often less attractive for leisure purposes will see a more moderate decrease in performance compared to listings in the affluent areas. Finally (H3), the Arab and lower socioeconomic neighborhoods who typically have lower share of professional hosts will also experience a more moderate decline in listings' availability. This is because non-professional hosts are more

^{*} Corresponding author.

E-mail addresses: amit.birenboim@mail.huji.ac.il (A. Birenboim), limin.wang@mail.huji.ac.il (L.M. Wang), michal.zuckerman-farkash@mail.huji.ac.il (M. Zuckerman Farkash), rachel.shane@mail.huji.ac.il (R. Shane).

<https://doi.org/10.1016/j.annale.2023.100108>

Received 30 June 2023; Received in revised form 26 August 2023; Accepted 29 August 2023

Available online 6 September 2023

2666-9579/© 2023 The Authors. Published by Elsevier Ltd. This is an open access article under the CC BY-NC-ND license (<http://creativecommons.org/licenses/by-nc-nd/4.0/>).

reluctant to add their listings to the long-term renting market (Dolnicar & Zare, 2020).

1. Methodology

1.1. Study area

Jerusalem, Israel's capital and the country's poorest large city, exhibits a highly segregated neighborhood pattern, with Arabs comprising over one-third of the population primarily residing in the eastern part, and Jews in the western part. As a sacred city to three monotheistic religions, it attracts a substantial number of international tourists and heavily depends on incoming tourism. However, during the COVID-19 pandemic, the city witnessed a significant 77% decrease in overnight stays (Jerusalem Municipality, 2021).

1.2. Data and analysis

The study used AirDNA data on Jerusalem listings, applying linear mixed models with two random effects (property ID and date) and a temporal autocorrelation component. Fixed effects included socioeconomic level (1–10), proximity to the tourism center, holiday, lockdown level, COVID (yes/no), ethnicity, listing type, and number of rooms. The study also examined three interaction terms to explore moderating effects: ethnicity*COVID, socioeconomic*COVID, and proximity*COVID. The dependent variables were monthly revenue (Model 1) and number of reservation days (Model 2). For more information on data, variables, and analysis, refer to the supplementary materials.

2. Results

2.1. Airbnb supply: descriptive statistics

Fig. 1A indicates higher rental availability in 2019, prior to the pandemic, near the tourism center (old city). Notably, there were

significant differences between the more affluent Western Jewish neighborhoods and the more deprived Eastern Arab neighborhoods. The latter had substantially lower rental availability, suggesting low adoption of the Airbnb platform among Arab populations. Fig. 1B reveals a significant decline in rental availability during the pandemic for most neighborhoods in the city.

Figs. 1 Ci-iii display property changes from 2019 (pre-pandemic) to 2020 (initial shock) and 2021 (late COVID period with vaccinations). The curves are referenced to 2019 (100%). Values on the curves represent the absolute number of available properties in each year. Regardless of socio-geographical characteristics, there was a consistent decline in the number of properties from 2019 to 2021 (to around 50% of 2019 levels). Arab neighborhoods saw a slightly sharper decline to 69.1% of the properties in the first COVID year, while Jewish neighborhoods went down to 75.2% (Fig. 1 Ci). In the second COVID year, trends shifted, with Arab neighborhoods showing a more moderate decline compared to Jewish ones. The difference between neighborhoods of low and high socio-economic status (Figure 1Cii) is more dramatic with more affluent neighborhoods demonstrating sharper decline in the number of properties, possibly due to a quicker host reaction to the demand drop. The distance from the tourism center also seems to moderate the decline (Figure 1Ciii), with distant properties decreasing faster than those closer to the center.

2.2. Mixed models

Models 1 (revenue) and 2 (reservation days) in Table 1 show similar trends, with the control variables behaving as expected. During holiday months, revenue and reservation days increased by ~\$259USD and 0.565 rental days per month, respectively. Full apartments and hotel rooms performed better than private and shared rooms. Increasing the number of rooms increased revenue but decreased monthly rented days by -0.900 per room. Socio-geographical variables had a significant impact on performance. Properties located closer to the tourism center and in Jewish (compared to Arab) neighborhoods displayed enhanced

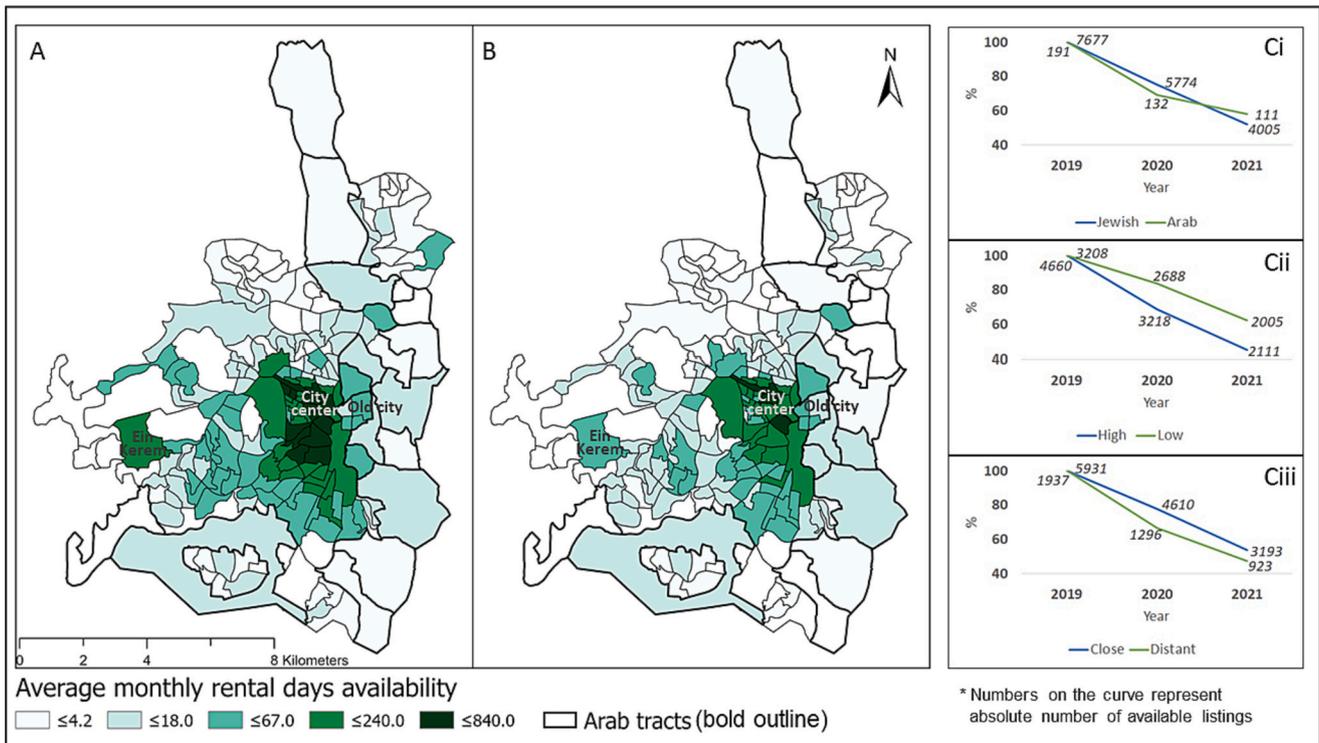


Fig. 1. Airbnb availability. (A) Pre-COVID. (B) During COVID. (C) Annual change in properties relative to 2019 (i) By ethnicity; (ii) By socioeconomic cluster; (iii) By distance from the tourism center.

Table 1
Mixed models.

Variables	Model 1–Revenue		Model 2–Reservation days	
	Estimate	Std. error	Estimate	Std. error
Intercept	721.978***	61.464	9.818***	0.258
CONTROL VARIABLES				
Holiday [ref: No holidays]				
Holiday	259.011***	6.843	0.565***	0.027
Listing type [ref: Entire studio/apartment]				
Hotel room	621.399***	181.204	1.467*	0.776
Private room	−469.954***	45.143	−0.646**	0.190
Shared room	−673.131***	148.872	−2.450**	0.624
Number of bedrooms	265.598***	13.259	−0.900***	0.056
SOCIO-GEOGRAPHICAL				
Socioeconomic level				
Proximity (to tourism center) [ref: Distant]	−81.334***	7.410	−0.283***	0.031
Close	656.310***	39.278	2.119***	0.165
Ethnic area [ref: Jewish]				
Arab	−724.128***	108.186	−2.654***	0.453
COVID VARIABLES				
Lockdown [ref: No lockdown]				
Partial lockdown	−189.230***	10.949	−0.116**	0.042
Full lockdown	−381.367***	12.786	−1.168***	0.050
COVID [ref: pre Covid]				
COVID	−652.373***	35.108	−5.138***	0.137
INTERACTIONS				
Arab*Covid	505.817***	64.865	0.970***	0.252
Socioeconomic level*Covid	61.666***	4.601	0.209***	0.018
Proximity*Covid	−424.200***	25.042	−1.444***	0.097
Sd (Property.ID)		743.568		5.373
Sd (datetime)		6.734e-07		1.2822e-09
Sd (Residual)		1619.480		6.298
Temporal Autocorrelation estimate		1.399		1.403
	N: 253915		N: 253917	
	Log-likelihood: −2,166,946		Log-likelihood: −757,798	
	AIC: 4333933		AIC: 1515636	
	BIC: 4334141		BIC: 1515845	

* $\alpha < 0.05$, ** $\alpha < 0.01$, *** $\alpha < 0.001$.

performance, with an increase of ~\$656USD and ~ \$724USD in monthly revenue, respectively, as well as higher monthly occupancy of 2.119 and 2.654 days, respectively. Interestingly, properties in higher socioeconomic status neighborhoods showed lower performance, experiencing a monthly decrease of ~\$81USD in revenue.

As expected, COVID-19 reduced monthly revenue by over \$652USD and reservation days by 5.138 days. The economic impact on hosts was worse the stricter the lockdown restrictions were. The positive coefficient of the interaction terms for COVID with Arab and socioeconomic level (~\$505USD and ~ \$61USD, respectively) indicate that the effect of COVID on performance was positively moderated in Arab areas and in higher socio-economic neighborhoods. This suggests that while the overall effect of COVID on performance was negative, it was relatively less severe in these neighborhoods. In contrast, in more central neighborhoods the adverse COVID effect was amplified as indicated by the negative coefficient (−\$424.2USD).

3. Conclusions

The study validates COVID-19's impact on Airbnb listings, showing reduced numbers of listings and their performance, particularly during lockdowns and with heightened effects in central areas (H1). Moreover, properties in disadvantaged areas, such as lower

socioeconomic and Arab neighborhoods experienced a smaller decline in the number of listings, possibly since they have a lower share of professional hosts (H3). In line with our hypothesis Arab neighborhoods that typically see lower demand, demonstrated a more moderate decrease in performance (H2). However, contrary to our hypothesis, properties in higher socioeconomic areas demonstrated greater resilience, with a more moderate decline in economic performance.

The reason why seemingly disadvantaged neighborhoods show more resilience during crises appears to rely on both demand (e.g., a stronger decrease in demand for leisure tourism in central neighborhoods) and supply aspects. The ability of hosts to quickly open, close, and modify their offerings makes the supply side a crucial factor in determining Airbnb's listings performance and spatial distribution. Here, we suggest that various factors may impact hosts. For example, higher socioeconomic populations with greater resources may respond more promptly to shocks and experience milder economic impacts. Additionally, cultural conventions and home ownership structures within neighborhoods may result in distinct spatial patterns in hosts' responses.

In conclusion, we suggest that the increased flexibility in tourists' accommodation supply significantly impacts the tourism market's crisis (and routine) responses. This new landscape of enhanced supply flexibility has practical implications. Policymakers should consider implementing distinct strategies and remedies tailored to each neighborhood based on its condition (e.g., gentrification process), residents' resources, and the municipality's future development plans. For instance, the rapid decrease in Airbnb supply in wealthier neighborhoods during the COVID-19 presents an opportunity to encourage hosts to maintain their properties in the long-term housing market, thereby alleviating high rental issues in Jerusalem and other tourist cities.

The potential increase in the frequency of crises due to environmental, health and security risks makes this investigation timely, encouraging further exploration of flexible accommodation supply's impact on cities. While Jerusalem makes a unique case study, we anticipate similar responses among property owners in other destinations as these responses often reflect similar risk reduction strategies. To substantiate this hypothesis, further research is necessary to directly examine property owners' decision-making and extend the study to encompass other cities and regions. Additionally, researchers should examine the long-term effects of COVID-19 on peer-to-peer supply patterns.

Declaration of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

Acknowledgements

This research has been funded by the H2020 program, SMARTDEST project under grant agreement no. 870753.

Appendix A. Supplementary data

Supplementary data to this article can be found online at <https://doi.org/10.1016/j.annale.2023.100108>.

References

- Chen, G., Cheng, M., Edwards, D., & Xu, L. (2022). COVID-19 pandemic exposes the vulnerability of the sharing economy: A novel accounting framework. *Journal of Sustainable Tourism*, 30(5), 1141–1158. <https://doi.org/10.1080/09669582.2020.1868484>
- Dogru, T., Hanks, L., Suess, C., Line, N., & Mody, M. (2023). The resilience of the lodging industry during the pandemic: Hotels vs. Airbnb. *International Journal of Hospitality Management*, 109, Article 103406. <https://doi.org/10.1016/j.ijhm.2022.103406>

- Dolnicar, S., & Zare, S. (2020). COVID19 and Airbnb – Disrupting the disruptor. *Annals of Tourism Research*, 83, Article 102961. <https://doi.org/10.1016/j.annals.2020.102961>
- Gyódi, K. (2022). Airbnb and hotels during COVID-19: Different strategies to survive. *International Journal of Culture, Tourism and Hospitality Research*, 16(1), 168–192. <https://doi.org/10.1108/IJCTHR-09-2020-0221>
- Jang, S., & Kim, J. (2022). Remediating Airbnb COVID-19 disruption through tourism clusters and community resilience. *Journal of Business Research*, 139, 529–542. <https://doi.org/10.1016/j.jbusres.2021.10.015>
- Jang, S., Kim, J., Kim, J., Kim, S., & (Sam).. (2021). Spatial and experimental analysis of peer-to-peer accommodation consumption during COVID-19. *Journal of Destination Marketing & Management*, 20, Article 100563. <https://doi.org/10.1016/j.jdmm.2021.100563>
- Jerusalem Municipality. (2021). Jerusalem statistical yearbook. <https://jerusalemstitute.org.il/en/yearbook/#/3589/19252>.
- Kourtit, K., Nijkamp, P., Östh, J., & Turk, U. (2022). Airbnb and COVID-19: SPACE-TIME vulnerability effects in six world-cities. *Tourism Management*, 93, Article 104569. <https://doi.org/10.1016/j.tourman.2022.104569>
- Sainaghi, R., & Chica-Olmo, J. (2022). The effects of location before and during COVID-19: Impacts on revenue of Airbnb listings in Milan (Italy). *Annals of Tourism Research*, 96, Article 103464. <https://doi.org/10.1016/j.annals.2022.103464>

Amit Birenboim is a Senior Lecturer at the Department of Geography at The Hebrew University of Jerusalem. His research interests include human spatial behavior, tourism mobility and health geography.

Li Min Wang is a PhD student at the Department of Geography at The Hebrew University of Jerusalem. Her research interests include the role of digital health in environmental exposures, and its potential effects on mental health and stress.

Michal Zuckerman Farkash is a PhD student at the Department of Geography at The Hebrew University of Jerusalem. Her research focuses on social and environmental impacts of tourism, and on possible mitigation measures.

Rachel Shane is a graduate student at the Department of Geography at The Hebrew University of Jerusalem. Her research interests include human spatial behavior with an emphasis on physical activity, sports and health.