

The Impact of COVID-19 on Housing Market: A Review of Emerging Literature

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Article history: Received: 15 March 2021 Received in revised form: 10 August 2021

Accepted: 29 October 2021 Published online: 31 December 2021

Abstract

The housing market over the years has been impacted by various factors in different ways. This review paper examines the growing literature on the impact of COVID-19 on the housing market to ascertain its positive and negative effects. Thus, a total of 40 published conference papers, thesis, academic journal articles, and others obtained from secondary sources were reviewed and revealed that the novel coronavirus (COVID-19) in some scenarios had positive and negative impacts on the housing market. The paper found that the positive impacts include a rise in housing prices, increase in housing supply and reduction in mass evictions in some locations, while the negative impacts are on housing prices, demand and supply, constraints in mortgage return maintenance and delay in the construction of new housing apartments. The paper, therefore, concludes that both positive and negative impacts of the COVID-19 pandemic are felt on the housing market globally. These thereby form a basis for further studies on the growing impacts of the pandemic concerning the housing market.

Keywords: Housing market, COVID-19, positive impacts, negative impacts, literature review

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01.0 INTRODUCTION

Globally, the effects of the COVID-19 have been well documented. The World Health Organization (WHO) tagged it as a pandemic on the 11th of March 2020. Its outbreak has thus far been confirmed in at least 222 countries as of 21st of May 2021 (Worldometer, 2021) – this novel human coronavirus disease which originated from Wuhan in China on 8th of December 2019, was declared on January 30, 2020 as a Public Health Emergency of International Concern (PHEIC) by the World Health Organization (WHO, 2020). It was reported by Johns Hopkins University & Medicine (2021) that the confirmed cases of this health challenge equate to 165,555,872 while 3,430,955 have lost their lives globally as of 21st of May 2021. At the forefront of these, most reported cases were from the United States of America, India, Brazil, France, with African nations are the least affected region (Johns Hopkins University & Medicine, 2021).

At the early stages of the pandemic, precautionary measures are needed to guide against possible danger and reduce the disease spread (Mogaji, 2020). There are series of strict measures on outdoor activities resulting from the ongoing COVID-19 pandemic (Carson et al., 2021). In the first quarter of 2020, the constant spread of the virus prompted governments across western nations to activate series of extraordinary measures not known in peacetime (Allen-Coghlan & McQuinn, 2021), countries globally are telling citizens to stay at home (Closson et al., 2020; John et al., 2020). The world's economies are seriously been affected by the ongoing pandemic in different ways and degrees (Delgado & Katafuchi, 2020), most economic activities had been halted across countries, the positive relationship between working, living, and leisure has been unusually disturbed unlike before (Carson et al., 2021; Keke et al., 2020), a severe economic disturbance has been caused by the pandemic, including the largest global recession since the US Great Depression (see International Monetary Fund website – www.imf.org). Real estate developers are facing issues resulting from the risks of the stay at home policies enforced on the real estate chain and built environment (Uchegara et al., 2020) and social distancing has stagnated the prosperity expected of the real estate sector and other economic activities. The measures put in place to curb the spread and transmission of the pandemic is having a serious effect and toll on all spheres of human life; ranging from governance, health, religious, social, economic, and education, without leaving behind the property/housing market (Taub, 2020).

The housing market is the convergence of buyers and sellers of goods and services that relates to housing, and are supplied upon demand (Mohammed & Sulyman, 2019; Sulyman, 2015). According to de Bandt et al. (2010), housing market development influences the development of business cycles and, under negative circumstances, could render the financial system unstable. In the opinion of Gurran

and Bramley (2017), there will be a difference in the nature of the housing market concerning various locations, cities and localities within the same country. The housing market over the years have been impacted by different factors which include but are not limited to, the global economic meltdown (Ellis, 2008; Fang et al., 2016), government policies (Meen, 2001; Yap & Ng, 2018), environmental factors (Jung & Yoon, 2018; Razali et al., 2020; Zivin et al., 2020), economic and finances (Eerola & Määttänen, 2018; He et al., 2018; Huang et al., 2020), and cultural/ethnic factors (Bunel et al., 2019; Flage, 2018; Kuang & Wang, 2018), natural disasters like earthquakes (Cheung et al., 2018), as well as religion (Dean & Pryce, 2017). It has also been impacted by the spread of diseases like Ebola, Lassa fever and recently the COVID-19 pandemic (Fields & Hodkinson, 2018; Zhao, 2020).

There are little growing literature on how the housing market fared with the emergence of the COVID-19 pandemic (Allen-Coghlan & McQuinn, 2021; Allen-Coghlan et al., 2020; Arcaya et al., 2020; Boshoff, 2020; Delgado & Katafuchi, 2020; Del Giudice et al., 2020; Evans et al., 2020; Kadi et al., 2020; Kulander & Wilhelmsson, 2020; Marona & Tomal, 2020; Özgen, 2020; Pfeifer & Steurer, 2020; Tanrıvermiş, 2020; Verhaeghe & Ghekiere, 2021; Yang & Zhou, 2021). For instance, the possible effect of the COVID-19 pandemic on the housing sector of Ireland was looked into by Allen-Coghlan and McQuinn (2021), while Arcaya et al. (2020) investigated rising rental values and COVID-19 case rates in Massachusetts, United States. Other than that, Verhaeghe and Ghekiere (2021) assessed the extent to which the COVID-19 pandemic impacted the housing market as regards ethnic discrimination while Kulander and Wilhelmsson (2020) were concerned about determinant factors of housing supply for the elderly concerning the spread of the COVID-19 pandemic and changes in the future demography. In Poland, Marona and Tomal (2020) also investigated the impact of COVID-19 pandemic on housing brokers' workflow and their clients' attitude.

Presently, there is a dearth of literature on the global impact of COVID-19 on the housing market. It is against this backdrop, that it becomes imperative to review some empirical studies on COVID-19 and the housing market on a global scale considering the housing price, demand, supply, mortgages loans, construction materials, tourism and leisure industry with its effects; both positive and negative which will eventually form a basis for further housing market research.

02.0 METHODOLOGY

An archival research method was utilised to assess the COVID-19 impacts on the housing market. The data required for this study are mainly sourced from secondary sources, such as textbooks, thesis, journals, conference papers, and other online sources. Online data sources were mainly from the academic electronic database utilising Google Scholar, ScienceDirect, Emerald Insight, Microsoft Academic and ResearchGate. Included in this research were studies that met search requirements criteria for this study which include housing market, COVID-19, property market, pandemic, housing price, economic impact, housing demand and supply, mortgage loans, construction materials, hotels, tourism and leisure. However, those that could not meet the required criteria were excluded. Therefore, a total of eighty-five (85) papers were gathered, out of which only forty (40) met the criteria for selection. Studies with a clear focus on the impact of the COVID-19 pandemic were then selected, sorted and grouped accordingly (see Figure 1).

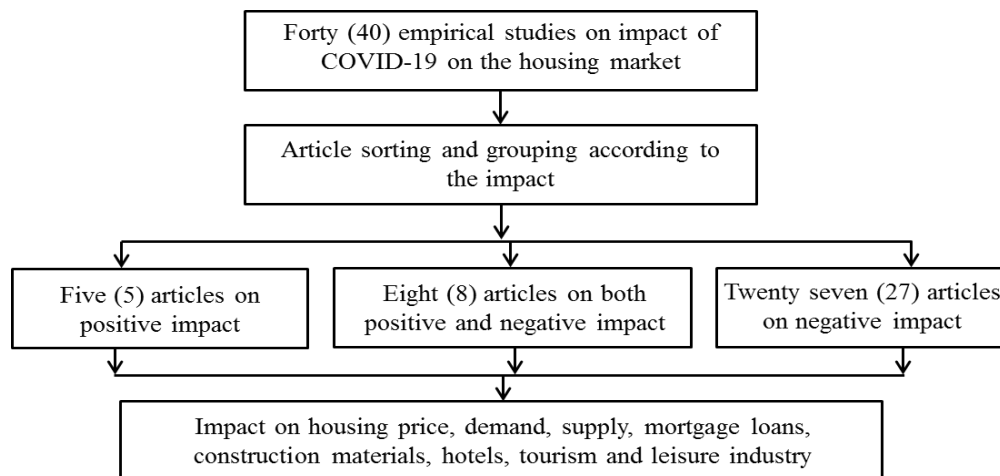


Figure 1 Methodology and review process

03.0 POSITIVE IMPACTS OF COVID-19 ON THE HOUSING MARKET

Researchers in the field of property and housing market over the years examined series of factors impacting the housing market. Among the recent is the positive effect of the COVID-19 pandemic on the housing market. These include housing price, demand and supply. Kadi et al. (2020) examined the impact of COVID-19 on the rental housing market based on an analysis of real estate listings in four large Austrian cities and found out that property owners have reconsidered their decision to use their units for touristic purposes, converted them back to the regular rental market as a result of increasing rental prices. In terms of COVID-19 restrictions, Yang and Zhou (2021), while studying the impacts of COVID-19 on the housing market in China revealed that there was a considerable and significant positive housing

price after the emergence of the pandemic implying the urgent need to stay together for better home quarantine. Wang (2021) argued that stay at home orders and business restrictions has led to an upsurge in housing prices, especially in houses with better amenities. Similarly, Verma and Husain (2020), while assessing the resilience and strength of the new housing market during the pandemic, observed that the Canadian cities with proximity to large urban centres witnessed a rise in housing prices. In terms of reported cases, Arcaya et al. (2020) reported that housing value increases with increasing COVID-19 cases as a result of housing displacement pressure due to the pandemic.

Delgado and Katafuchi (2020) studied the COVID-19 pandemic and Japanese housing market during the declaration of the state of emergency and revealed that there was a favourable demand for housing during the period. Likewise, Verma and Husain (2020) also observed that the lockdown which made people spend more time at home amplified buyers' interest in suburban areas and cities of Canada. However, Kadi et al. (2020) observed that the conversion of hotels and touristic properties to regular rental apartments increases the housing supply in four Austrian cities during the COVID-19 pandemic. Subsequently, An et al. (2021) submitted that the U.S. government's intervention during the pandemic for defaulting household rent increases the housing stock and reduces mass evictions. Also, the supply for industrial properties like warehouses and stores increases during the pandemic (Oyedeki, 2020).

04.0 NEGATIVE IMPACTS OF COVID-19 ON HOUSING MARKET

Generally, plentiful studies have been conducted on the negative effects of COVID-19 on the housing market. These include subjects focusing on housing price, demand, supply, mortgage, construction materials and tourism and hospitality.

A research work conducted by Del Giudice et al. (2020) on short and mid-term effects of COVID-19 on housing prices in the Campania region of Italy indicates a drop of 4.16% in the short-run and 6.49% in the mid-term between late 2020 and early 2021 as a result of the global pandemic. Another study by Hu et al. (2021) on COVID-19 and housing prices of Australian cities revealed that every doubling of newly confirmed COVID-19 cases, it results in dropping of housing prices by 0.35% to 1.26% annually. It was also argued that recorded cases and deaths from COVID-19 play a significant impact on housing market leading to a 60% fall in housing price in the United Kingdom, United States of America, Canada, Australia and Russia (Avakyan & Pratsko 2020; Christie et al., 2020; Yörük, 2020). Qian et al. (2021) submitted that COVID-19 negatively affects housing prices of the region with higher infection levels or inadequate healthcare and medical conditions and further indicates a 2.47% reduction in housing prices as the pandemic persists in Ireland.

Allen-Coghlan and McQuinn (2021) also observed that housing prices fell over 18 months as a result of the COVID-19 pandemic on the Irish housing sector. Francke and Korevaar (2021) opined that there was a temporal increase in housing risk premia caused by growing uncertainty and economic disruption from the COVID-19 pandemic which results in housing price reduction in Amsterdam and Paris. In the same vein, Apergis (2021) submitted in the study of 31 countries that the effects of the COVID-19 pandemic have been felt by the housing market concerning housing prices and monetary expansions of the financial institutions. More so, Pfeifer and Steurer (2020) looked into early real estate indicators in London and Vienna concerning the pandemic and reported that least-price indicators lose their predictive power during the economic recession due to the pandemic.

In another perspective, Verhaeghe and Ghekire (2021) suggested that the COVID-19 pandemic escalates discrimination between different ethnic groups which led to a reduction in demand for rental housing in Belgium. As observed by Jones and Grigsby-Toussaint (2020) during the pandemic, the rent-burdened populace in the racially segregated and low-income communities reallocated finances meant for housing to feeding and medication, thus leading to a drop in demand for housing. Benfer et al. (2021) observed that the COVID-19 pandemic led to unprecedented job loss and severe economic hardship for rental households among the coloured and low-income populace in the US leading to a fall in housing demand. Also, Liu and Su (2020), while studying the impact of the novel coronavirus on the US housing market opined that housing demand reduced in densely populated cities and neighbourhoods as a result of the reduced need to reside near jobs. In the same vein, Pomeroy (2020) also observed that the prolonged absence of students from schools negatively affects the rental market leading to 10,000 reductions in demand for housing owing to lockdown, reduced income and job loss in the Canadian city of Ottawa.

While also exploring the trends in the Italian residential market, there exists a visible structural shift in residential property demand in the metropolitan area owing to the new requirements of the ongoing pandemic (De Toro et al., 2021). Recorded cases and deaths from the COVID-19 negatively affect the demand for housing (Avakyan & Pratsko, 2020; Christie et al., 2020; Yörük, 2020). Similarly, Oyedeki (2020) argued that residential housing demand remains static in the face of the ongoing pandemic in Lagos, Nigeria. Allen-Coghlan et al. (2020) observed an increased imbalance between the demand and supply for properties in the Irish property market resulting from the pandemic emergence.

In terms of housing supply, Boshoff (2020) submitted that increased litigations during the pandemic negatively impact housing supply as a result of tenants' inability to fulfil the contractual agreement. More so, investors had to take their properties off the market to minimise the loss in their investment, reducing the available housing stock which led to a sharp decline in the supply of residential housing units and some buyers equally delay purchasing till after the uncertainties of the pandemic (Centre for Affordable Housing Finance in Africa, 2020). Furthermore, Milcheva (2021), in her investigation into the risk-return relationship in the cross-section of real estate equities in the United States and selected Asian countries during the pandemic, observed that the most affected sectors in the US were retail and hotels, while in Asia it was offices.

In the aspect of the pandemic effect on a mortgage, it was confirmed that investors and landlords face difficulties in mortgage return maintenance (Avakyan & Pratsko, 2020; Christie et al., 2020; Yörük, 2020). In the same vein, Özen (2020) opined that the COVID-19 pandemic negatively affected the housing mortgage in Turkey. Furthermore, Alsharif et al. (2021) in a study of the early impact of the COVID-19 pandemic on the US construction industry opined that since the official declaration of a national emergency, construction work witnessed a huge delay of ongoing projects, inadequate supply of materials, reduced rate of productivity, upsurge in material price, cash-flow issues, delay grant of a permit as well as potential conflicts and disputes. Furthermore, Stanturf (2020) found out that, due to the

impact of the COVID-19 restrictions, lumbering cannot be done remotely while the meagre production cannot meet the required quantity for construction purposes, thus delaying housing repair and construction. Tanrıvermiş (2020), while investigating the possible impacts of the COVID-19 outbreak on the real estate sector and possible change to adopt, concluded that there will be a shift in the planning and construction decisions.

Accordingly, properties in the retail, hospitality, and some office buildings had been greatly impacted negatively by the novel coronavirus with a huge rental income decrease (Hoesli & Malle, 2021). Also, Olanrele and Thontteh (2020) opined that COVID-19 and its implications for the real estate sector in Nigeria and other tourism and leisure properties have suffered negative patronage since all social gatherings, seminars, conferences, and symposiums have been converted to hold online as against the physical edition. The negative externalities accompanying the pandemic is most pronounced and felt through the rapid reduction in the number of housing completion, with most construction currently being halted while execution of few we're at a slow pace resulting from the policies put in place to curb the spread of the virus like lockdown, social distancing and others.

05.0 DISCUSSION

From empirical studies, the COVID-19 pandemic has impacted the housing market both positively and negatively. Positively, the impact is felt on price, demand and supply for housing, while it is negatively felt on the mortgage, construction materials, price, supply, demand, and hotels, tourism and leisure (see Figure 2).

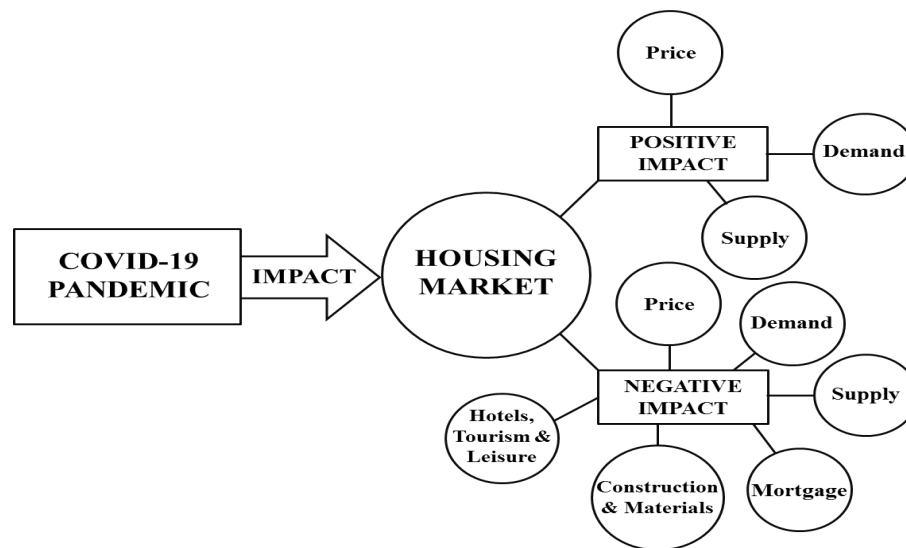


Figure 2 Impacts of COVID-19 on housing market

Contrary to the general perception that COVID-19 is an outright disturbance, the findings of this review prove that the pandemic has a positive impact on the housing market. The pandemic led to an increase in the housing prices in some cities as a result of increasing pressure on the need for accommodation due to restrictions in movement and other COVID-19 control measures. It was found out that with proximity to large urban centres some Canadian cities witnessed a rise in housing prices (Verma & Husain, 2020), housing values also increases with increasing reported cases of COVID-19 in Massachusetts, United States (Arcaya et al., 2020). In the same vein, because of the need to stay together for better home quarantine, there was a considerably significant rise in the housing prices in Chinese cities (Yang & Zhou, 2021).

The study shows that housing demand increased favourably during the pandemic due to the declaration of a state of emergency in Japan, while the lockdown in Canadian cities amplified buyers' interest in housing units of suburban areas (Delgado & Katafuchi, 2020; Verma & Husain, 2020). More so, the housing supply increases owing to the conversion of hospitality properties to residential apartments in Austrian cities (Kadi et al., 2020), alongside a reduction in mass eviction in the United States (An et al., 2021). However, it can be inferred from the findings that the COVID-19 pandemic has a positive impact on the housing market of some cities and locations, particularly, rise in housing prices, increase in housing supply and reduction in mass evictions.

The findings of the review also prove that the novel coronavirus negatively affects the housing market. Studies indicate a steady decline in housing prices in the Campania region of Italy, Australian cities, the United Kingdom, the United States of America, Canada, Russia, Ireland and several European capital cities such as Amsterdam and Paris (see Allen-Coghlan & McQuinn, 2021; Apergis, 2021; Avakyan & Pratsko, 2020; Christie et al., 2020; Del Giudice et al., 2020; Francke & Korevaar, 2021; Hu et al., 2021; Qian et al., 2021; Yörük, 2020).

Furthermore, the effect of the pandemic led to a reduction in the demand for housing (De Toro et al., 2021; Kulander & Wilhelmsson, 2020; Liu & Su, 2020; Pomeroy, 2020) while a static housing demand is experienced in the Nigerian city of Lagos (Oyedeji, 2020).

Similarly, the supply of residential housing declined sharply as a result of the pandemic (Boshoff, 2020; Centre for Affordable Housing Finance in Africa, 2020; Keke et al., 2020).

However, studies also show that investors and property owners face difficulties in mortgage return maintenance during the lingering pandemic (Özen, 2020). The housing construction industry has also witnessed a huge delay in ongoing projects resulting from the pandemic (Alsharaf et al., 2021). In another dimension, the impact of COVID-19 is negatively felt in hospitality and other related industries (Hoesli & Malle, 2021; Olanrele & Thontteh, 2020). Consequently, the findings also proved that the pandemic negatively affect the housing market of some cities and locations, leading to a decline in housing prices, demand and supply. It also led to constraints in mortgage return maintenance and delay in housing constructions.

06.0 CONCLUSION

In conclusion, COVID-19 has impacted the housing market both positively and negatively. Its positive impact was felt through a rise in housing prices, supply, and reduction in mass evictions as witnessed in some locations around the world. The negative impacts are however being experienced through a decline in housing prices, housing demand and supply, constraints in mortgage returns and delay in housing constructions. The long-run negative effects would increase the imbalance between property demand and supply. The negative effect of the pandemic is equally felt in hospitality and related industries due to restrictions to movements across the borders. The research limitations include the fast-growing literature on the COVID-19 pandemic, as the new research works could reveal different impacts on the housing market. However, this paper provides a basis for further research in the area of the housing market.

References

- Allen-Coghlan, M., & McQuinn, K. M. (2021). The potential impact of Covid-19 on the Irish housing sector. *International Journal of Housing Markets and Analysis*, 14(4), 636-651.
- Allen-Coghlan, M., McQuinn, K., & O'Toole, C. (2020). Assessing the impacts of COVID-19 on the Irish property market: An overview of the issues. In K. McQuinn, C. O'Toole, M. Allen-Coghlan & C. Coffey (Eds.), *Quarterly Economic Commentary* (pp. 93-112). Dublin: The Economic and Social Research Institute.
- Alsharaf, A., Banerjee, S., Uddin, S. M. J., Albert, A., & Jaselskis, E. (2021). Early impacts of the COVID-19 pandemic on the United States construction industry. *International Journal of Environmental Research and Public Health*, 18(4), 1559.
- An, X., Gabriel, S. A., & Tzur-Ilan, N. (2021). COVID-19 rental eviction moratoria and household well-being. Retrieved from https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3801217
- Apergis, N. (2021). The role of housing market in the effectiveness of monetary policy over the Covid-19 era. *Economics Letters*, 200, 109749.
- Arcaya, M. C., Nidam, Y., Binet, A., Gibson, R., & Gavin, V. (2020). Rising home values and Covid-19 case rates in Massachusetts. *Social Science & Medicine*, 265, 113290.
- Avakyan, K., & Pratsko, G. (2020). Impact of the coronavirus pandemic in 2020 on the real estate market in Russia: Legal aspects. *E3S Web of Conferences*, 210, 13001.
- Benfer, E. A., Vlahov, D., Long, M. Y., Walker-Wells, E., Pottenger, J. L., Jr., Gonsalves, G., & Keene, D. E. (2021). Eviction, health inequity, and the spread of COVID-19: Housing policy as a primary pandemic mitigation strategy. *Journal of Urban Health*, 98(1), 1-12.
- Boshoff, D. (2020, June 1). The impact of COVID-19 on the property sector – How does it influence property values and possible litigation? *De Rebus*, 14-16. Retrieved from <https://www.derebus.org.za/the-impact-of-covid-19-on-the-property-sector-how-does-it-influence-property-values-and-possible-litigation/>
- Bunel, M., Gorohouana, S., L'Horty, Y., Petit, P., & Ris, C. (2019). Ethnic discrimination in the rental housing market: An experiment in New Caledonia. *International Regional Science Review*, 42(1), 65-97.
- Carson, S., Nanda, A., Thanos, S., Valtonen, E., & Xu, Y. (2021). *Imagining a post-COVID-19 world of real estate* [Viewpoint]. *Town Planning Review*, 92(3), 371-376.
- Centre for Affordable Housing Finance Africa. (2020, November 3). 2020 housing finance in Africa yearbook – 11th edition. Retrieved on 21 December 2021 from <https://housingfinanceafrica.org/documents/2020-housing-finance-in-africa-yearbook-11th-edition/>
- Cheung, R., Wetherell, D., & Whitaker, S. (2018). Induced earthquakes and housing markets: Evidence from Oklahoma. *Regional Science and Urban Economics*, 69, 153-166.
- Christie, A., Neatherlin, J. C., Nichol, S. T., Beach, M., & Redfield, R. R. (2020). Ebola response priorities in the time of Covid-19. *The New England Journal of Medicine*, 383(13), 1202-1204.
- Closson, K., Lee, M., Gibbs, A., & Kaida, A. (2020). When home is not a safe place: Impacts of social distancing directives on women living with HIV. *AIDS and Behavior*, 24(11), 3017-3019.
- de Bandt, O., Knetsch, T., Peñalosa, J., & Zollino, F. (Eds.). (2010). *Housing markets in Europe: A macroeconomic perspective*. Heidelberg: Springer.
- De Toro, P., Nocca, F., & Buglione, F. (2021). Real estate market responses to the COVID-19 crisis: Which prospects for the metropolitan area of Naples (Italy)? *Urban Science*, 5(1), 23.
- Dean, N., & Pryce, G. (2017). Is the housing market blind to religion? A perceived substitutability approach to homophily and social integration. *Urban Studies*, 54(13), 3058-3070.
- Del Giudice, V., De Paola, P., & Del Giudice, F. P. (2020). COVID-19 infects real estate markets: Short and mid-run effects on housing prices in Campania Region (Italy). *Social Sciences*, 9(7), 114.
- Delgado, A., & Katafuchi, Y. (2020, July). COVID-19, state of emergency, and housing market (MPRA Paper No. 102475). Retrieved from https://mpra.ub.uni-muenchen.de/102475/1/MPRA_paper_102456.pdf
- Eerola, E., & Määttänen, N. (2018). Borrowing constraints and housing market liquidity. *Review of Economic Dynamics*, 27, 184-204.
- Ellis, L. (2008, September 18). *The housing meltdown: Why did it happen in the United States?* (BIS Working Paper No. 259). Basel: Bank for International Settlements.
- Evans, R., Rosewall, T., & Wong, A. (2020). The rental market and COVID-19. *RBA Bulletin*, September, 75-84. Retrieved from <https://www.rba.gov.au/publications/bulletin/2020/sep/pdf/the-rental-market-and-covid-19.pdf>
- Fang, H., Gu, Q., Xiong, W., & Zhou, L.-A. (2016). Demystifying the Chinese housing boom. *NBER Macroeconomics Annual*, 30, 105-166.
- Fields, D. J., & Hodkinson, S. N. (2018). Housing policy in crisis: An international perspective [Guest editors' introduction]. *Housing Policy Debate*, 28(1), 1-5.
- Flage, A. (2018). Ethnic and gender discrimination in the rental housing market: Evidence from a meta-analysis of correspondence tests, 2006–2017. *Journal of Housing Economics*, 41, 251-273.
- Francke, M., & Korevaar, M. (2021). Housing markets in a pandemic: Evidence from historical outbreaks. *Journal of Urban Economics*, 123, 103333.
- Gurran, N., & Bramley, G. (2017). *Urban planning and the housing market: International perspectives for policy and practice*. London: Palgrave Macmillan.

- He, J., Hennig, K., Lang, E., & Neukranz, N. (2020). Risk shift of real estate stocks during the COVID-19 pandemic. *International Journal of Real Estate Studies*, 14(S1), 54-61.
- He, X., Cai, X.-J., & Hamori, S. (2018). Bank credit and housing prices in China: Evidence from a TVP-VAR model with stochastic volatility. *Journal of Risk and Financial Management*, 11(4), 90.
- Hoesli, M., & Malle, R. (2021). Commercial Real Estate Prices and COVID-19. *Journal of European Real Estate Research*. Advance online publication. doi: 10.1108/JERER-04-2021-0024
- Hu, M., Lee, A. D., & Zou, D. (2021). COVID-19 and housing prices: Australian evidence with daily hedonic returns. *Finance Research Letters*, 43, 101960.
- Huang, W.-L., Lin, W.-Y., & Ning, S.-L. (2020). The effect of economic policy uncertainty on China's housing market. *The North American Journal of Economics and Finance*, 54, 100850.
- John, N., Casey, S. E., Carino, G., & McGovern, T. (2020). Lessons never learned: Crisis and gender-based violence. *Developing World Bioethics*, 20(2), 65-68.
- Johns Hopkins University & Medicine. (2021, May 21). COVID-19 Dashboard by the Center for Systems Science and Engineering (CSSE) at Johns Hopkins University. *Coronavirus Resource Center*. Retrieved from <https://coronavirus.jhu.edu/map.html>
- Jones, A., & Grigsby-Toussaint, D. S. (2020). Housing stability and the residential context of the COVID-19 pandemic. *Cities & Health*. Advance online publication. doi:10.1080/23748834.2020.1785164
- Jung, E., & Yoon, H. (2018). Is flood risk capitalized into real estate market value? A Mahalanobis-metric matching approach to the housing market in Gyeonggi, South Korea. *Sustainability*, 10(11), 4008.
- Kadi, J., Schneider, A., & Seidl, R. (2020). Short-term rentals, housing markets and COVID-19: Theoretical considerations and empirical evidence from four Austrian cities. *Critical Housing Analysis*, 7(2), 47-57.
- Keke, O. V., Okafor, J. I., & Sado, R. O. (2020). Influence of the novel coronavirus disease on Nigerian real estate sector and the way forward. *International Journal of Real Estate Studies*, 14(S2), 206-212.
- Kuang, W., & Wang, Q. (2018). Cultural similarities and housing market linkage: Evidence from OECD countries. *Frontiers of Business Research in China*, 12(2), 10.
- Kulander, M., & Wilhelmsson, M. (2020). *What determines the supply of housing for the elderly, and how is it related to the spread of Covid-19 and future demographic changes?* (Working Paper No. 2020:18). Stockholm: KTH Royal Institute of Technology. Retrieved from <https://www.diva-portal.org/smash/get/diva2:1512836/FULLTEXT02>
- Liu, S., & Su, Y. (2020). *The impact of the COVID-19 pandemic on the demand for density: Evidence from the U.S. housing market* (Working Paper No. 2024). Dallas, TX: Federal Reserve Bank of Dallas.
- Marona, B., & Tomal, M. (2020). The COVID-19 pandemic impact upon housing brokers' workflow and their clients' attitude: Real estate market in Krakow. *Entrepreneurial Business and Economics Review*, 8(4), 221-232.
- Meen, G. (2001). *Modelling spatial housing markets: Theory, analysis and policy*. Norwell, MA: Kluwer Academic Publisher.
- Milcheva, S. (2021). Volatility and the cross-section of real estate equity returns during Covid-19. *The Journal of Real Estate Finance and Economics*. Advance online publication. doi:10.1007/s1146-021-09840-6
- Mogaji, E. (2020). Impact of COVID-19 on transportation in Lagos, Nigeria. *Transportation Research Interdisciplinary Perspectives*, 6, 100154.
- Mohammed, J. K., & Sulyman, A. O. (2019, April 29-30). Conventional approaches and mechanism to housing market analysis. In L. T. Ajibade, N. B. Tanimowo, G. Amuda-Yusuf, & N. A. Bello (Eds.), *ICES 2019. Proceedings of the International Conference of Environmental Sciences* (pp. 255-263). Ilorin: University of Ilorin.
- Olanrele, O., & Thontteh, E. (2020, May 27). COVID-19 and the 'new normal': Implications for the Nigerian real estate sector. Retrieved from <https://chsd.unilag.edu.ng/?p=980>
- Oyedemi, J. O. (2020). The impact of COVID-19 on real estate transaction in Lagos, Nigeria. *International Journal of Real Estate Studies*, 14(S1), 107-112.
- Özen, E. (2020, September 25-26). The effects of interest applications in the Covid-19 period on the housing market and individuals' housing investment decisions: Evidence from Turkey. In G. Belostecinic, C. Guțu, L. Condrățchi, D. Bragoi, E. Feuraș, C. Copăceanu, ... N. Roșcovan (Eds.), *Culegere de articole științifice Conferință Științifică Internațională "Competitivitate și Inovare în Economia Cunoașterii"* (pp. 279-284). Chișinău: ASEM.
- Pfeifer, N., & Steurer, M. (2020, October). *Early real estate indicators during the Covid-19 crisis - A tale of two cities* (Graz Economics Papers No. GEP 2020-17). Graz: University of Graz. Retrieved from <http://www100.uni-graz.at/vwlwww/forschung/RePEc/wpaper/2020-17.pdf>
- Pomeroy, S. (2020, July). *Exploring how the COVID-19 pandemic may impact Ottawa's rental housing market* (Issue #11 - COVID impact on Ottawa rental market). Ottawa: Centre for Urban Research and Education (CURE).
- Qian, X., Qiu, S., & Zhang, G. (2021). The impact of COVID-19 on housing price: Evidence from China. *Finance Research Letters*, 43, 101944.
- Razali, M. N., Zulkarnain, S. H., Tarmidi, Z., Maimun, N. H. A., Adnan, Y. M., & Yuzir, M. A. (2020). Property market price response to flood-hazard. *Natural Hazards*, 104, 1955.
- Stanturf, J. A. (2020). *Initial assessment of the impact of COVID-19 on sustainable forest management in Canada and the USA* [Background Paper]. New York, NY: UNFF. Retrieved from <https://www.un.org/esa/forests/wp-content/uploads/2021/01/Covid-19-SFM-impact-USA-Canada.pdf>
- Sulyman, A. O. (2015). *Introduction to housing: Basic concepts and applications* (Revised edition). Minna: King James Publishing House.
- Tanrıvermiş, H. (2020). Possible impacts of COVID-19 outbreak on real estate sector and possible changes to adopt: A situation analysis and general assessment on Turkish perspective. *Journal of Urban Management*, 9(3), 263-269.
- Taub, A. (2020, April 6). A new Covid-19 crisis: Domestic abuse rises worldwide. *The New York Times*. Retrieved from <https://www.nytimes.com/2020/04/06/world/coronavirus-domestic-violence.html>
- Uchegara, I., Hamma-adama, M., Obiri, K. A., Jafarifar, N., & Moore, D. (2020). Impacts and risk management of COVID-19 pandemic on real estate supply chain. *International Journal of Real Estate Studies*, 14(S1), 41-53.
- Verhaeghe, P.-P., & Ghekiere, A. (2021). The impact of the Covid-19 pandemic on ethnic discrimination on the housing market. *European Societies*, 23(Supplement 1), S384-S399.
- Verma, R., & Husain, R. (2020, October 5). The resilience and strength of the new housing market during the pandemic. Retrieved from <https://www150.statcan.gc.ca/n1/pub/45-28-0001/2020001/article/00080-eng.htm>
- Wang, B. (2021). How does COVID-19 affect house prices? A cross-city analysis. *Journal of Risk and Financial Management*, 14(2), 47.
- World Health Organization (WHO). (2020, July 22). *WHO coronavirus disease (COVID-19) dashboard*. Retrieved from <https://covid19.who.int/>
- Worldometer. (2021, May 21). COVID-19 coronavirus pandemic: Reported cases and deaths by country or territory. Retrieved on 21 May 2021 from <https://www.worldometers.info/coronavirus/>
- Yang, M., & Zhou, J. (2021). The impact of COVID-19 on the housing market: Evidence from the Yangtze river delta region in China. *Applied Economics Letters*. Advance online publication. doi:10.1080/13504851.2020.1869159
- Yap, J. B. H., & Ng, X. H. (2018). Housing affordability in Malaysia: Perception, price range, influencing factors and policies. *International Journal of Housing Markets and Analysis*, 11(3), 476-497.
- Yörük, B. K. (2020). *Early effects of the COVID-19 pandemic on housing market in the United States* (CESifo Working Paper No. 8333). Munich: Center for Economic Studies and Ifo Institute.
- Zhao, Y. (2020, September 25). *US housing market during COVID-19: Aggregate and distributional evidence* (IMF Working Paper WP/20/212). Washington, DC: International Monetary Fund. Retrieved from <https://www.elibrary.imf.org/view/journals/001/2020/212/article-A001-en.xml>
- Zivin, J. S. G., Liao, Y., & Panassié, Y. (2020, July). *How hurricanes sweep up housing markets: Evidence from Florida* [NBER Working Paper No. 27542]. Retrieved from https://www.nber.org/system/files/working_papers/w27542/w27542.pdf

APPENDIX

Table 1 Summary of empirical studies on impact of COVID-19 on housing market

S/No	Author(s)	Location	Focus	Results/Findings	Impacts (+/-)
1	Allen-Coghlan and McQuinn (2021)	Ireland	How COVID-19 impacted the Irish housing sector	Due to the pandemic, the Irish house prices were predicted to fall over the next 18 months	-
2	Allen-Coghlan et al. (2020)	Ireland	The impacts of COVID-19 on Irish property market	An increase in the imbalance between the supply and demand for properties in the Irish market	-
3	Alsharef et al. (2021)	United States	The United States construction industry and the early impacts of COVID-19 pandemic	Construction work witnessed a huge delay on ongoing projects, inadequate supply of materials, reduced rate of productivity, an upward surge in material price, cash-flow issues, and delay the grant of a permit	-
4	An et al. (2021)	United States	Household well-being and the COVID-19 rental eviction	The US government eviction moratoria intervention during COVID-19 for defaulting household rent reduces evictions which resulted in the redirection of scarce finances to pressing consumption needs including food and groceries	+
5	Apergis (2021)	Unspecified	The housing market, monetary policy, and COVID-19 pandemic	The effects of a monetary expansion are smaller than in a regime of low house prices during the ongoing COVID-19 crisis	-
6	Arcaya et al. (2020)	Massachusetts, United States	Rising home values and COVID-19 case rates in Massachusetts	A high record of COVID-19 cases increases housing prices	+/-
7	Avakyan and Pratsko (2020)	Russia	Coronavirus pandemic impact on the Russian real estate market	The housing sector witnessed a shift from the norm as stakeholders and participants in the housing market now make use of technologies against the traditional physical contact with a structure before the transaction	-/+
8	Benfer et al. (2021)	United States	The spread of COVID-19: Health inequity and eviction	There is evidence of unemployment and severe economic hardship on housing neighbourhoods, particularly the rental housing and the low income coloured population	-
9	Boshoff (2020)	South Africa	How COVID-19 affected the property sector	There is a significant increase in litigation resulting from inability to meet contract agreements during this pandemic	-
10	Centre for Affordable Housing Finance in Africa (2020)	Cape Town, South Africa	Cape Town Housing Market Report – 2020	In a bid to reduce the loss on an investment, some sellers had to take their property off the market, reducing the available housing stock opening up a sharp decline in the supply of residential housing units	-
11	Christie et al. (2020)	United Kingdom, Canada and Australia	The likely emergency, stimulus and longer-term/recovery implications of COVID-19 effects on mortgage and housing markets	A sharp fall in house price resulting from the furlough of over 6 million employees insinuates that investors and landlords face difficulties in mortgage return maintenance	-
12	Del Giudice et al. (2020)	Campania Region, Italy	The short and mid-run effects COVID-19 on the housing prices in Campania region of Italy	As a result of the global pandemic, there is a drop of about 5% and 6.5% in the short and long run of the housing prices	-
13	De Toro et al. (2021)	Naples, Italy	The COVID-19 pandemic and the real estate market responses	There is a negative structural shift in residential property demand in metropolitan areas resulting from the requirement of the ongoing pandemic coupled with the prevailing bottlenecks in obtaining a mortgage	-

14	Delgado and Katafuchi (2020)	Japan	The housing market and state of emergency in the face of COVID-19	The short-term shocks of the COVID-19 does not affect the long-term housing consumption	+
15	Evans et al. (2020)	Sydney and Melbourne, Australia	The rental market and COVID-19	COVID-19 has disproportionately affected the households most likely to rent – young, inner-suburban workers, international students and new migrants resulting from the travel ban	-
16	Francke and Korevaar (2021)	Amsterdam and Paris	Housing markets in a pandemic: Evidence from historical outbreaks	The temporal increase in housing risk premia caused by growing uncertainty and economic disruption from pandemics like COVID-19 results in large housing price reduction	-
17	He et al. (2020)	Europe and Asia	Shock in the real estate stocks during the COVID-19 pandemic	The restrictions put in place to curb the pandemic spread led to an unforeseen shock in real estate stocks	-
18	Hoesli and Malle (2021)	Unspecified	Commercial real estate prices and COVID-19	Hospitality and related properties are negatively impacted with huge rental income decrease resulting from the lockdown. In the long run valuation of the property will largely depend on its type and location	-
19	Hu et al. (2021)	Australia	Housing prices in Australia during COVID-19	There are drops in the daily housing returns due to the increase in COVID-19 reported cases	-
20	Jones and Grigsby-Toussaint (2020)	United States	COVID-19 pandemic and the residential housing stability	The rent-burdened populace; mostly in the segregated communities reallocated funds meant for housing to urgent issues like feeding, medications leading to reduced housing demand	-
21	Kadi et al. (2020)	Vienna, Graz, Innsbruck and Salzburg, Austria	COVID-19, housing markets and short-term rentals	The pandemic led to increased rental housing listings and furnished rental housing listings that are fairly consistent across the two observed platforms in the four cities considered	+
22	Keke et al. (2020)	Nigeria	The impact of coronavirus on the Nigerian real estate sector	Commercial and residential real estate witnessed decrease in the investment returns	-
23	Kulander and Wilhelmsson (2020)	Sweden	The determinants of housing supply for the aged during the COVID-19 pandemic	The proportion of older people in the municipality prone to the virus infection seriously influenced reported cases and death leading to a reduction in demand for housing	+/-
24	Liu and Su (2020)	United States	How the COVID-19 pandemic affected the US housing market	Cities and neighbourhoods with higher population density disproportionately experienced a decline in the demand for housing in the US during the COVID-19 pandemic	-
25	Marona and Tomal (2020)	Krakow, Poland	Housing brokers' workflow and the impact of COVID-19	The workflow of the real estate brokers has been significantly affected by the pandemic	-
26	Milcheva (2021)	Asia and United States	The relationship between real estate equities and risk-return	There is an existing difference in housing market stocks of Asia and the US with Asian real estate firms becoming negative while it was positive in the US at the early stages	+/-
27	Oyedeji (2020)	Lagos, Nigeria	The impact of COVID-19 on real estate transaction in Lagos, Nigeria	The rate of real estate transactions during COVID-19 is static and experienced no growth owing to restrictions on movement	+/-
28	Özen (2020)	Turkey	Effects of interest applications in the COVID-19 period on the housing market and individuals' housing investment decisions	Investors find it hard to make a profit on mortgage loans and were unable to maintain the mortgage return, resulting in a low correlation between interest rate and cash sales, but there is a high correlation between interest rate and mortgage sales	-
29	Pfeifer and Steurer (2020)	London and Vienna	Early real estate indicators: A tale of two cities	Least-price indicators tend to lose their predictive power during economic upheaval like the ongoing COVID-19	+/-

30	Pomeroy (2020)	Ottawa, Canada	Exploring how the COVID-19 pandemic may impact Ottawa's rental housing market	The absence of students from school reduces demand for the rental market ensuing loss of 10,000 reductions in the Ottawa housing market as a result of the lockdown thereby reducing income via job loss	-
31	Qian et al. (2021)	China	The impact of COVID-19 on housing price	Higher infected regions with poor medical conditions has more impact on housing price	-
32	Stanturf (2020)	Canada and United States	How the COVID-19 pandemic affected sustainable forest management	The lockdown led producers to reduce the output of lumber production as it cannot be done remotely while the meagre production was unable to meet the requests for home repair and renovation activity leading to delay in housing construction	-
33	Tanrıvermiş (2020)	Turkey	The real estate sector and possible impacts of COVID-19	Planning and construction decisions were predicted to change due the impact of the coronavirus pandemic	+/-
34	Olanrele and Thontteh (2020)	Nigeria	COVID-19 and the 'new normal': Implications for the Nigerian real estate sector	Hospitality and other related properties suffered negative patronage as all social gatherings, seminars, conferences and symposiums have been converted to hold online	-
35	Uchegara et al. (2020)	Nigeria	The real estate supply chain and risk management during COVID-19	COVID-19 restrictions alter the tenants' liquidity and value in the Nigeria real estate market	-
36	Verhaeghe and Ghekiere (2021)	Belgium	The impact of the COVID-19 pandemic on ethnic discrimination in the housing market	There is a drop in the demand for housing due to ethnic discrimination during the pandemic	-
37	Verma and Husain (2020)	Canada	The resilience and strength of the new housing market during the pandemic	The lockdown which made people spend more time at home amplified buyers' interest in suburban areas, closer to large urban centres leading to increased housing prices	+
38	Wang (2021)	United States	The COVID-19 impact on housing prices	Locations with better amenities witness increased housing price	+
39	Yang and Zhou (2021)	Yangtze, China	How COVID-19 impacted Yangtze river delta region's housing market	As a result of the stay-at-home policy, the region witnessed a positive housing price compared to the pandemic's re-emergence	+
40	Yörük (2020)	United States	Early effects of the COVID-19 pandemic on the housing market in the United States	The recorded cases and deaths from COVID-19 plays a significant role in the availability of home listing as it decreases significantly with some housing market dropping by 60%	-