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**WHAT IMPACT HAD THE COVID-19 ON THE INTERNAL MIGRATION AND THE
REAL ESTATE PRICES?**

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ABSTRACT

The pandemic of COVID-19 has affected the lifestyles of the people all around the world, leading to tremendous shifts in various sectors (economic, social, environmental...). These shifts occurred due to the regulations imposed by the governments through the lockdowns implemented all over many countries in the world during the pandemic, in order to limit the people's mobility and to prevent the spread of the virus. In response, most of the industries (education, construction, financial, food services...) has introduced the teleworking as a way to persevere their work during this pandemic. Therefore, the requisites of a home have changed to accommodate for more activities and functions, demanding for bigger houses. Many people now have the flexibility and the opportunity to live far from cities, in less crowded places closer to nature, which became one of the drivers to the urban-rural migration. Hence, new decision-making of individual's location and new housing demands in the property market have arisen in the countryside, suburban and rural areas which led to the changes in the real estate prices. The aim of this study is to understand the impact that COVID-19 had on this internal migration and on the real estate prices from 2020 until the end of 2021. By using a descriptive case study methodology, this study analyzes and compares the eleven case studies the regions of Ile-de-France, Greater London, New York City, Hangzhou, Greater Tokyo, Greater Los Angeles, Cracow, New South Wales, Metropolitan Area of Naples, Montreal and Tbilisi, to validate the presumed context. These eleven regions show that due to the pandemic that led to the internal migration together with the high demand on properties in the countryside and the policies implemented by the governments, the real estate prices in the metropolitan areas have decreased in opposite to the prices in the rural and suburban areas that have increased in some cases, in others the prices have decreased or increased all over the region. This variation in prices imposes a question on the role of cities in the future and how governments together with architects and urban planners can prevent future pandemic driven fallouts in the real estate market, by shedding the light on the rural areas and countryside that were once marginal.

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INTRODUCTION

The concentration of the world's population in cities is unprecedented (The World Bank, 2019), which frequently has unfavorable effects like growing environmental footprints (Lenzen et al., 2012) and lowered well-being of city dwellers (Cramer et al., 2004). In February and March of 2020, the emergence of the 2019 outbreak of severe acute respiratory syndrome coronavirus disease (COVID-19), has highlighted how precarious and vulnerable urban life is in highly populated places (Rocklov and Sjodin, 2020), by turning large cities all over the world into the first epicenters of infection. (Pomeroy & Chainey, 2020). Since in large cities, COVID-19 cases tend to cluster because of high population density, intense air connectivity, and spatial concentrations of jobs involving the public (Florida et al., 2021). Due to these circumstances and connections, COVID-19 was more easily transmitted within communities and was disseminated geographically (Brandén et al., 2020).

Therefore, most of the governments had applied strict rules and regulations all over the world to put some restraint and to lower the spread of the virus. (IOM, 2020) These strict rules were mainly imposed through the major lockdown of cities, towns, and villages that caused a significant detrimental disruption to the human mobility systems of countries, restricting international travel and local daily mobility patterns. (Guadagno, 2020)

The business closures and social isolation policies eliminated the dynamism of urban life and social interaction, and many people were forced into unemployment. (Honey-Rosés et al., 2020). Hence, many companies and services have implemented the teleworking as a way to presume their work in order to prevent future losses. The implementation of teleworking made it less necessary to commute frequently and to live

closer to the place of work. These modifications are thought to have decreased ties to large cities in favor of more spacious, affordable, and sparsely populated residential areas during the outbreak, or the need to seek shelter in family homes (Florida et al., 2021).

Therefore, COVID-19 pandemic led to a shift in urban workers' perspectives due to the heightened risk of infection in densely populated cities as well as the quick and broad acceptance of teleworking in society. Many people stated a preference for residing and working in rural areas where they could continue to do their regular jobs without running the danger of contracting an infection and achieve a higher standard of living (Cabinet Office, 2020). The three biggest obstacles that potential migrants must overcome to carry out their movement plans are often employment, housing, and local community connections in the destinations (Odagiri and Tsutsui, 2016). Changing lifestyle preferences and mobility of employment are anticipated to encourage more urban residents to relocate to rural areas. Consequently, it is alleged that COVID-19 encouraged people to move from large cities to rural areas, suburbs, and smaller cities. (Hughes, 2020)

This internal migration from urban-to-rural areas, had many consequences on the real estate market prices. People's priorities in choosing where to live and in which type of residents have changed. The latter is due to the pandemic that has caused changes that have made it possible for non-work-related factors to take center stage in the choice of a home (Hernández-Morales et al., 2020; Nathan & Overman, 2020).

In addition to the already-existing urban pressures from crime, housing affordability, and air pollution, residents of big cities were confined to cramped living quarters with little room for remote work and homeschooling, as well as other daily activities during lockdowns: they were feeling the pressure to leave cities in search of more room and reasonably priced property. (Marsh, 2020) Hence, after the lockdown

people were choosing to move to bigger houses with more open spaces and bigger rooms to accommodate the various activities from work from home to gym and entertainment. These new demands in the real estate market had led the prices of the properties to alter in the rural areas and in the metropolitan areas. In some cases we will see that the real estate prices in the metropolitan areas have decreased in opposite to the prices in the rural and suburban areas that have increased in some cases, in others the prices have decreased or increased all over the region.

The aim of this article is to highlight the impacts that the COVID-19 had on the internal migration and on the shifts in the real estate prices during the years 2020 and 2021. It will analyze the eleven regions case studies of Ile-de-France, Greater London, New York city, Hangzhou, Greater Tokyo, Greater Los Angeles, Cracow, New South Wales, Metropolitan Area of Naples, Montreal and Tbilisi in order to answer the following questions: What impact had the COVID-19 pandemic on the real estate prices? What impact had the COVID-19 pandemic on the internal migration? How did the decision-making of individual's location shift due to the pandemic? What are the emerging trends in the real estate post-pandemic?

LITERATURE REVIEW

1. Historical Outbreaks and Cities

The recent pandemic of Covid-19 serves as a reminder of how closely connected are the historical outbreaks and the history of cities. Throughout history, several outbreaks have had an impact on not just the healthcare disciplines, but also on urban and city planning.

From the Plague of Athens in 430 BC, the oldest known virus outbreak ever documented, to the Black Death epidemic in Europe in the 14th century, the cruelest outbreak ever captured, had a massive effect on and changed the configuration of cities for a wholesome one. Moreover, the quarantine idea was initially used during the Black Death plague pandemic in the 14th century, and the name "quarantine" is derived from the Italian "quaranta giorni," which means "forty days." (Routley, 2020) Larger public areas were introduced as a result of the Black Death pandemic in European cities to foster a stronger connection with greenery and a sense of community. (Mahoney and Nardo, 2016)

An outbreak of cholera at the beginning of the 19th century had no apparent explanation, until a London doctor by the name of John Snow studied two extremely comparable social and economic regions in London in 1854. However, one had more cholera infections than another; this was an enormous distinction, and the disparity in their water sources gave rise to the theory that cholera might be spread through water supplies. Following this, numerous research was conducted, and they were ultimately able to support the idea and provide an explanation for why mixing potable water with wastewater is one of the primary causes of cholera outbreaks and how to separate the two. (Hays, 2005) Additionally, the spread of cholera and yellow fever led to significant changes in city infrastructure, such as the development of waste infrastructure and the

replacement of flagstone roadways with paved surfaces that are easier to clean. (Carr,2020) These deadly pandemics have had some positive impacts on the urban planning and cities in general, each outbreak has served as an example and a lesson for the second one by implementing new strategical plans that might have lowered those impacts, and that have shaped the cities.

These impacts served as lessons, although they are frequently artfully concealed in plenty of other urban debates. Many nations adopted substantial urban planning and landscape architectural initiatives after extended times of industrialization, civil war, city fires or earthquakes, and epidemics that caused considerable human mortality in order to revitalize their cities and improve the quality of living of their population. (Allam and Jones, 2020) All of these historical occurrences have demonstrated that outbreaks were critical in enhancing urban planning and creating healthier communities to control the spread of sickness. However, the idea of urbanization, which gained popularity during 1870 and 1914 with the industrial revolution, is significant since cities grew crowded with people, big residential buildings, and public transit. Pandemics might quickly extend in these incredibly populated areas. Spanish influenza, which killed more people than the First World War in 1918, hampered urban development and restricted social sector. (Crosby, 2003)

Moreover, pandemics became more likely as populations grew more urbanized and developed, building cities and establishing trade routes to connect them. Precautions are required during outbreaks that have an impact on cities, particularly respiratory epidemics. The initiatives emphasize the value of seclusion and the closure of public areas to limit the risk of transmission. Urban neighborhoods and common spaces are depicted as being deserted as a result. Accordingly, to cooperate among community wellbeing behavior and cultural contact in the city when the pandemics are over, a change in the

city's form is required. (Eltarabily and Elghezanwy, 2020) Urban areas and cities have continually been generated by pandemics since the beginning of civilization. Millions of people have lost their lives as a result of those pandemics, which have struck and afflicted the entire planet. (Routley, 2020)

Therefore, the urban and city planning are mandatory until this very moment in order to face and protect our cities and real estate markets from the impacts of COVID-19 that made a huge shift in our lifestyle and desires. In the following sections the Covid-19 pandemic and its effects on cities, different sectors and the real estate market will be discussed.

2. COVID-19 and Urban Density

The most recent outbreak that hit the entire world was the Coronavirus. Two significant coronavirus-based pandemics, including the Middle East respiratory syndrome (MERS) and severe acute respiratory syndrome (SARS), have emerged throughout the past 20 years. The first instance of a brand-new virus known as severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) was discovered in Wuhan, China, in December 2019. A brand-new beta coronavirus was discovered in January 2020, and the illness has been given the name Covid-19. In January 2020, it was deemed a global public health crisis. By March 2020, it had spread to each nation, with more than 2.3 million confirmed cases and more than 160 000 fatalities. (Cevik, 2020) This virus's effects can vary from minor (or nonexistent) symptoms to serious conditions, and occasionally even mortality. Additional information revealed that approximately 80% of individuals have mild disease, 20% require hospital admission, and nearly 5% require admission to critical care units. (TNCPERE, 2020) Covid-19 is marked by ease of transference from person to person, from animals to people, as well as through intimate

contact between humans mostly through droplets. (Zhao et al., 2020) In contrast to other pandemics, COVID-19 seems to rapidly spread across human societies. (Blau and Elvery, 2020) That fast transmission was the reason behind the governments imposing quarantines and new regulations for social distancing and travel control that lasted even longer in highly populated areas. (Sharifi & Khavarian-Garmsir, 2020; Wilder-Smith & Freedman, 2020) Considering the number of nations interconnected by the global economy, forming a global urban network under the name of globalization in the 21st century, this epidemic opens a new era in the history of contagious diseases by illuminating how swiftly infections can travel over the globe. (Frankema & Tworek, 2020) Hence, a rise in Covid-19 infections may result from increased contact, exposure, and interpersonal interactions that are associated with increasing urban densities (Jamshidi et al. 2020).

Urban density and the COVID-19 outbreak are topics of rising discussion in scholarly debates. (Caron, 2020) In order to discuss the impact of urban density on the spread of Covid-19, Teller (2021) defined urban density as the number of people per square kilometer, he emphasized as well on the fact that the connectivity within the urban settlement should be taken into consideration. Because some settlements can be very dense but not well connected internally and externally. (Teller, 2021) Thus, neglecting external connectivity (that often serve to connect the denser and larger cities between each other) as a distinct element could result in underestimations and a focus placed too heavily on the urban density aspect. (Hamidi et al., 2020) The romantic notion of a "bounded metropolis," which would be manageable by its inherent features, is in some way fostered by a focus on urban density. (Teller, 2021) The experience with Covid-19, and more generally urban health, rather invites one to confront the unbounded and topological structure of the modern city (Connolly et al. 2021), taking interconnections

between cities as well as along the continuum between urban and rural life into consideration. (Azevedo et al. 2020) High-density cities and urban regions, which have often been hailed for stimulating creativity and productivity and improving efficiency, are now causing a concern that they may be contributing to the spreading of COVID-19. (Boterman, 2020; Hamidi, Sabouri, & Ewing, 2020; Hua et al., 2021; Megahed & Ghoneim, 2020). Questions about the benefits of dense urban environments have been revived as a consequence of the coronavirus pandemic. Numerous initiatives to increase urban density were made during the last few decades in an attempt to improve efficiencies and combat climate change (Burton et al., 2003; Stevenson et al., 2016). Given the likelihood that density could act as a causal factor of facilitating the transmission of diseases like the COVID-19, the latest outbreak has casted doubts about the viability of such initiatives (Cordes & Castro, 2020).

Furthermore, since cities are agglomeration hubs for socioeconomic links between people, goods, and services, urban activities are not restricted to the city limits or a specific spatial domain. A city's or region's increased connections can raise the likelihood of viral infections. (Cave et. Al., 2020) Numerous studies have found that because high-density residential settlements contain more residents per square foot, there are more intimate social interactions, which can speed up the spread of viruses (Ren et al., 2020; You, Wu, & Guo, 2020). Among the studies that highlighted the link between the urban density and the Covid-19 was the study done by Nguimkeu and Tadadjeu (2021) who reported that population density, together with elements like the rate of urbanization and the fraction of people aged 65 and older, are key elements that can demonstrate why the amount of COVID-19 cases varies throughout nations in their analysis of demographic and geographic factors in 182 countries. Another study was conducted by Ren et Al. (2020), in which it was proven that in Beijing and Guangzhou, the Covid-19 infection

zones were concentrated in areas with greater population densities. Moreover, using information from 351 Massachusetts towns and cities, Wheaton and Kinsella Thompson (2020) conducted a cross-sectional analysis of the per capita infection rate. They discover that the occurrence of the virus is positively impacted by population density in a way that is statistically and economically meaningful.

However, as the present COVID-19 outbreak has shown, these urban areas are essentially powerless when a rare virus outbreak occurs. Millions of people who reside in crowded metropolitan areas, either in developed or rich nations, face numerous threats from an epidemic. These cities' extreme urbanization creates a perfect setting for illnesses to spread quickly. (Desai, 2020) Urban planners, architects, legislators, and officials must take notice of the accelerated COVID-19 viral transmission and the mortality amount observed in hyper-dense megacities around the globe. They must also rethink their long-held notion that larger cities are superior to less dense ones. (Simon,2020) It is necessary to reconsider how the general "sustainability" characteristic of densities turns, in the presence of biological disasters of the degree of seriousness of COVID-19, not only unproductive but also mortal. (Desai,2020)

3. Concepts and Approaches of Migration

Migration has emerged as one of the primary causes of demographic shifts, influencing patterns of human settlement respectively across and among countries, as fertility and mortality settle (Bell et al., 2015). Braj Raj Kmar Sinha (2005) have analyzed the different concepts and approaches of migration, based on the study of different scholars from the 20th century, such as Eisenstadt, Goldscheider, Ginn, Matzke... He ended up defining migration as the universal process of moving a person or a group of people from one area or place of residence (referred to as the origin place) to another (referred

to as the destination point), which is determined by any type of generally accepted geographic, political, or administrative boundary in space and time. Spatial or territorial movement is referred to as the move between the specified origin and destination locations. A mover seeks alteration in his or her domicile by such territorial or geographical migration, which could be temporary, semi-permanent, or permanent. These movers are commonly encountered living in a home (whether it is their own or one they rent), working (in the case of those who are employed), sharing or consuming the resources of the area they entered (in the case of those who are employed and those who are not), at a specific time period of estimation. (Sinha, 2005) Moreover, migration depicts and emphasizes potentially controversial equality in living standards and employment prospects, which is plainly tied to variations in social and economic circumstances. (Chapman, 1979)

To classify migration, the spatial approach is one way to do so. (Sinha,2005) Hence, the migration is typically divided into categories based on the types of political borders, such as county, state, and international borders, as well as the origin and destination locations. But the key contrast is between national and international migration. (Weeks, 1989) Newman, J.L. and Matzke, G.E. (1984), Ghosh, B.N. (1987), Chandna, R.C. (1998), and Raj, H. (1981) additionally have considered as national or internal migrations, the political borders, such as the village boundary, central business districts boundary, district boundary, state boundary, and have taken into consideration the national boundary or international border, for international or external migration. National or internal migration occurs when people move within a nation by crossing a village, district, or state border, and the people involved are referred to as in-migrants and out-migrants. International migration occurs when migrants cross international borders. These migrants are also referred to as immigrants and emigrants. Hence,

internal migration is the main factor transferring the population across subnational borders, along with international migration (Bell et al., 2015).

Under the category of the internal migration and based on the rural-urban nature of the area the migration is categorized as rural to rural, rural to urban, urban to rural and urban to urban. The territorial diversity or regional differences in resource accessibility in the spatial frame cause migration. The demographic distribution and redistribution result from this. Not every region has the same resources and values available to it. This circumstance results in differences in the levels of improvement of the regions, and as a result, various regions can be found at various stages of development: "Depending upon such difference in the levels of development regions can be categorized as depressed / disadvantaged / deprived / undeveloped or vulnerable and affluent / advantaged / developed / prosperous or progressive. "(Sinha, 2005)

According to Cottey, W.J. (1981) the most common form of migration is the rural to urban in which the volume of movement diminishes with distance between the source (place of origin) and the center, this migration movement typically tends to be toward densely populated centers (destination place). People travel because of the diverse regional aspects and rural-urban nature (caused by the processes of modernization and traditionalism). The area's particularly rural and urban characteristics have a greater impact on people's ability to move about from place to place. The majority of people in developing countries reside in rural areas, where the quality of life is worse. Consequently, the plurality of migration in most developing countries is from rural to urban areas. (Sinha, 2005) This tendency of people moving from rural to urban areas is due to several factors: Pull factors influence an individual or draw them closer to a location, these factors are present by their positive, favorable, or motivating aspects or

traits. In contrast, push factors pressure or repel a person to move somewhere, or more specifically to the place where the pull factors for such person do exist. This second category of factors are negative, unfavorable, or discouraging traits or forces discovered functioning at a place. However, the reality is that both the push and pull factors exist or occur at the location of a migrant's origin and destination at the same time. (Sinha, 2005) According to Bogue (1969), when there are more positive (encouraging) pull factors at the destination than there are negative (discouraging) push ones at the source, migration often occurs. In the case of rural to urban migration, the movement's orientation and severity rely not only on the miles traveled, but on the larger pull factors of the city due to employment and salary opportunities, as well as the push factors provided by the countryside due to its limited resources. (Bhat et. Al., 1980)

Moreover, in the 1960's the pattern of urban to rural migration was first noted in the developed countries of Europe and North America. (Fielding, 1982; Fuguitt et. Al., 1978; Gordon, 1979). In order to describe the characteristics and goals of these migrants, geographers and demographers used terms with fractionally alternate meanings, including such "counter urbanization, deurbanization, or rural rebound, lifestyle migration, amenity migration, or back-to-the-landers" (Benson and O'Reilly, 2016; Gosnell and Abrams, 2011). In specific, migration trends away from urban hubs and in the direction of their peripheries or farther-off rural areas are explained by counter urbanization. Amenity migration states that a superior quality of life in rural areas "pulls" migrants from urban areas, whereas lifestyle migrants want to improve their lifestyle and reestablish their identities through migrating (McIntyre, 2009).

However, according to Ghosh (1985), migration is more than just moving people from one location to another. It is a key basis for altering population composition and

greatly aids in comprehending the spatial content and relationships of any given region. In a spatial context, in-migration and out-migration affect the places of origin and destination of migrants, while in a non-spatial framework, their health, education, profits, ways of living, psychological motivations, socio-economic profiles, demographic characteristics, and environmental components alter. Both in-migration and out-migration have a significant role in the spread of culture and the alteration of spatial opportunity patterns. Migration patterns can sometimes improve situations and other times have the opposite effect. In a larger sense, the effects of migration typically relate to issues of ethnicity, religion, social class, culture, economy, politics, and the environment. (Dingle and Drake, 2007)

Other than the spatial approach, there is the approach of migration that is based on the decision-making. It is recognized as an enforced or an induced migration (when the migrants have no option as to either they leave or remain), is considered as well as voluntary or free migration (typically for better quality of life reasons) and it is an impelled migration (when they maintain some power of decision): “The core concept of movement lies in the attitude, interest, choice and desire of the movers.” (Sinha, 2005) According to Fernie, J. and Pitkethly, A.S. (1985) the forced migration is mainly induced by political reasons such as wars, by natural reasons such as floods and earthquakes and by pandemics.

The Black Death serves as an example for the latter, where in the mid-1300s, many people fled to the countryside to prevent themselves from the spread of the disease as cities turned into death traps. (Clark and Cummins, 2009)

The focus of this study will be discussed in the following section on the urban to rural migration caused by the pandemic of COVID-19.

3.1. COVID-19 and Urban-Rural Migration

As COVID extended over the globe and people learned about its intensity, dread and stress increased, making it necessary to limit personal interaction and stay away from congested areas. Large cities around the world became the first epicenters of infection (Pomeroy & Chainey, 2020). Since, densely populated areas, intense air connections, and a geographic concentrated jobs involving the public, all contributed to the concentration of COVID-19 cases in big cities. (Florida et al., 2021). It was stated that around 95% of all illnesses and fatalities documented up through November 2020 happened in urban areas. (Pomeroy & Chainey, 2020). Therefore, people have started moving from urban to rural areas (also known as urban-rural migration, urban-rural movements, or reverse movements) as a result of the 2019 pandemic of coronavirus disease (COVID-19) and as a result of the realization that a globalized world is now exposed to the threats of future outbreaks. (Chigbu et. al., 2021) It started early on in the pandemic, when reports of an "urban exodus," and many debates about whether this trend would continue after COVID 19 were carried out. (e.g., Marsh, 2020; Nathan & Overman, 2020). In addition to growing anecdotal evidence that stated that citizens of large cities relocated to second homes, vacation towns, suburbs, and other smaller towns.(e.g., Hughes, 2020; Marsh, 2020; Paybarah et al., 2020).

Several studies over many countries have shown through a variety of data that these flows of migration were true. For instance, the data derived from the Australian Bureau of Statistics had proven that during the month of September in 2020, 11 thousands of people have moved out from the capital cities of Australia. (Davies, 2021) Other data related to the United Kingdom, portrayed that the number of internet queries from people based in the ten major cities who were looking for properties in the villages,

has increased by 126% in June-July 2020 compared to the same time in 2019 (Marsh, 2020). According to the study done by Sagnard in 2021, France has seen its inhabitants of cities relocating to smaller towns or villages, this relocation was associated with a rise in transactions involving real estate outside of cities. In addition, according to preliminary data from Sweden, most people who left large cities during the epidemic migrated to their suburbs rather than to smaller, more rural cities and towns, (Vogiazides & Kawalerowicz, 2022), while some urban inhabitants also relocated to nearby neighborhoods, second homes, vacation spots, and other cities. (Quealy, 2020). Another case study was about Spain, in which the COVID-19 pandemic in 2020 caused abrupt changes in internal movement patterns throughout the Spanish urban hierarchy. Internal movement caused a population decline in main cities, as outmigration rose by 6% and in-migration fell by 15.4% (Gonzalez-Leonardo et al., 2022). The net migration balance was positive in rural regions due to a 12.6% decline in outmigration and a 20.6% rise in in-migration. Small variations were noticed in towns and suburbs alike. (Gonzalez-Leonardo et al., 2022). The demographic structure of cities was very slightly affected by these net migration outcomes, but the local populations of sparsely inhabited rural areas were significantly increased. Despite these alterations, the majority of migrant movements still take place between distinct urban areas or between core cities and suburbs. (Gonzalez-Leonardo et al., 2022)

Tokyo was also among the cities that have witnessed the outward migrations toward more remote rural areas such as Nagano a mountainous, close to nature region that hosts the Tokyoites second properties, it is located to the west of Tokyo, considered distant but well connected to the metropolitan city. Other rural destinations sought after by the Tokyoites were Tottori, Shimane and Kochi in the western area of Japan. (Fielding and Ishikawa,2021). In an article conducted by Fielding, T. and Ishikawa, Y. (2021), in

which they were examining the correlation between net migration and (log) population density for 2019 and 2020, as illustrated in Figure 1, as an approach to summarize these changes in migration. The regression line's slope has changed; it is noticeably lower in 2020 than in 2019. This indicates that the epidemic has damaged Japan's "one-point concentration," which has benefited the country's less populous regions, which are renowned for their population decline during the past 70 years.

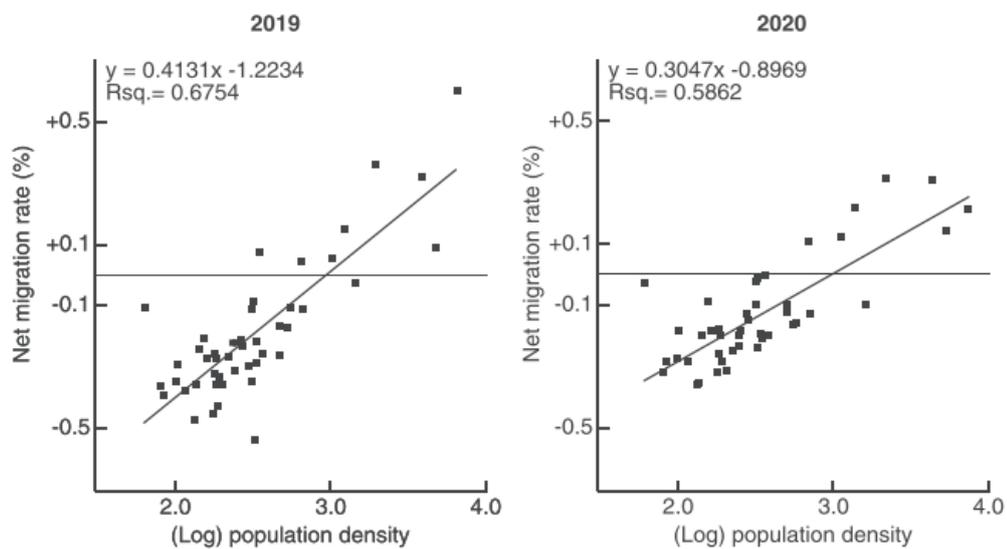


Figure 1: JAPAN - the relationship between net migration balance and (log) population density in 2019 and 2020 (Fielding and Ishikawa, 2021).

In a study on the demand for density, Sitian Liu and Yichen Su found that there was a decline in demand for more central and populous neighborhoods by looking at the United States' housing market. By examining home inventory, House Price Index (HPI) and rent within and across Metropolitan Statistical Areas (MSA) in 2020 (Figure 2), the authors found that home inventory had grown in central and populated areas, in addition to a surge in housing prices as well as rent in the suburbs and farther areas.

This clearly indicates that a migration occurred from urban to suburban and even rural areas. The authors state that the cause of this shift is due to a decrease in demand

for more expensive and central homes as well as a decline for consumption amenities due to the accessibility of a bigger and more diverse market through the Internet.

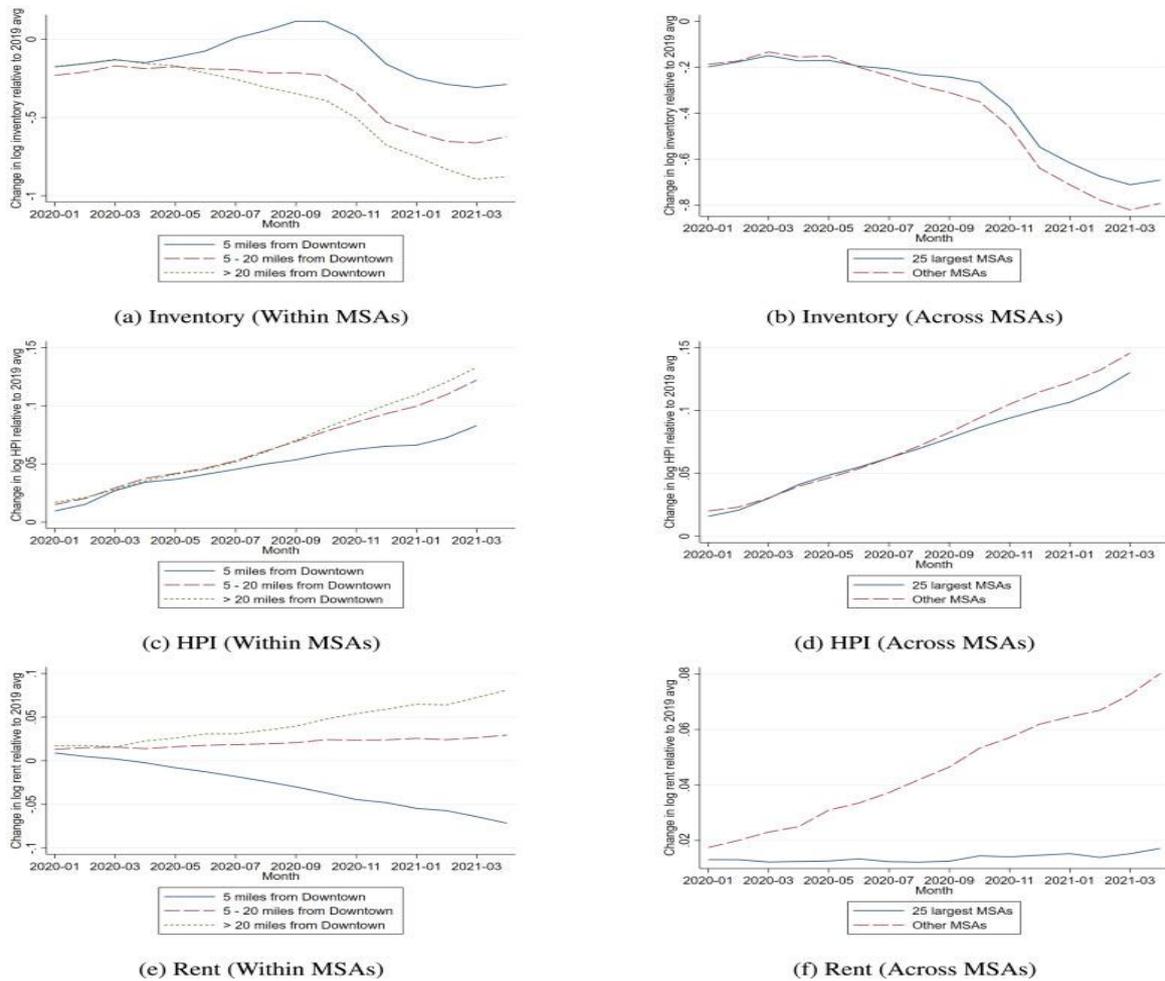


Figure 2: Shift in housing demand within and across MSAs graph (from: Sitian Liu and Yichen Su, 2021)

In another study, Arjun Ramani and Nicholas Bloom, measured “real estate rents and prices using data from the Zillow Group and migration patterns using the NationalChange-Of-Address (NCOA) dataset from the United States Postal Service (USPS)” (Ramani & Bloom, 2021) and concluded that a pattern of migration from cities to their outskirts occurred. The authors noted a “hollowing effect”, coined as the “donut effect” (Figure 3), where rental rates as well house prices in central districts of large cities had fallen in favor of lower density areas in the outskirts. Similar to the findings of Liu

and Su, Ramani & Bloom found some movement from large metropolitan areas to sparser ones.

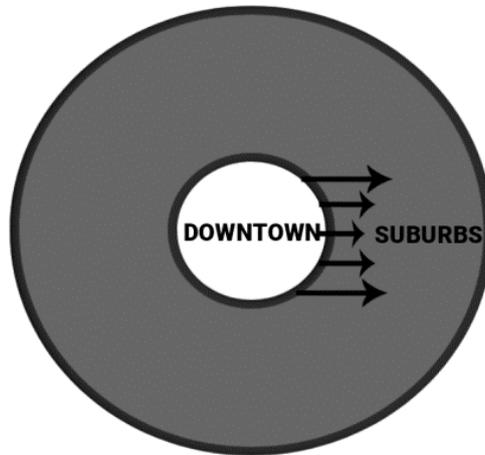


Figure 3: The Donut Effect

As all these studies have showcased, that the pre-existing national structure of the net internal migration balances does not appear to have been significantly changed by COVID-19. But it appears to have hastened migration choices that were already being made before the outbreak.(Kolko et al., 2021). The reasons behind these internal migrations influenced by the pandemic of COVID-19 will be discussed in the following section.

3.2. COVID-19 Factors Influencing Migration

As was mentioned in the previous section, people across Australia, the United Kingdom, France, Japan, the United States and many other countries have migrated from the cities to the suburbs, countryside and rural areas during the pandemic of COVID-19. In this section we will discuss the possible motives that led to these migrations. The factors influencing the migration are many factors that are overlapping and interlinking, they range from economic factors to social factors, and factors that are related to the attractiveness of a place. (Tønnessen, 2021)

Under the category of the economic factors, the pandemic had an impact on the urban economy by targeting the urban density. According to the report done by the European Commission in 2021, the COVID-19 epidemic has caused the biggest and most sudden decline in economic activity that has ever occurred over the years. This decline was mainly due to the lockdowns that were imposed by many governments during the pandemic, which shutdown every retail and industry in order to control the spread of the virus. The effects have drastically differed across business activities. Whilst sectors that promote contactless services, like ICT support or service delivery, were hardly impacted, high-contact services, such as tourism, have suffered severely.

Economic activity decline differs significantly by sector, and the sequence of sectoral effect deviates significantly from typical downturns. The much more impacted were contact-intensive services (such as Trade, transport and accommodation, and arts, entertainment and other service activities), which are often not super vulnerable to the state of the economy. As seen in Figure 4, Activity in these industries was 25% lower pre-COVID-19 norms at the beginning of wave's peak in the second quarter of 2020. (On another note, pro-cyclical areas like industry (-19 percent) and construction were hurt less (-15 percent). ICT, banking, and real estate, which have highly qualified people and a great potential for remote work, saw much lower (less than -10 percent) contracting.

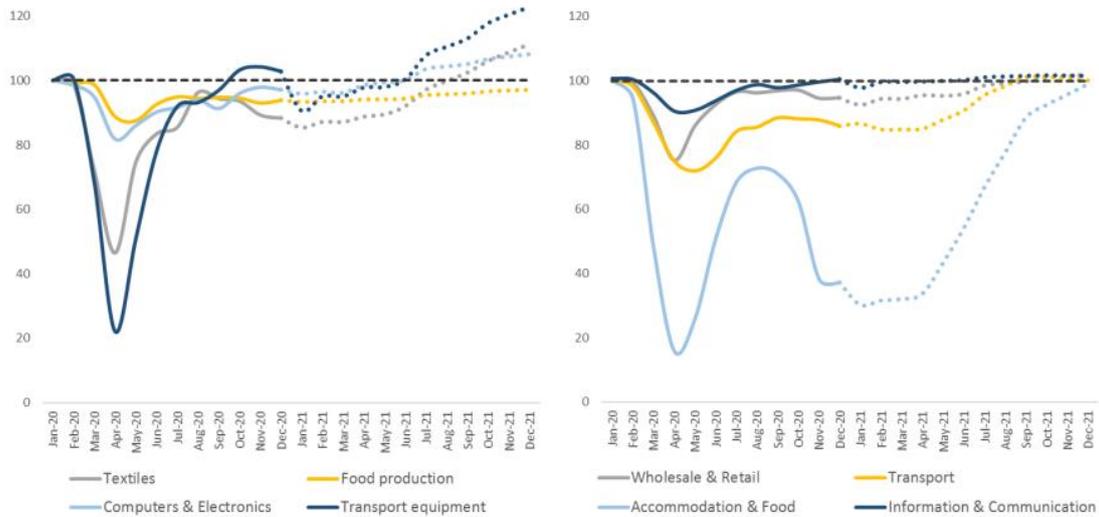


Figure 4: Observed turnover and predicted turnover of sectors- 2020-2021 (European commission,2021)

Therefore, due to the severe regulations, that resulted in the sudden decline in economic activities, many employees in the lockdown-affected industries of stores, bars, restaurants, and other businesses were either temporarily unemployed or lost their jobs altogether. (Cenar, 2021) Hence, this situation led many workers to move out from cities where the paying for expensive housing became more challenging. (Cenar, 2021) This was the case for Oslo youth whose parents resided elsewhere. They moved out from the city because of unaffordability and because they were no longer required to reside in Oslo for work. (Tønnessen, 2021)

In addition, many companies have decided to adopt the teleworking as a strategy to cope with the lockdown and business shutdowns. (Honey-Rosés et al., 2020) Hence, people's opinions and interests surrounding their balance between work and life changed as teleworking became more widespread during the height of the pandemic. It showed that there were alternatives to the time-consuming daily commute to work and that many work tasks could be completed online and remotely. (Vogiazides and Kawalerowicz,

2022) Consequently, it is legitimate to anticipate that many workplaces will alter their schedules and make part-time teleworking a regular practice. (Vogiazides and Kawalerowicz, 2022) During the post-pandemic, many public and private employers have begun to prepare for "hybrid work" (The Economist, 2021, October). Employees also support the continued use of telework. According to a Swedish Internet Foundation survey, 89% of employees who worked remotely during the pandemic would like to do so again at least occasionally in the future, and 45% stated they would like to work remotely for at least half of the time (Internetstiftelsen, 2020). Greater workplace flexibility may have a significant impact on dwelling patterns. People may be inclined to travel across longer distances if they just have to go to work two or three times per week. (Vogiazides and Kawalerowicz, 2022) This creates opportunities for relocation to suburban or peri-urban areas rather than the city center (Denham, 2021).

The emergence of teleworking has also given the house a powerful sense of significance. People's housing requirements changed as they spent more time at home for both work and leisure. (Vogiazides and Kawalerowicz, 2022) Many people wished they had more room, especially for offices. Additionally, gardens gained popularity. (Vogiazides and Kawalerowicz, 2022) The pandemic has impacted people's home preferences, according to a survey by Sweden's biggest housing search portal. People in 2021 place a higher value on home offices, floor space, and gardens compared to the year before (Hemnet, 2021). Additionally, people's awareness of their surroundings increased, and living near green spaces became more desirable (Löhmus, et al., 2021). Therefore, a rise in demand for large, detached houses outside of urban centers is likely to result from changes in residential choices brought on by the pandemic. In suburbs and rural locations, these homes are more reasonably priced. (Vogiazides and Kawalerowicz, 2022) For instance, many people in Oslo work in office settings that permit more

teleworking, it is now simpler for this group to live elsewhere than it was before the year 2020. (Tønnessen, 2021) Working from home may also necessitate a larger home. However, housing costs in Oslo are significantly higher than those in most other parts of Norway, and they increased significantly through 2020, which is likely closely linked to low interest rates. As a result, it was simpler to find larger, more affordable homes outside of the city. (Tønnessen, 2021)

Other than the economic factors influencing the urban to rural migration during the pandemic, there are the social factors that are linked as well to the attractiveness to the rural areas. Since, the need to prevent disease in heavily crowded cities resulted in a newfound appreciation for nature and the outdoors. At the same time, cities lost some of their appeal as a result of social gathering bans and lockdowns that forced the closure of attractions for culture and recreation. There seems to have been a mass flight from inner city neighborhoods as a result of all these social problems. (Vogiazides and Kawalerowicz, 2022) Moreover, many people stated a preference for residing and working in rural areas where they could continue to do their regular jobs without running the danger of contracting an infection and achieve a higher standard of living (Cabinet Office, 2020).

Rural living is frequently compared to urban living as having a higher quality of life. The countryside, in the minds of the public, is associated with wide-open areas, a healthy environment, safety, tranquility, and chances for recreation and socialization. (Hansen & Aner, 2017). It is also due to the fact that city-style living conditions are growing less appealing as a result of rising urban settlement densities, the loss of green spaces, rising land and housing prices, rising summertime temperatures, high traffic density, high air and noise pollution, rising demand for larger housing spaces due to coronavirus restrictions, and a number of other factors. (Magel, 2019) Many families with children found out that the rural areas provide them with a healthier environment to live in.

(Chigbu et. al., 2021) Other social reasons related to family that led to the migration to the countryside are the desire for people to live closer to their family and “home”, after going through the experience of isolation and being locked alone in their apartments in the city. (Tønnessen, 2021)

All these economic and social factors in addition to factors related to the age of people deciding to migrate, were stated in a survey conducted by Cohn D (2020) among 9,654 U.S. adults from June 4 to 10 in 2020, using the Center’s American Trends Panel, that they conducted in 2020. In this survey, they found that millions of Americans had to relocate after the COVID-19 outbreak, either to move out of college dorms that closed, unsafe communities or houses they can no longer afford. Statistically speaking, around one-in-five U.S. adults (22%) were quoted saying that they either changed their residence due to the pandemic or know someone who did.

Relocating due to COVID-19 depends on the demographic age group being analyzed. Younger adults, in particular 37% of those aged between 18 to 29, responded that they moved out, or know someone who did because of the pandemic. Education was also found to be significant factors for people to move due to the pandemic. 28% of adults with a bachelor's degree responded that they moved or know someone who did, compared to 18% of those without one. Among those who moved out because of the pandemic, 18% said that the most critical reason for their relocations was financial, meaning either job losses, which amounted to 8% of the sample, or other financial issues (10%). 23% attributed the move to dorms and campuses closing. 20% wanted to be with their families. 28% wanted to move somewhere with lower risk of attaining the virus. To sum up these numbers of term of destination, 61% moved in with a family member home. 13% moved to a vacation or secondary home. 7% moved in with friends. 9% moved permanently to new homes, while the remainder chose to relocate to temporary solutions

such as hotels. As the lockdown and economic suffering continued, pandemic migrants surveyed during the fall of 2020, were more likely compared to the ones interviewed in the spring, to have moved due to financial issues and stress, and were less occupied with the risks of getting infected by the coronavirus (Cohn, 2020).

Another, statistical analysis was conducted by Yasuo Takahashi in 2021, that analyzed the motives for people migrating from cities to Hokuto, a rural area in Japan using 868 responses to a migrant's survey. The three primary categories of values associated with migration—nature, housing, and food—were identified through the study of data from the Hokuto City migrant survey. However, not all migrants shared the same values. In addition to these shared ideals, migrants between the ages of 16 and 29 prioritized finding work. The welcoming environment for raising children was valued by migrants in their 30s and 40s. No distinguishing value tendency among the migrants in their fifties was discovered. For retired migrants over 60, it was important to remain with or close to family. (Takahashi et. Al., 2021)

To sum up, the COVID-19 factors that influenced the urban to rural migration across several countries are many factors that are interconnected. The non-work-related factors have been given more weight when making decisions about where to live. (Hernández-Morales et al., 2020) In addition to the already-existing urban pressures from crime, housing affordability, and air pollution, residents of big cities were confined to cramped living quarters with little room for remote work and homeschooling, as well as other daily activities during lockdowns. Business closures and social isolation policies eliminated the dynamism of urban life and social interaction, and many people were forced into unemployment. (Blustein et al., 2020; Honey-Rosés et al., 2020) Furthermore, telework eliminated the necessity for regular commuting and for residing close to one's place of employment. These modifications are thought to have decreased ties to large

cities in favor of more spacious, affordable, and sparsely populated residential areas during the epidemic, or the need to seek shelter in family homes (Florida et al., 2021).

However, these changes are anticipated to affect household decision-making at the micro level, but they are not anticipated to dramatically impact the macro-level patterns of national population settlement and economic systems (Florida et al., 2021). Large cities are likely to continue to be desirable locations to reside because they have successfully survived prior pandemics. (Glaeser, 2020) Cities have a fundamental characteristic called agglomeration economies. Cities make it easier for talent, economic resources, consumer base, face-to-face connection, and diversity to congregate, all of which are essential for promoting innovation, creativity, and economic success (Storper & Venables, 2004). An inevitable long-term result of the pandemic will likely be new types of hybrid work (Alexander et al., 2021). Working remotely is a poor replacement for knowledge-based, high-contact jobs. While efforts are already underway to make cities more resilient to upcoming pandemics, more rural and distant locations might not have the digital infrastructure and diversity of services needed to accommodate the city residents who moved to them. (Eltarabily & Elghezanwy, 2020; Moreno et al., 2021) The lack of adequate broadband access in rural and isolated areas continues to be a major issue in the majority of the world's nations. (Chen & Wellman, 2004).

4. COVID-19 and Real Estate Market

As seen in the previous section, among the markets affected by Covid-19, was the real estate market. Before tackling the impacts of COVID-19 on this market, it is better to understand first the different parties that it involves. According to Abel Brodeur et al. (2020), the real estate and mortgage markets is thought of as a complicated network of interrelated parties that includes, households, developers, banks, and investors. The

market is additionally distinguished by a greater extent of interconnectedness as well as connections to the general macroeconomy and financial markets. (Brodeur et al., 2020)

One of the major industries, particularly in emerging nations, is the real estate market in overall and the building sector in specific. Starting at a low point growing nations are constantly in need of constructing a foundation infrastructure, creating homes, and raising standards of life. Consequently, the function of the real estate market has consistently been crucial for these nations' economies. (Ha, 2021) Various notable studies have validated the interaction across housing costs and economic expansion as reported in a study by Miller et al. (2000). According to Filotto et al. (2018), modifications in the home values and housing mortgage policies have an influence on the expansion of GDP, since soaring home values are linked to increased household spending on household service (averaging roughly 12-13% of GDP) and business investment, both of which contribute to the economic growth.

The real estate market was impacted asymmetrically by the pandemic. Relative to cities with higher COVID infections, housing districts that were significantly impacted by the epidemic saw sharp drops in property values. (Iyer and Simkins, 2020)

Because of the extended COVID-19 epidemic, numerous investors became afraid to take part in the uncertain and unstable market by investing in buying new properties as assets, which caused a severe decline in demand in the housing market. (Ha, 2021) The real estate market as well saw some effects throughout the outbreak. Due to market providers' not being able to boost supplies, the market's supply subsequently declined concurrently, precipitating a rapid decline in the market. The same as prior instances, the real estate mortgages practices in the United States were the primary reason for the economic slump in most of the world's nations and gave rise to the global financial crisis

in 2008. This demonstrates how significantly the real estate sector affects the economy. (Ha, 2021)

The current COVID-19 pandemic has paralyzed the modernized world, killing thousands of people and trapping millions of people in their houses under "lockdown." (Balemi et.al., 2021) Preliminary reports imply that prices and demands in the property market have been decreasing quickly in some severely hit cities, whereas these consequences have so far not been felt in other regions. For instance, as demand has surged in nearby suburban areas, rental costs in Manhattan have been dropping quickly. (New York Times, 2020) "As expected, prices disruption, can be due to fear from the country lockdown as workers stay home, and due to business shutdowns, quarantines, and curfews. Huge numbers of layoffs will lead to further contraction in consumer spending, which will force landlords to decrease their prices, some has already started to adapt to the new situation, and some are still offering the same normal prices, having in mind also that the market for short-term renting is slowing down massively". (Elsedawy, 2020)

Following the COVID-19 epidemic, Liu and Su (2020) examined the relationship between housing market demand and US population density. Their findings show whether a fall in demand is particularly pronounced in densely populated areas and in urban cores. As a result, the study shows that demand for density has decreased. (Liu and Su, 2020) This impact can be explained by a declining value of residing near to telework-compatible jobs and a diminishing usefulness of convenient access to consuming services. According to the scholars, these decreased motives for accepting high housing expenses go together with rising medical conditions about residing in high-density areas. Moreover, the study discovers indications of a continuing fall in housing demand in crowded locations, although the overall housing market appears to be recovering from

the trauma brought on by COVID-19. This finding implies that the dislike of packed environments might endure in the future. (Balemi et.al., 2021)

The research by Zhao (2020) also examines the housing market's rebound in depth after April 2020. The Federal Reserve's extraordinary monetary stimulus as part of COVID-19 combating efforts was documented as driving up real estate prices and housing demand. (Zhao, 2020) Zhao's analysis (2020), in contrast to Liu and Su's (2020), supports these changes in housing prices as well as the dynamics of supply and demand in rural and suburban locations.

Numerous other research supports the idea that the COVID-19 epidemic caused rent and home prices to fall in metropolitan centers while rising outside of them. According to Gupta et al. (2021), housing markets anticipate that in the years ahead, urban rent increase will outpace suburban rent rise. According to Rosenthal et al. (2021), all cities experience a large reduction in the rent premium associated with job density after the COVID-19 disruption. Hu et al. (2021) used the daily behavioral house market index for five Australian capital cities to show a low correlation among prior COVID-19 instances and everyday housing profits.

The spread of COVID-19 affected all real estate markets differently because of the diversity of this market and because of the "various transmission channels from initial macroeconomic shocks". Governments, national banks, or investors in both the public and private sectors must comprehend these disparities and their long-term effects. (Balemi et. al, 2021) Therefore, to predict the effects of COVID-19 is not easy, but one thing is for sure: if supply and demand shortages in the macroeconomy worsen, the liquidity and capital risk in the real estate markets will be more severe the longer the epidemic and lockdown orders endure (Carlsson-Szlezak et al., 2020). The future of real

estate markets is therefore not a clear-cut and describing the nature of the recovery may not be sufficient or useful. (Balemi et. al., 2021)

But the exceptionally generous amount of support from all levels of government, considerably beyond expectations, was by far the most important cause for the relative stability of the real estate markets during the pandemic. The entire amount of federal generosity, including stimulus spending and other federal government expenditures, ultimately reached \$6 trillion. Family payments made through stimulus checks and additional unemployment benefits preserved personal incomes and kept consumers from cutting back on their spending. Although at great expense to landlords of retail and apartment buildings as well as mortgage holders, households also benefited from mortgage forbearance and rent relief schemes. (Hughes et. al, 2022)

In figure 5, PWC has done a survey in 2022 of the emerging trends in real estate, in which they stated the importance of issues for real estate in 2022, from scaling them from the least to the most important issue, in other words, the factors that were highly affected in the pandemic and which influenced tremendously the real estate market. They divided the issues into three different categories. In the first category entitled economic/financial issues, the main issues affecting the real estate market were related immensely to the job and income growth that were affected by the pandemic, the qualified labor availability, capital availability and the inflation. In the second category social and political issues, the key issues were the pandemic and the housing costs and availability. Whereas in the third category real estate and development issues the construction material costs and labor costs, the construction labor availability, land costs, state and local regulations, operating costs, property taxes and transportation were all affected by the covid-19 which made them the key factors in the muting and the down turning of the real estate market.

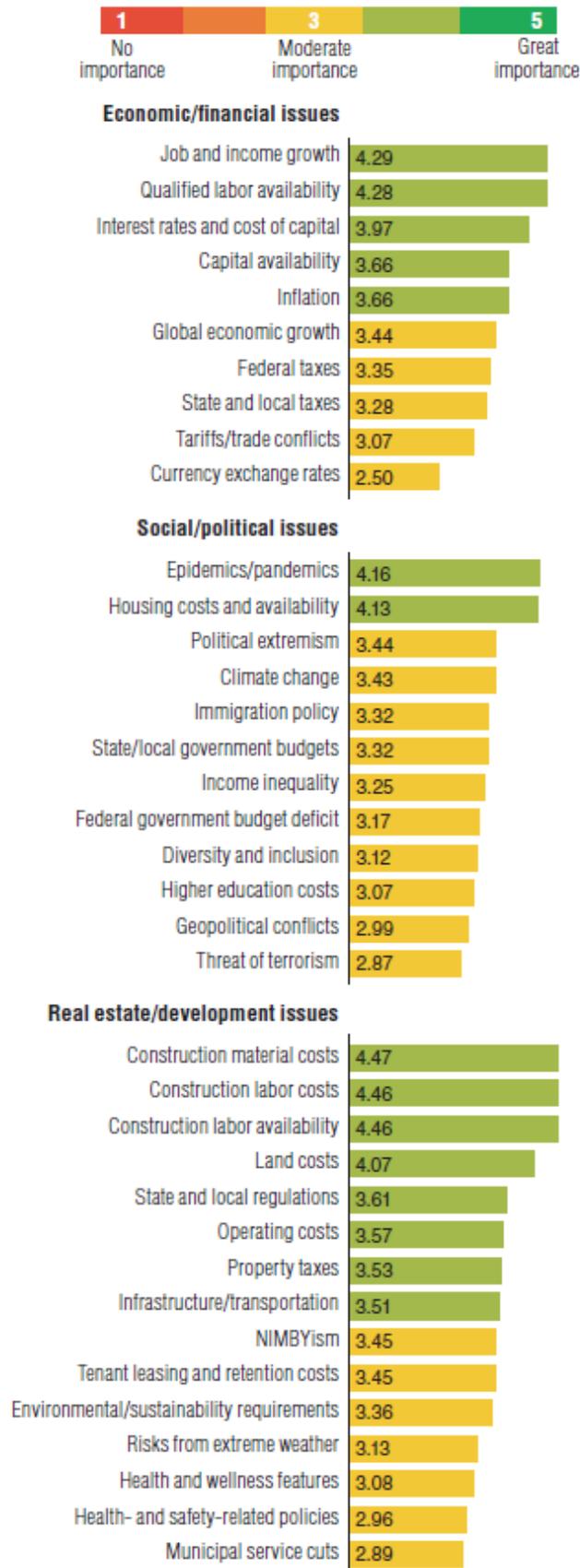


Figure 5: Importance of Issues that affected the demands and prices of the Real Estate market in 2022 (Emerging trends real estate 2022 survey)

To better understand these impacts and price shifts, in the following section the shifts in the residential preferences that was influenced by COVID-19 will be analyzed. These shifts resulted in new decision-making and new demands in the real estate market.

4.1. Impacts of COVID-19 on Residential Preferences

As discussed in the previous sections, the social distancing policy might spur more interest from consumers in privately held landed homes in rural areas as opposed to apartments in cities (Balemi et al., 2021). According to this claim, alterations in housing preferences may have occurred due to the pandemic, regardless of geographic location. (Muhyi and Adianto, 2021)

According to Kam et al. (2018), home ownership is typically based on needs and preferences, with preferences broken down into house-adapting behavior and house type. The definition of preference is "the relative attractiveness of an object" (Jansen et al., 2011). The homeowner's history, including aspects such as age, education level, family members, marital status, culture, and acquired values, affected their preference, and need in different ways (Kam et al., 2018). For instance, Palicki (2020) asserts that there is a correlation among a person's age and their housing necessities, which is referred to as the lifecycle theory. The youngest generation valued having a home, a garden, and exposure to the outdoors the highest. Older age groups, in contrast, value single-story homes and frequently relocate to smaller houses near public amenities, such as hospitals (Andersson, 2018). Moreover, Sbakhi et al. (2018) differentiates amongst intrinsic and extrinsic features when discussing housing preferences, as these are essential determinants in dwelling selection. Extrinsic features include gardens, open spaces, and the location of the property, whilst intrinsic factors involve, along with many other

aspects, the number of rooms and the size of the house (Sbakhi et al., 2018). While most research indicates that economic (Abeysinghe & Gu, 2011) or social factors (Jabareen, 2005) are most relevant when choosing a property, preferences are often influenced by external factors. Shift in work location, financial situation, or the formation or dissolution of a family should all be examined (Palicki, 2020). Hence, certain preferences were created to adjust for factors related to transportation, residence, or family (Morris & Winter, 1975). This adjustment is known as home adjustment behavior theory, and it involves inhabitants evaluating the house in which they live in (Morris & Winter, 1975). Housing adjustment is more likely to take place when the house's state does not conform to the residents' contentment or standards (Morris & Winter, 1975), affecting their preference for dwellings. (Morris & Winter, 1975) As a result, the home adjustment behavior theory could be beneficial in comprehending how housing preferences have shifted as a result of the pandemic.

According to UNCTAD (2020) and Wang & Tang (2020) in Tanrvermiş (2020), the home adjustment behavior that may arise in a pandemic environment is in the procedure of evolving into a perpetual component of people's lives and activities. People's viewpoints and attitudes regarding many topics, such as lifestyle, job, and connections with others, have shifted (Stier, 2020). There is various evidence to suggest that large-scale occurrences, like as the COVID-19 pandemic, have an impact on behavioral preferences. According to Xavier et al. (2022), the uncertainty caused by the pandemic comprises panic, dread, and impatience, which leads to risk and ambiguity sensitivity. Additionally, Yu and Fujii (2022) believe that the constraints had a major psychological influence. People are less likely to participate in community projects outside of their houses. (Muhyi and Adianto, 2021) They additionally started reorganizing expenditures to deal with the unpredictability of the future

whilst maximizing the use of existing space for the numerous activities that the entire family member, or inhabitants residing in that residence, would demand. (Muhyi and Adianto, 2021) These adjustments that led to new home preferences, have three drivers: dread of encountering new people, fear of an economic downturn, and the stay-at-home lifestyle.

Due to the fear of an economic downturn caused by the pandemic, people were looking to reduce their housing expenditure, their housing preferences were more tangible towards houses with resilient prices and towards houses that were in more affordable locations (Arcaya et Al., 2020). For instance, in Massachusetts, the economy's unpredictability has elicited a variety of responses, where citizens were urged to leave during the pandemic. (Arcaya et Al., 2020). Moreover, numerous workers worldwide were impacted by shifts in work events that involve their revenue. Some workers had their salaries reduced, while others had not, and the rest had to lose their job. This fluctuation in employment has impacted their capacity to pay bills, rent, and the mortgage. (Muhyi and Adianto, 2021) This scenario was resolved by the governments of the United Kingdom (BBC News, 2020) and the United States (Goodman & Magder, 2020) by offering monetary aid as guarantee for housing rent. The government provided this help to those who were having financial hardships during the epidemic and advised real estate purchasers and sellers to postpone agreements due to fears of an unanticipated economic collapse (Lawford, 2020).

Another housing preference is to live in a single house and not in an apartment that has shared services with other apartments in the same building (Kang, 2020) and to live away from high densely populated areas (Stier et al., 2020). These preferences are derived from the fear of encountering people and the fear of getting contaminated by the virus (Muhyi and Adianto, 2021). In this scenario, the described fear in an architectural

setting, it is the fear generated by the surrounding external elements, not the social anxiety condition. External causes that cause dread include personally contracting the virus (57%), utilizing public transit (49.3%), traveling to public areas (47.5%), shopping (45.9%), returning to workplaces or schools (45.8%), and attending social gatherings (45.6%) (Anxiety UK, 2020).

This dread should diminish when homeowners gain control over who enters their homes when they are present. Apartments and condominiums, on the other hand, lack this control because they share shared service facilities (Muhyi and Adianto, 2021). In addition, Cheung et al. (2021) have identified a phenomenon in which people's preference for avoiding high-density areas causes a shift in house sales locations. Those who can afford the move can manage to leave, but those who cannot or must stay for employment reasons, they had to hunt for more inexpensive housing. (Muhyi and Adianto, 2021).

Furthermore, other housing preferences such as the need of a larger home, the need of outdoor space, green view, and good indoor air quality, were driven by the "stay-at-home lifestyle" (Amerio et al., 2020). As mentioned in previous sections, the strict regulations and the implementation of teleworking led to this stay-at-home lifestyle. Hence, people value living in a green environment more now than they did before the outbreak. This is because urban parks and other big open outdoor areas offered citizens with a safe place for outdoor recreation and social interaction in a green atmosphere. It acted as a buffer zone to promote good health and quality of life (Xie et al., 2020). According to a study that found psychological benefits to persons exposed to nature, those who live near green spaces have lower mental distress and higher well-being (White et al., 2013). Additionally, COVID-19 is thought to have increased demand for larger homes. Families are living together 24/7, schooling, working, and exercising under

the same roof. As a result, homes with a designated office or exercise space have become more appealing (JCHS, 2021). ABN AMRO (2020) validates this theory and claims that more than ever before, people will value extra space to work in peace.

Consequently, all these housing preferences were validated by several surveys carried out across many countries. For instance, in Poland, Stankowsk and Stankowska-Mazur (2022) conducted a survey in which the findings support the idea that the COVID-19 pandemic experience raised people's need for outdoor space near their homes. According to an examination of the people' responses, there is now a higher importance placed on natural and urban green spaces, having a view of the outdoors that is green, and having a private garden than there was before the pandemic. The importance of having a balcony, terrace, or private plot of land outside of one's home has decreased. Another survey carried out in the Netherlands by Bouma (2022), shows that the number of people looking for detached homes with gardens increased, while searches for apartments decreased. In addition to these modifications, the quantitative study discovered that the COVID-19 issue has made it more important to be near family and friends and to reside in a green environment. Post- COVID, it has become clear that individuals expect to work from home, which has resulted in a rise in relocation from the city to the countryside. Additionally, it was desired to have an additional room due to more time spent at home. And finally, in a study conducted in Italy, according to Guglielminetti et al. (2021), a significant increase in demand for homes situated in less populated locations was seen as a result of a transition in preferences for bigger homes with outdoor space.

4.2. New Tendencies in the Real Estate Market Post COVID-19

In 2020, the COVID-19 epidemic compelled lifestyle shifts all throughout the planet, fundamentally changing our lives. (Gur et al., 2021) These shifts were illustrated

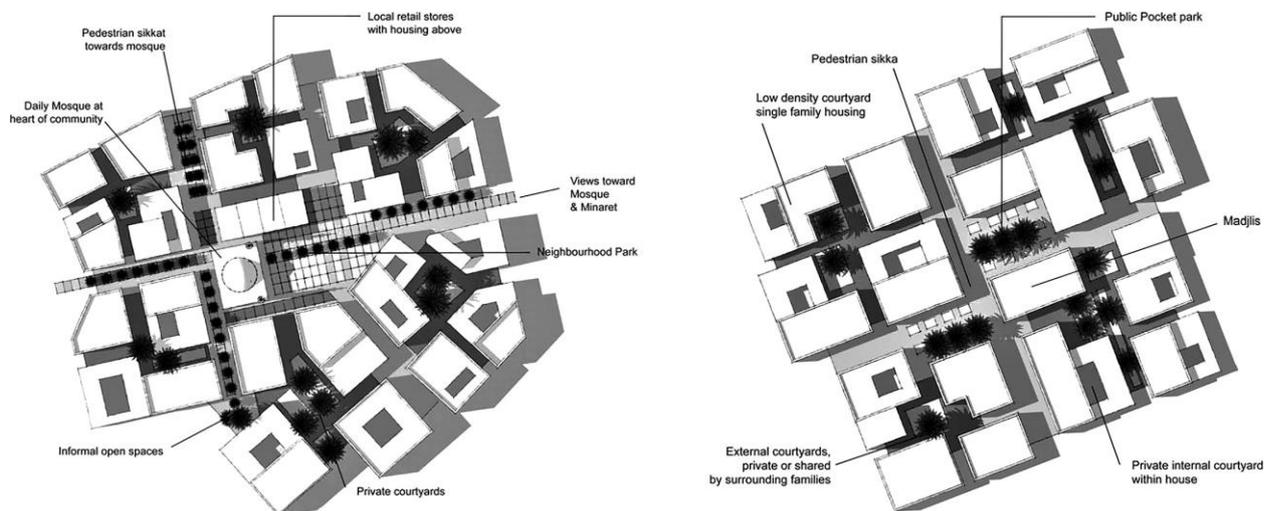
throughout many behaviors in our daily lifestyle, translated in architecture, migration, changes in urban planning and economy. The epidemic showed off the real estate industry's amazing ingenuity and flexibility in responding to quickly changing space needs. The "new normal" will include new methods of working, shopping, and living as people recover from the pandemic and return to normality, which everyone hopes will happen soon. Properties will need to evolve in order to better match how they will be utilized, along with users, as a result of these changes in how people go about their daily lives. (Hughes et al., 2022)

Individuals, communities, organizations, governments, housing, workplaces, neighborhoods, and public spaces have all been impacted by the pandemic (Salama, 2020). People who are compelled to remain in their houses face a diverse range of problems and difficulties (Rogers and Emma 2020). Individual and societal issues were brought on by the COVID-19 epidemic, but space issues also became critical. Homes have started to take on several functions beyond just providing shelter, including those of a job, school, gym, restaurant, laundry room, theater, and even the town square (Gur, 2021). This has increased the criticality of their utility and design (Garber, 2020). The term "healthier, safer, and more resilient homes" (COVID-19) now refers to dwellings that enhance the well-being and living conditions of their residents while lowering the chance of infections. (Signorelli et al., 2020).

Participants agreed that the importance of residential neighborhoods is growing, and that a person's quality of life does not just depend on having a home where they can feel comfortable being alone. The importance of closeness, especially when it comes to having family, job, and shopping close by maximize the significance of context outside the house by utilizing the neighbor, the greater family, and urban reflection. Social distance and social divergence versus the importance of social solidarity. The results highlight the

urgent need for neighborhoods that are more hospitable to people and pedestrians. (Alraouf, 2020)

Several conclusions can be drawn from this topic, such as the importance of public spaces and parks and the certainty that they are not lavish, especially in underdeveloped places, but an efficient way to improve human health physically and mentally. Additionally, people are prioritizing the easiness of transportation to and from their homes in a way for it to be safe and efficient. There's also the factor of having access to nature through courtyards, terraces, balconies, roof gardens, front or backyards that's been an interest in people. Other than that, people are seeking the local life and the belonging to the neighborhood and the community. Lastly, urban equity among the community sectors is crucial because the pandemic has the greatest impact on overcrowded, underprivileged neighborhoods that need services. (Figure 6) (Alraouf, 2020)



Source(s): Author

Figure 6: Revisiting the design of residential neighborhoods in Gulf cities to encourage walkability and the presence of vibrant public spaces, the case of Doha (Alraouf, 2020)

Most homeowners who were interviewed expressed sadness about the weak connection between their homes and any type of nature. According to them, the pandemic taught them that having nature around their houses is a necessity not a luxury. The link of housing to nature is one of the most significant findings that emerge during the isolation of homes. (Alraouf, 2020) Balconies, gardens, roofs, inside courtyards, and any other features that ensure delivering natural lighting and ventilation are the spatial elements to develop this relationship. This need of surrounding nature arose particularly after seeing how the family members benefit from this connection to nature and are freed from the severe psychological impacts of forced seclusion and a lack of social and occasionally professional life. (Alraouf, 2020) Balconies and windows have replaced street-level locations as the social filter between private spaces of solitude and the public realm. (Tamborrino, 2020)

Liu and Su (2020) investigated how the COVID-19 pandemic might affect housing demand in a particular area. The results of their study demonstrate that the pandemic has triggered an important change in property demand away from densely populated areas and large cities, while the scale is less significant. Workers are relocating further away from their places of employment for a variety of reasons, including the desire for a more suburban or rural setting and the need for additional room for a home office, nursery, or other demands on the home. Home prices and rentals are rising more quickly than in markets closer to home as a result of the increasing housing demand in these destination markets. These shifts are expected to accelerate as more businesses adopt hybrid and remote work as a permanent option, strengthening migration trends that predate the epidemic and favoring less populated and yet more cheap suburbs, particularly in Sunbelt regions.

Because homes are less expensive in these somewhere further areas, purchasers can afford bigger homes that are better able to meet all the new functional requirements in the post-COVID work from home era. (Hughes et al., 2022)

Industry leaders have been exploring digital initiatives, focusing on tenant experience, and diversifying revenue sources over the past few years. The COVID-19 problem has emphasized the need for such strategic adjustments and has hastened the timeline by which those who have not yet made these investments will likely need to do so. (McKinsey, 2020)

In addition, the economy is subject to significant potential losses and unpredictability, notably in the shape of fresh COVID-19 outbreaks, particularly if they are more contagious than the Delta variety or more deadly. New government regulations pose a lower threat than consumers apprehension and the ensuing slowdown from economic activity as contagion rates rise. (Hughes et al., 2022) As COVID-19 instances increased in July, the early summer's promise that the world would finally return to some semblance of normality was dashed. Mass events (like the New York Auto Show and the Jazz Fest in New Orleans) began to be postponed, people changed their trip plans, and large employers put off their return to work. The most telling statistic is that although delivery services were in more demand, consumers started stocking up on pandemic-related things like disinfection sprays and cold medications. If these patterns persist, growth might be adversely affected over time. (Hughes et al., 2022)

On another hand, according to a report done by McKinsey in 2020, like the extent of the pandemic's human devastation, it is unknown how much the real estate industry will be affected economically. However, it appears that in a post-coronavirus world, behavioral shifts may soon render huge amounts of space useless. Real estate players will be best suited to act now to advance their companies while also keeping an eye on a future

that may be very different given the possibility of transformative developments. Some landlords are already beginning to plan for after the crisis is gone. Understanding potential future changes in real estate usage is the goal of strategic review processes. However, real estate professionals are turning to psychologists, sociologists, futurists, and technologists rather than conventional economists or customer-survey-driven techniques for solutions. Will workers request bigger, enclosed workspaces? Will consumers opt against renting in condos because they don't want to use the elevators? While uncertainty currently reigns, corporate executives may discover fresh and more prescient insights by utilizing a variety of creative staff and new processes, such as deep design interviews. (McKinsey, 2020) And it needs to be highlighted that despite how strong the desire for a return to normalcy may be, a lot nonetheless remains obviously unusual. Up until beginning of fall of 2021, most companies are still adapting the work from home lifestyle. According to surveys, a significant and increasing portion of the population continues to express reluctance to engage in formerly common activities like going to restaurants, watching movies in theaters, or going to concerts. (Hughes et al., 2022)

By making individuals live and work in diverse ways, the epidemic altered expectations about how people will utilize homes in the future and found previously unfamiliar sources of flexibility in the real estate industries. (Hughes et al., 2022)

People had to find new methods to practically do everything as the first major pandemic in a century turned society upside down as we knew it in the spring of 2020. People were obliged to find new ways for how to work, how to shop, how to socialize, how to educate their children, and how to live and these changes had to happen almost immediately. (Hughes et al., 2022)

Since most of what we do takes place in a physical environment, both the way people utilize various types of property and the ways in which properties operate must change and adapt also. Suddenly, both people's personal and professional lives were centered in their homes. Working from home and online shopping were both common long before the pandemic, but both have grown significantly since then, and neither will fully return to their prior positions. By hastening these changes and new trends, as one developer of real estate in PWC put it, "2030 arrived early". (PWC, 2022)

But residential modifications encompass much more than just a home office and shopping mall, additionally, homes now double as a gym, school, and entertainment hub. These several purposes frequently compete with one another and place a lot more demands on the modest home. The Leading Indicator of Remodeling Activity, prepared by the Joint Center for Housing Studies (JCHS) at Harvard University, projects that home renovation and repair expenditures will grow 8.6 percent by the second quarter of 2022 from a year earlier.

The JCHS's annual Improving America's Housing report noted that "in 2020, spending on home improvements and repairs grew more than 3 percent as people modified living spaces for work, school, and leisure in response to the COVID-19 pandemic." (Hughes et al., 2022)

Before COVID-19, working from home/working from anywhere (WFH/WFA) was rather uncommon for most employees, but became more usual during the initial lockdown. As the economy started to recover, it has been mainly officer workers who have been given the luxury to the work from home lifestyle. However, after experiencing the comfort and flexibility of working from home, employees won't be ready to give these advantages up. One investment firm's CEO said "When push came to shove, our employees largely chose to stay home even though they had asked for the office to be

open. It came down to them making a value call each morning.” But with a price. Working remotely usually requires adapting limited home space to create a practical workspace—at the worker's expense. (Hughes et al., 2022)

More than any other single event in many generations, COVID-19 may have weakened the bond between the home and the workplace. Italian physicist Cesare Marchetti made the hypothesis that people have historically been ready to travel up to a half-hour to their place of employment. With each new generation of transportation technology, people commuted for progressively longer distances—until traffic jams caused them to move more slowly and lengthened commute times. (Hughes et al., 2022)

In the future, most of the emigrating households are consolidating pre-COVID migration trends by relocating within the same metro region to smaller, less pricey areas. As a result of the need for a larger home that can fit a home office, a nursery, or whatever other new requirements are imposed on the property, many families are looking to stretch their housing payments in more affordable regions. However, a large portion of the movers are well-paid office professionals who can afford more costly homes but are relocating to suburbs or metro areas that are further away simply because they can now that they don't have to commute as frequently. Housing prices have already begun to reflect this trend. Since rising demand is driving up home rates faster in markets with longer travels to CBDs (central business district) than in closer-in areas, we can conclude that people are more ready to accept longer commutes than before and pay for it since. (Hughes et al., 2022)

In the post-COVID-19 period a more considerate, responsible, and demanding user will be present. The importance of claiming a home that is sustainably designed would give a user who learned from the disaster a sense of home rather than just a shelter

or safe haven. According to the same logic, real estate investors might feel pressure from new types of users and clients. As was argued in various webinars discussing the future changes, the desire for new housing projects will be determined by whether they would result in a beautiful isolation if the pandemic scenario and the inevitable isolation in living spaces are reproduced. (Alraouf, 2020)

In the aftermath of the 2008 global financial crisis, certain real estate players went beyond simple adaptation and flourished while others went out of business. In particular, the current losses in short-term cash flow and space demand, as well as the uncertainty surrounding commercial tenants' capacity to pay their bills, will determine how individual firms respond to the industry's immediate issues and, ultimately, their ability to weather the storm. The industry's forced behavior changes are likely to have transformed how consumers and businesses use and interact with real estate throughout the course of the next few years. Which of these adjustments will stick is the important question. Throughout, players' success will be influenced by their ability to move fast and wisely, both in these difficult times and when the industry eventually recovers from its current crisis and reinvents itself. (McKinsey, 2020)

METHODOLOGY

The main aim of this research is to explore the various changes that Covid-19 led in the real estate market starting from the pandemic hitting densely populated areas moving to the new lifestyle and demands created in the property market during the years 2020-2021. For this purpose, this research will answer the following questions:

- What impact had the COVID-19 pandemic on the real estate prices?
- What impact had the COVID-19 pandemic on the internal migration?
- How did the decision-making of individual's location shift due to the pandemic?
- What are the emerging trends in real estate post-pandemic?

To conduct the study and answer the mentioned research questions, many factors related to the research must be investigated. Firstly, the researcher seeks to explore the impact that Covid-19 had on densely populated areas and the changes induced in the lifestyle of people that led to new behaviors. Furthermore, an in-depth investigation must be done to understand the changes that happened in the real estate market in the regions where metropolitan cities were immensely affected.

Therefore, eleven different regions in different countries were selected as case studies to discuss more in detail and to portray all these impacts that Covid-19 had. The case studies selected except for China (the country in which the COVID-19 virus started) and Georgia take part of the Organization for Economic Co-operation and Development (OECD) countries. The latter, represent an international organization that works on policies to live a better life. (OECD, 2022) The authorities from thirty-seven countries with market-based economies work along during this organization (OECD) to form tips

for public policy which will support long economic process and sustainable economies. The OECD offers a platform wherever states could exchange concepts, search for solutions to shared issues, pinpoint best practices, and establish rigorous criteria for policy. The OECD has been a trustworthy supply of fact-based policy analysis and economic information for sixty years. (OECD, 2022) Hence, the reason behind choosing those eleven case studies is because they are the countries in which the advancement in technology allows the firms to highly implement work from home in order to protect the economy from the Covid-19 pandemic together with applying the same strategies and policies during such times. Therefore, the shifts in the real estate values and prices are clearly shown in these areas. The regions selected in each country are the following: the region of New York city in the United States, the region of Greater London in the United Kingdom, the region of Ile-de-France in France, Greater Tokyo in Japan, Tbilisi in Georgia, Cracow in Poland, Greater Los Angeles in the United States, New South Wales in Australia, Metropolitan Area of Naples in Italy, Hangzhou in China, Toronto and Montreal in Canada. In each region we will see that either the values and prices of real estate were decreasing due to the pandemic in the metropolitan areas such as London, New York and Paris, and the prices in the suburban and rural areas are increasing because of people migrating to greener areas, close to their families within a proximity to the centers. People were looking for larger houses, with more open spaces and flexibility for their new lifestyle that involves work from home in the years 2020- 2021. In other case studies we will discuss why the prices were rising or decreasing all over the region. The evaluation done in each case study is through the collection of data covering the population density, the migration effects, the new demands, and the housing market prices in each region. This data will be analyzed and compared at the end in the discussion section.

The methodology carried out in this paper is a qualitative method, that falls under the name of descriptive case study methodology. In qualitative research, topics are studied in their natural contexts with an explanatory, naturalistic perspective on the world to gain an understanding of or evaluate a phenomenon in terms of the meaning's individuals assign to them. (Denzin & Lincoln, 2005).

A descriptive case study is about a case study that describes a scenario and how people or groups dealt with it in the actual world. In order to help the audience, comprehend the causes of the issue, the motivations driving a solution, the results of implementation, lessons learned, and connections to theories, concepts, policies, and tools pertinent to the circumstance, it includes a succinct but thorough account of the facts of the situation and expert commentary. Rather than research articles, descriptive instances are used as teaching tools. Although research is necessary, it also provides ideas and material for the case narrative. (Denzin & Lincoln, 2005).

Based on the study of Creswell (2007), a strong case study is when recognizable cases with constraints and a desire to provide a thorough comprehension of the cases or a juxtaposition of numerous examples. Operating a descriptive case study research is adequate when it comes to a recent event analyzed in a concrete setting. (Benbasat, Goldstein, & Mead, 1987; Yin, 2009). In our research topic the contemporary phenomenon is the pandemic of Covid-19. A case study, according to Yin (2009), is a verifiable investigation that explores a current situation or event in-depth and in the circumstances of real-world events, particularly when the distinctions among the event and the setting are hazy. He goes on to say that case studies are the best approach when "how" or "why" questions need to be answered yet the researcher has almost no influence over the outcomes. (Patnaik, Pandey, 2019)

CASE STUDIES

1. FRANCE – Île-de-France

 Covid-19 effect dec 2019- dec 2021
 -lockdown
 -virus spread in density in populated areas
 -low supply

 Gouvernement Interventions 2020-2021
 -50% remote work
 -solidarity funds
 -panelties removed for paying rent + bills

 Migration
 -building 2nd hand houses bigger and cheaper
 -closer to nature

 Price Variation
 -(-3.2%)paris
 -(+11.9) suburbs



Legend

 price increase between 3 to 6 %	 price decrease between 0 to -5 %	 very dense area	 movement between districts
 price increase >6%	 less dense	 rural	 % proportion of buyers moving from one district to the other

1.1 A Radical Change to the Usual Market of France

The housing market in France is impacted by the pandemic of Covid-19 that led people to buy houses far from city centers. Since forever, the French capital and the 10 largest cities in France were leading the housing market until 2022 where this lead shifted the demands to the rural and suburban areas. According to the report carried out by Meilleurs Agents (leader in online real estate evaluation) in March 2022, these new demands were 26% higher since the 1st of March 2020, which led the prices to have the strongest growth of 11.9% in around a year experienced in the rural municipalities and the prices to go 3.2% lower in Paris in the same year (Figure 7).

	10 years	5 years	2 years	from 1 jan. 2022	1 month	Index in points
● Paris	21.6%	19.9%	-3.2%	-0.4%	-0.5%	158.1
● Top 10 major cities	36.8%	35.1%	10.0%	0.4%	0.1%	145.5
● Top 50 major cities	24.3%	28.9%	10.0%	0.2%	0.1%	127
● Rural areas	5.8%	17.1%	11.9%	0.4%	0.3%	101.5
● France	16.4%	22.1%	10.3%	0.3%	0.1%	120

Source: IPI Best Agents

Figure 7: Property Price index (IPI %), 2020-2022, Meilleurs Agents, Barometre National des Prix de L'Immobilier, March 2022

The new demands in the rural and suburban areas were mainly due to the 50% (before the pandemic of 2020 was 38%) of the French people who had the possibility to work daily from home during the pandemic (Figure 8). This new possibility of working for home so called smart working allowed them to have the freedom to live wherever they want. Another fact that led to the new demands was that people were preferring buying second houses to live in bigger spaces away from the big cities. (Meilleurs Agents,

2021). However, this fact shows that the pandemic did not cause an urban-rural migration or an urban exodus, rather it opened the eye for the opportunity to many buyers to consider an extra option of purchase which led the country to hit a record of 1.2 million of transactions as expected by the year 2022. (Meilleur Agents, 2021)

...grâce à la hausse du télétravail occasionnel

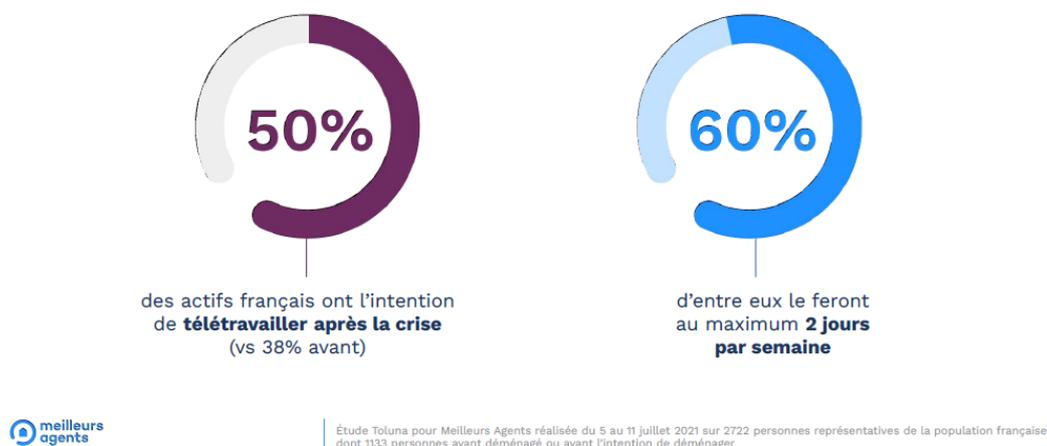


Figure 8: People intending to work from home (%) – 2021, Meilleurs Agents, Bienvenue Dans Le Monde D'après, September 2021

With a more noticeable increase during the year and a half since 2020, values in rural regions had gone back to their 2008 rate. Though, this occurrence needs to be viewed in the context of the relevant regions. In fact, Meilleurs Agents (2021) categorized the market into three main categories: peri-urban locations, second-home communities, and more distant/isolated municipalities. The most isolated towns continue to lag behind (+1.7%) while the leading two (peri-urban and second-home properties) see significant price rises (+9.7% and +9.4%, respectively, in a year). (Meilleurs Agents, 2021). One factor that might clarify this trend is work from home, which, although seeming like it will persist, should only be used occasionally. In fact, the maximum amount of days for 60% of French working people would be one to two days per week if 50% of them wish to do

smart working after the pandemic (compared to 38% before the pandemic). A growth in yearly sales volumes (+13 percent since March 1, 2020) reflects this rekindled desirability. Additionally, 33 percent of rural residences sell for the asking amount (vs. 21 percent before the initial phase of the Covid-19) which is 13% higher than 2019. (Meilleurs Agents, 2021)

According to Meilleurs Agents (2021) studies, the popularity of second residences is a truth. Whereas only 12% of French residents presently possess one, 17% already are thinking about making the purchase. Throughout this regard, the sea is what tempts project proponents. The beach resorts have experienced a pricing explosion, making them the primary beneficiaries of the public health emergency. They grew by 12.3 percent for the year 2021, compared to a mere +4.6% growth during the year 2020.

Mountains (+8.8 percent) and the countryside (+9.4 percent) also performed well despite a little decline. Implicitly, the pandemic has increased demand for second homes and pushed the idea of semi-main dwelling by encouraging the growth of remote work. Over than six out of ten teleworkers claim to have spent much more time at their second property across the period of the pandemic, and 40% of consistent remote workers anticipate doing the same for nearly half of the period of the year. (Figure 9, Meilleurs Agents, 2021)



Figure 9: price evolution in rural areas (%) – September 2019- September 2021, Meilleurs Agents, Pas D'exode Urbain Mais une Nouvelle Geographie Immobiliere, September 2021

IPI (Property Price Index) Rural is made up of peri-urban indices at 40%, secondary residence zone indices at 20% and other rural indices at 40%, weighted by the number of houses in each of the 3 segments.

In the biggest cities, the huge suburbs are becoming more desirable at the expense of the downtown. Paris provides the most egregious illustration of this tendency. From September 2020, intramural costs have decreased by 1.5 percent, but in the outer suburbs, they have increased by 8.3 percent. (Meilleurs Agents, 2021) Smaller cities are doing well and avoiding the ennui of the larger ones. Thus, the values of the Top 40 megacities increased by +4.9% in the city center and by 5.8% in the outlying suburbs in a single year. As a result, medium-sized cities like Brest (+8.2%), Angers (+7.4%), Reims (+6.9%), Quimper (+6.8%), or Orleans likewise (+6.2%) profit from the pandemic. (Figure 10, Meilleurs Agents, 2021)

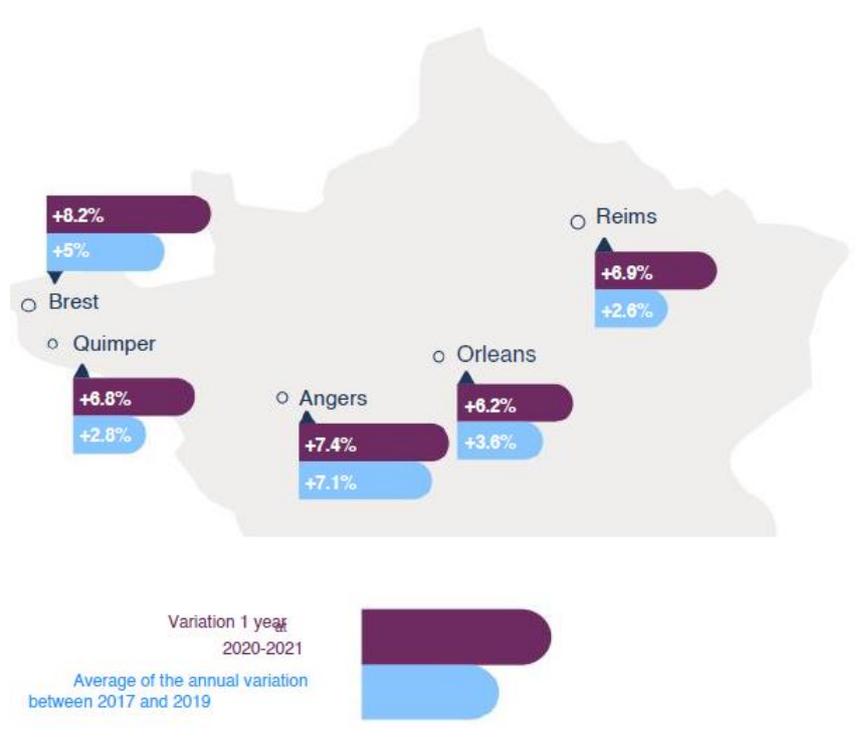


Figure 10: Property Price Index (IPI %) in the top 5 medium-sized cities – 2017-2021, Meilleurs Agents, Pas D'exode Urbain Mais une Nouvelle Geographie Immobiliere, September 2021.

1.2 A Focus on Île-de-France (Greater Paris) Region

1.2.1. Price Increase in the Inner and Outer - Suburbs of Île-de-France

Île-de-France hosts the capital of France: Paris. It is the region in which we can highlight the changes and the shifts of prices according to many studies and statistic data carried out across the years, since the beginning of Covid-19 in 2020 until today.

Over the years 2020 and 2021, Paris' real estate market prices were 3.2% lower (from March 2020 to March 2022), instead the rural areas have seen their prices grow high with a rate reaching around 11.9%, as shown in figure 11 below. (Meilleurs Agents, 2021)

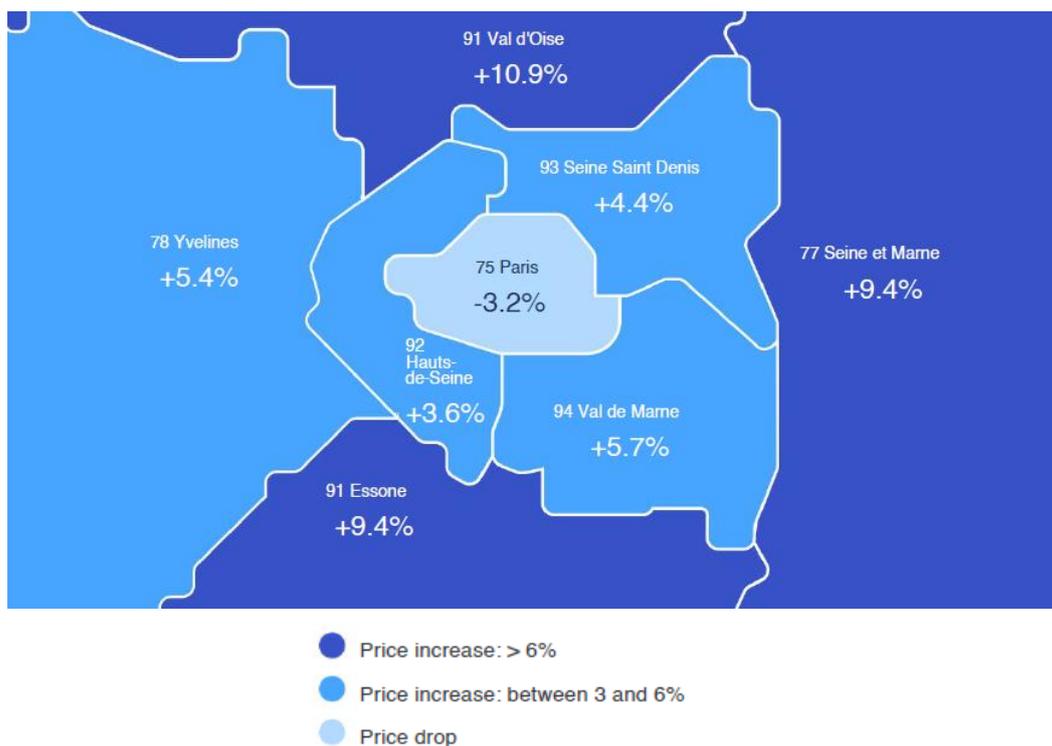


Figure 11: The Evolution of prices in Ile-de-France (%) from March 2020-March 2022, Meilleurs Agents, Barometre National des Prix de L'Immobilier, March 2022

According to Paris Property Group (2021), the demands in the outer suburbs of Paris were getting higher in 2021, together with the inner suburbs that are pushing more

buyers to invest there, where more people are moving to bigger homes in Seine-et-Marne or Yvelines. “The outer suburbs are popular. The inner suburbs are attracting more and more buyers”. (Paris Property Group, 2021). This increase in demands has led the prices to rise in these areas for about 7.3% in October 2021. All of that happened thanks to the rise in remote work among companies. The president of Fnaim (Federation National de l’Immobilier) Jean-Marc has commented on the fact that the people are transferring to the periphery of big towns and medium-sized towns and rural areas, by saying: “Prices in the capital are stagnating, while those in provincial towns skyrocket.” (Paris Group Property, 2021)

While some chose to move to the countryside, many searched for greener areas close to Paris, which may have led to an increase in housing costs in the inner and outer suburbs of the city. Petite Couronne, in the inner suburbs, witnessed a 9 percent gain in home prices, while Grande Couronne, in the outer suburbs, have seen hikes of 6.1 percent for apartments and 7.6 percent for homes. (Figure 12, Les Notaires du Grand Paris, 2021)

Most people attracted to the suburbs and to the idea of moving were from Paris: “If 24% of French people have felt the urge to change region or city since the start of the pandemic, it is 35% of Parisians who have expressed the desire to leave the capital”. (Meilleurs Agents, 2021). Paris Je Te Quitte (2021), a reference media team for Ile-de-France did a survey on 866 residents in this region to see how the pandemic and the lockdown that started on March 17, 2020, have affected their choices and decisions to leave Paris, and which were the reasons behind their desire.

The result of their survey was about 54% (they were before about 38%) of the inhabitants wished to reside in a somewhat less stressful atmosphere and to be more in touch with nature. “Those who had a taste of this new life in confinement are now

convinced that this life suits them better and those who have accumulated the inconveniences of the capital during lockdown have all the more reason to want to leave.”

(Figure 13, Paris Je Te Quitte, 2021)

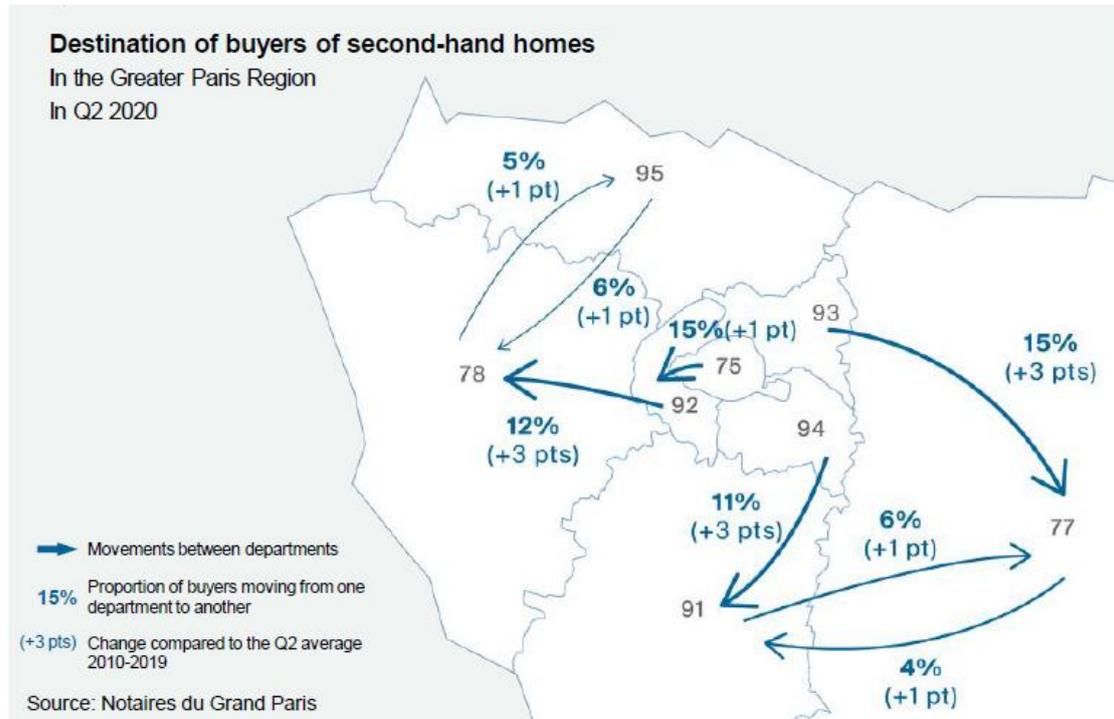


Figure 12: Destination of buyers of second-hand homes in the Greater Paris region in the Q2 2020, Notaire du Grand Paris, 2020

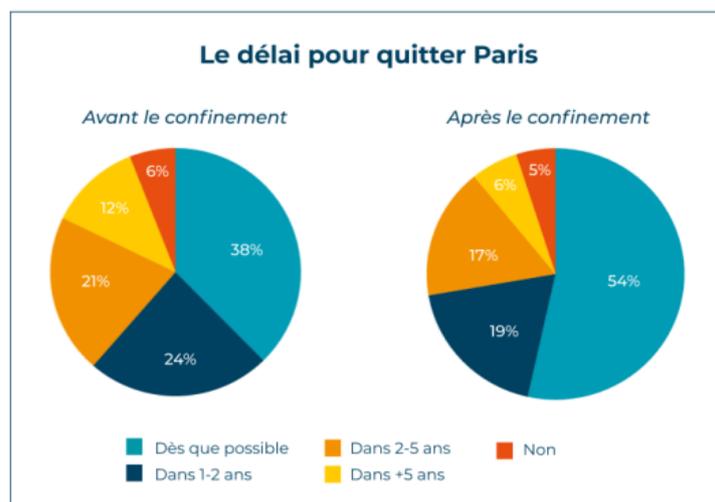


Figure 13: The percentage of people willing to move from Paris before and after the lock-down in function of time/years (%) – 2021, Paris Je Te Quitte, 2021

Charts description: Before the lock-down: 38% of the residents were willing to move as soon as possible, 6% not willing to move, 24% willing to move in 1-2 years, 21% willing to move in 2-5 years and 12% willing to move in 5 years. After the lock-down: 54% of the residents were willing to move as soon as possible, 5% not willing to move, 19% willing to move in 1-2 years, 17% willing to move in 2-5 years and 6% willing to move in 5 years.

1.2.2. Rent Price Variation in Île-de-France 2020-2021

According to the observatory of LocService published in 2022, this observatory is a study that is based on a sample of more than 200,000 rental offers and requests recorded on LocService.fr over the year 2021, in which they compare the results to the data collected in the previous years. In France, in 2021 it was necessary to spend an average of €695 per month including charges to rent accommodation, i.e., a 3.4% increase compared to the figures for 2020. The rentals carried out showed an average surface area of 41.9 m², which gives a rent per square meter of €16.57, up 13.3%. Thus, compared to the provinces, Ile-de-France is practically twice as expensive in terms of rent per square meter, and Paris is 2.7 times more expensive. However, Parisian rents have stopped increasing, unlike the rest of France. This is due to a combination of factors: rent controls, lower demand (discussed later in this study) and increased supply with the return to the traditional rental market of Airbnb rentals. Based on the data collected by LocService, the rents from 2020 to 2021 have a clear variation that they are growing high in the inner and outer suburbs compared to the rent prices in Paris. They observed that the evolution of rents per square meter in France in 2021 compared to 2020 figures is 1.2% lower, whereas in the outer suburbs (Grande Couronne) the rental prices are 4.3% higher in 2021 compared to 2020 and in the inner suburbs the evolution of rents per square meter is 3% higher than in 2020. This results in a total of 5.4% rise in the prices of rents per

square meter in the entire Ile-de-France region from 2020 to 2021, where the rise of prices was mainly due to the people moving out from Paris in order to find accommodations in the inner and outer suburbs where initially the prices are more affordable to them, and where the access to bigger houses is easier, without forgetting the fact that these areas are strongly connected to the capital as well. It was noted that all types of properties (studios, apartments, houses, flats.) have seen their rent increase significantly, by around +4% to +8% depending on the case (Figure 14, LocService, 2022)



Figure 14: The Evolution of rents per square meter in France in 2021 (compared to 2020), LocService Observatory, 2022

Moreover, the data collected by SeLoger (2021), highlights that houses are also in high demand for rental since 14% of connections concern the Île-de-France region . But it is the departments a little further from Paris that remain the most attractive. Seine-et-Marne does well (28% of contacts) as does Yvelines (23%).

Older Versus new Property Prices Variation Across the Years

As mentioned before, all over France and also in Ile-de-France region the prices of older properties so called second-hand homes and especially the houses prices have seen a rise over the years unlike the new properties market which was broken since 2019 due to the difficulty in the built construction field that was not able to proceed the works due to the lockdowns and the infections due to the spread of Covid-19 that forced these works to slow down and to stop along the year 2020-2021. (Knight Frank,2021)

Following two years of slowing down despite a very active year in 2017, new supplies in the Greater Paris Region resumed to fall in 2020. With 17,300 new dwellings provided by the end of 2020—down 25% from 2019 but considerably more than the median over the previous 20 years—the pandemic had the impact of magnifying the decline. More precisely, flats make up 92% of the supply, while homes and serviced residences make up 2% and 6% of the stock, respectively. (Knight Frank, 2021) By the end of December 2020, most of the newly accessible resources was concentrated in Hauts-de-Seine (25 percent), Seine-Saint-Denis (22 percent), and Seine-et-Marne (13 percent). According to Knight Frank's (2021) report, only 2% of the Greater Paris Region's supplies are concentrated in the city of Paris. The pandemic of Covid-19 has had the impact of increasing the time it takes for the existing supply to run out, from an estimate of 7.3 months at the end of 2019 to almost 10 months in 2020, even though supply and demand are imbalanced (Figure 15).

This growth, nevertheless, is not consistent with what was seen throughout the severe financial crisis. The advertising cycle had grown from 10 months in 2007 to almost 19 months the subsequent year before quickly reverting to approximately 4 months in 2010. The inadequate availability of new supply, the persistence of robust demand, and the incremental progress in healthcare conditions would allow for the prevention of the lengthening of the market phase in 2021. (Knight Frank, 2021)

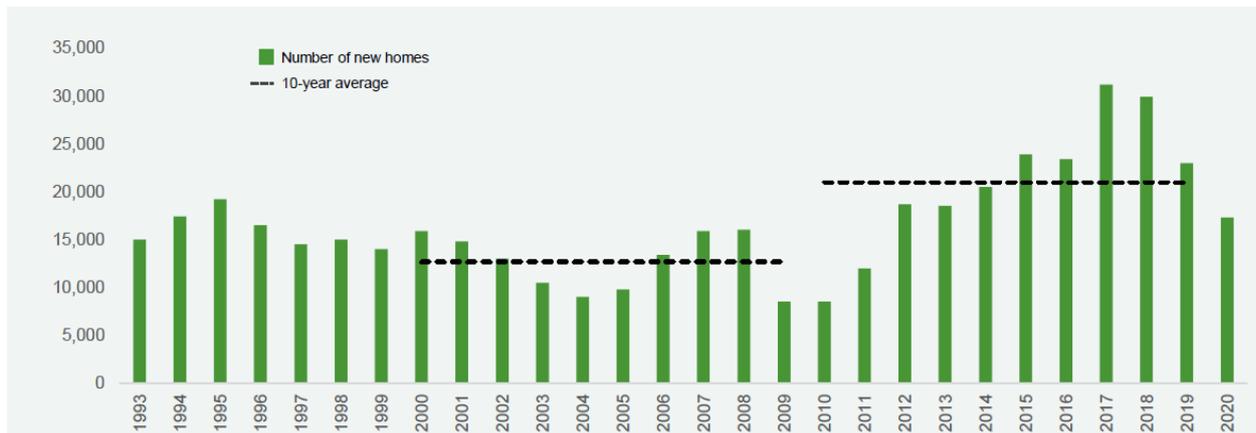


Figure 15: Change in the available supply of new homes, all property types in the Greater Paris region, CAPEM, 2021

This unavailability and slowdown in the new homes market, led as mentioned before to the increased values of the older properties. Below in the Figure 16, Figure 17 and Figure 18 that corresponds to the INSEE (French National Institute of Statistics and Economic Studies) and Notary Price Index variation published by Notaires de France for the year 2019, 2020 and 2021 respectively. The figure 16 highlights that over the year 2019 in Greater Paris region or Ile-de-France the price index variation for the old properties 3.9%, for older apartments 5.6%, and for the old houses 0.4%. Whereas the figure 17 shows that over the year 2020 after the start of the pandemic the price index variation for the old properties 4.7%, for older apartments 3.6%, and for the old houses 7.1% in Greater Paris. And the figure 18 portrays the price index variation over the year 2021 in Greater Paris (the year in which the lockdown restrictions were eased), the variation of values for the old properties was 4%, for older apartments 2.5%, and for the old houses 7%. When comparing these results, the old houses prices variation going high was the most obvious from 2019 to 2021 the price index variation increases of 6.6%. Which shows the interest of people in buying bigger properties that are older houses rather than apartments that saw their price index variation decrease of 3.1% from before the start of the pandemic in 2019 until the end of 2021.

	OLDER PROPERTIES		OLDER APARTMENTS		OLDER HOUSES	
	3 months	1 year	3 months	1 year	3 months	1 year
Mainland France	1.3%	3.7%	1.8%	5.2%	1%	2.6%
Greater Paris	1.5%	3.9%	2%	5.6%	0.5%	0.4%
French Provinces	1.3%	3.7%	1.6%	4.9%	1.1%	3.1%

* Three-month seasonally adjusted variation between the 3rd and 4th quarters of 2019
 One-year variation: between the 4th quarter of 2018 and the 4th quarter of 2019

Figure 16: Price Index Variation– 3 months variation and one-year variation 2019 (Source: Notaires de France, April 2020)

	OLDER PROPERTIES		OLDER APARTMENTS		OLDER HOUSES	
	3 months	1 year	3 months	1 year	3 months	1 year
Mainland France	1.4%	5.9%	1%	5%	1.7%	6.6%
Greater Paris Region (Ile-de-France)	0.6%	4.7%	- 0.1%	3.6%	2.2%	7.1%
French Provinces	1.7%	6.4%	1.9%	6.3%	1.7%	6.5%

* Three-month variation (seasonally adjusted): between the fourth quarter of 2020 and the first quarter of 2021
 One-year variation: between the first quarter of 2020 and the first quarter of 2021

Figure 17: Price Index Variation – 3 months variation and one-year variation 2020 (Source: Notaires de France, July 2021)

	OLDER PROPERTIES		OLDER APARTMENTS		OLDER HOUSES	
	3 months	1 year	3 months	1 year	3 months	1 year
Mainland France	2%	7.4%	1.4%	5.2%	2.5%	9%
Greater Paris Region (Ile-de-France)	1.3%	4%	1.1%	2.5%	1.8%	7%
French Provinces	2.3%	8.8%	1.7%	7.5%	2.6%	9.4%

* Three-month variation (seasonally adjusted): change between the second quarter of 2021 and the third quarter of 2021
 One-year variation: change between the third quarter of 2020 and the third quarter of 2021

Figure 18: Price Index Variation – 3 months variation and one-year variation 2021 (Source: Notaires de France, January 2022)

To go more into details on the prices variation for second-hand apartments / older properties in each part of Ile-de-France including the inner and outer suburbs; Figure 19 below shows that the price of old residences in France increased consistently in 2021 (+9% over a year) within the Paris region. The rise was more gradual by region (+2.7%), and prices may stabilize or perhaps increase, decreasing somewhat from the first quarter of 2022. In depth, the typical price of an existent property in the region of Greater Paris attained €6,730/m² (up 0.6% on the year), at the year 2021. based on the Notaries'

(2021) based on predictions, this should remain at this level till April 2022. (Knight Frank,2022)



Figure 19: Change in price per m² for second-hand apartments, Notaires de France, at the end of December 2021

According to the first preliminary contracts drawn up by Notaires de France (2021), the trends currently observed have every chance of continuing. In Paris, they expect a price of €10,440/m², down 1.6%. On the other hand, on the other side of the ring road and again for apartments, prices seem to be continuing their momentum: + 4.0% in the inner suburbs and + 5.4% in the outer suburbs. For houses, price increases should remain around 7% in the inner and outer suburbs (Figure 20).

In the inner suburbs (Petite Couronne), Seine-Saint-Denis remains the most accessible department with an average price of €4,000/m² in March 2021. Next come: Val-de-Marne (€5,200), Hauts-de-Seine (€6,610) and Paris with €10,590. In the outer suburbs (Grande Couronne), the department where you can buy the cheapest house remains Seine-et-Marne with an average price of €258,800. Next come Val-d'Oise (€324,600), Essonne (€329,000) and Yvelines (€429,200).

Maisons anciennes		Ile-de-France	Petite Couronne	92	93	94	Grande Couronne	77	78	91	95
Prix de vente (en euros)	juin-août 2021	356 400	431 000	720 400	322 700	426 800	325 600	272 700	430 000	331 200	319 500
Évolutions en 1 an	juin-août 2021 / juin-août 2020	+6,9%	+6,7%	+7,8%	+5,7%	+6,6%	+7,0%	+6,9%	+7,4%	+7,4%	+6,1%

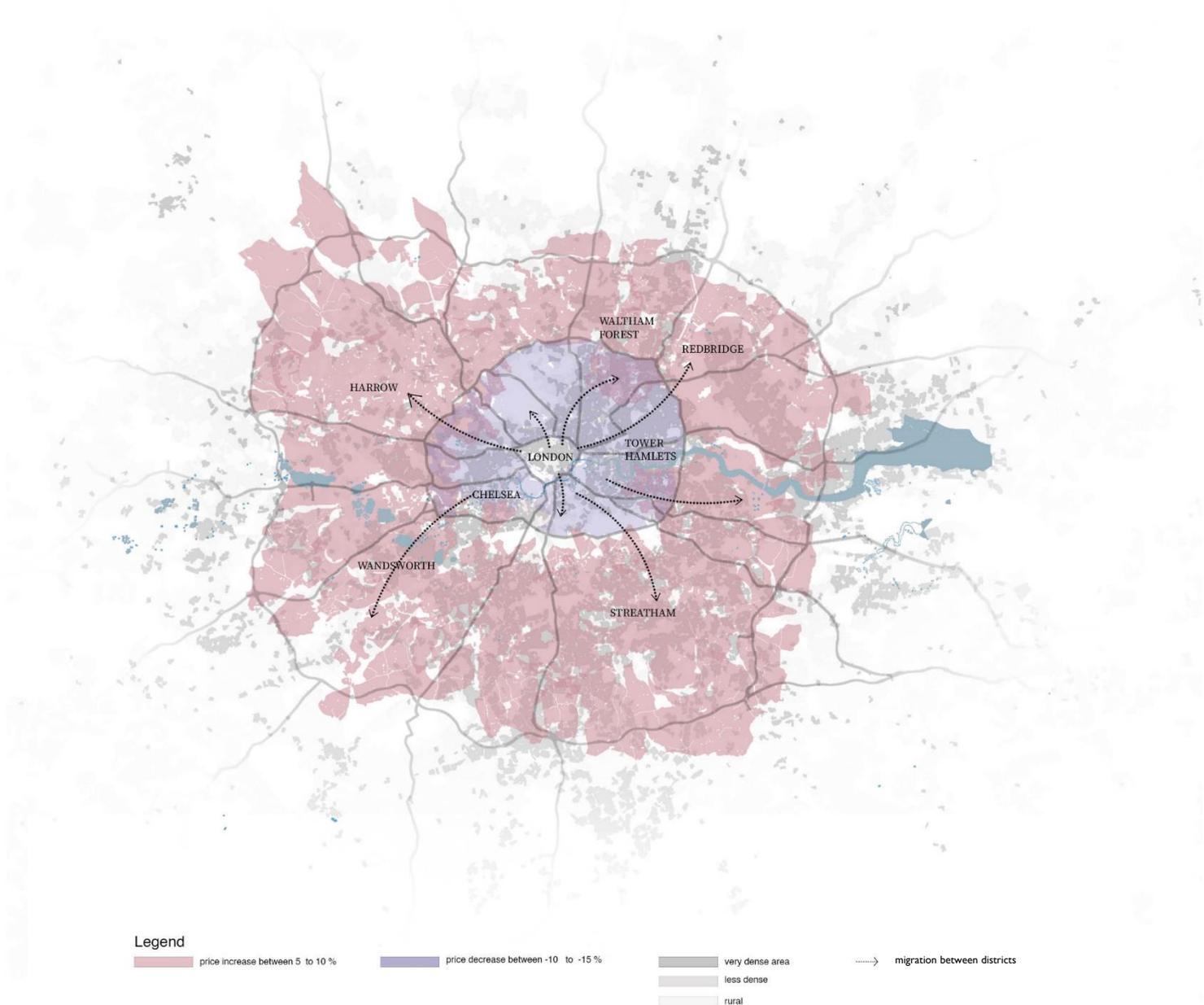
Appartements anciens		Ile-de-France	Paris	Petite Couronne	92	93	94	Grande Couronne	77	78	91	95
Prix au m ²	août -octobre 2021	6 830 €	10 700 €	5 540 €	6 770 €	4 130 €	5 290 €	3 400 €	2 920 €	4 370 €	2 950 €	3 060 €
Évolutions en 1 an	août -octobre 2021 / août -octobre 2020	+1,6%	-1,4%	+4,0%	+3,9%	+4,3%	+4,2%	+5,4%	+5,9%	+5,8%	+4,9%	+4,7%

Figure 20: Change in price for second-hand apartments and second-hand houses, Notaires de France, at the end of December 2021

1.2.3. Takeaways from Île-de-France Case Study

To conclude this case study, overall, in entire France over the two years of the pandemic 2020 and 2021 the prices of the properties increased by around 10.3%. This increase was mainly due to the increase of prices in the suburbs. The data collected for Ile-de-France shows clearly this trend where people were leaving the big cities such as Paris to settle in the inner and outer suburbs of Ile-de-France. According to Meilleurs Agents (2021) and Notaires de France (2021) prices have literally jumped by 8.5% in two years in these areas, the prices were rising more in the outer suburbs rather than the inner suburbs whereas the prices in Paris were decreasing. All these changes in the hierarchy of the big cities was due to the affordability of the bigger houses outside the cities and the availability and the option of the work from home that allows them to work any place far from the big city of Paris, but that has also an easy access to the capital.

2. SOUTH-EAST ENGLAND – Greater London



2.1. Change in Hierarchy of Real Estate Prices in the United Kingdom

In this case study, three major changes have been outlined overall in England. In which, the transition of accommodation options in cities, where value, versatility, and personal space take precedence over prime locations were highlighted first; on the other hand, the increased urban market diffusion, supported by new style of living and consumer behavior more by wealthy urban households; and lastly, the increased and new residential requests in rural accommodation areas.

Covid-19 has impacted tremendously the norms of the housing market in the United Kingdom. According to the data published by Rightmove (2021) (United Kingdom's largest online real estate portal and property website), during the first period of the pandemic 2020, the real estate market saw its prices decrease and freeze from March till May 2020, in both rental and sales prices and values to reach -50% and -80% respectively. After May 2020, the prices went back increasing where the sales reached a peak of +80% in April 2021 and the rentals +50%. However, this increase in prices for sales did not last for long, in October 2021, the rent prices were increasing more than the sales for +60% and +50% respectively as portrayed in the Figure 21 below. (Rightmove, 2021)



Figure 21: 2 years change in demands– 2020-2021, Rightmove, Data Service, 2021

This rise of prices was mainly due to the increase in prices in the rural areas, 12% increase compared to an increase of 6% in urban areas over the year 2021. (BBC, 2021) More and more people were looking for more spaces whether indoor or outdoor as an accomodation. These massive demands on new type of properties which were bigger and closer to the green spaces in less urban areas have accelerated the rise in prices: “Property values in less densely-populated areas have risen almost twice as fast as in urban hubs”. (BBC, 2021) Another source that emphasised this news of rural houses post-pandemic price growth in the United Kingdom was The Guardian (2021) which published an article under the title “Rural house prices in England and Wales rise twice as fast as in cities”. In this article they stated that this increase in prices was because of people wanting to move to bigger spaces in the countryside that are more affordable than the properties in the city. But this affordability did not last long in the rural areas due to the increased demands that increased the prices: “people moving from London and working from home on higher salaries than locally had driven prices further out of reach. Rural

house prices in the area rose more than 29% to £387,510 in the last year.” (The Guardian, 2021)

According to the Hamptons (2021), although the pandemic has contributed to the interest for rural living, it is probable that countryside rates would also have been increasing faster than urban ones albeit without the pandemic. Prices in cities had increased by 90% in the last ten years while only growing by 55% in rural regions. It has always been conceivable that by this point in the market cycle, they would be catching up, albeit possibly more slowly. (Figure 22, The Hamptons, 2021)

According to Nationwide Building Society figures (2021), each type of property saw a different variation in prices over the past years from December 2016 to December 2021, the rural detached houses category saw its prices increase for around 32%, whereas the rural semi-detached houses prices grew for 29% . However, flats prices in urban areas mainly had the weakest price growth of 6%. It was deducted that the increase in house prices was due to the high demands on the holiday or second home buying houses. (The Independent, 2022)



Figure 22: Average House Price in City vs. Country – 2000 – 2021, Hamptons, 2021

Again it was the pandemic with the more flexible work schedules that allow people to work from home from a far distance that led people to take this decision to relocate from their urban hometowns. (The Independent, 2022) Changes that could have occurred over a period of 15 years were condensed into a period of 15 months. The last phase of employees returning to their central city workstations after the lockdown is lifted is expected to happen. However, for others, the momentary change to teleworking may end up being, at least to some extent, everlasting. (The Hamptons, 2021) To illustrate more this new trend and variation in prices, we will tackle the region of London in details.

2.2. Decentralization of London's House Market

Even though London is not the focus of Britain's property market, it is a substantial source of market interest (as is the case in other global capitals, which have equivalent linkages to their regional countryside), and decisions taken in the capital (particularly transfers of built-up equities out from the capital) frequently have reverberating impacts further than the districts of London. (Meen, 1999) For this important role played by London, this case study will focus on the areas that surround it and the amount of people that are moving there, which led to the shift in the housing market prices and the decentralization of the capital.

The London Assembly (part of the Greater London Authority) has done a survey in the year 2021 about Londoners housing situation after Covid-19 and their desires to leave the capital.

The results of the survey were as it follows:

- 15% of the residents of London wanted to leave the city post-pandemic.

- 43% wanted to switch to new property. 34% from which wanted this new home to be out of London.

The desire to move to a new home had new requirements, the presence of a private outside space was a must, together with being a close distance from public green spaces; this was a result of being locked at home during the pandemic with a lack of space to breathe and work. (The London Assembly, 2021)

Rightmove (2021) has illustrated these movements out of the central London through maps and graphs. In which we can see that from 2020 to 2021 more and more people are moving out from London to settle in the outer London area.

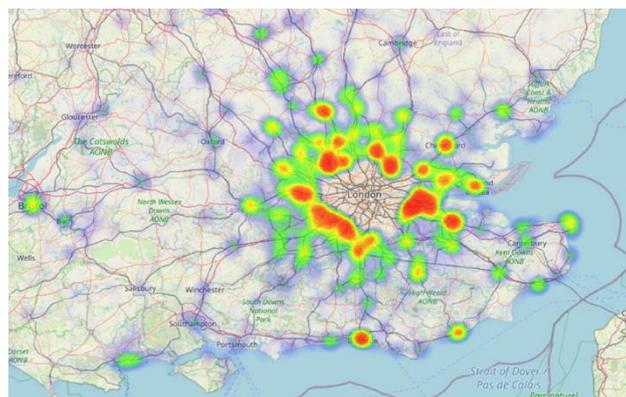


Figure 23: Sales inquiries leaving London – January 2020, Rightmove, Data Service, 2021

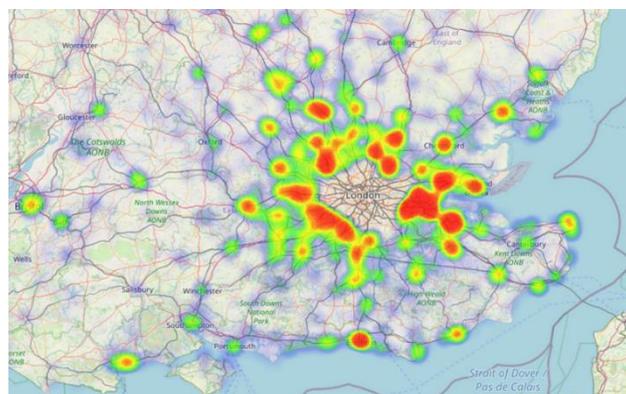


Figure 24: Sales inquiries leaving London – October 2021, Rightmove, Data Service, 2021

Over the years 2020 and 2021, the amount of people moving out and in to London was varying, before the start of the pandemic in March 2020, the amount of people moving in to London was higher than the amount of people moving out of London. But this proportion started to be reversed as of the start of the pandemic in March 2020 where more and more people started moving out of London. In August 2021 has recorded the highest peak of people leaving London, that reached around 58%. However, over the same period, London recorded the lowest amount of people moving in to London, the percentage reached the value of 42% as seen in the figure 25 below.

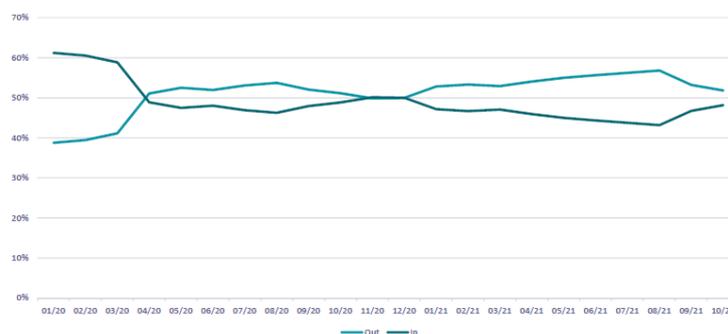


Figure 25: Proportion of London leads in to and out of London – 2020 – 2021, Rightmove, Data Service, 2021

2.3. Inner vs Outer London

However, this hides large divergences across regions: while prices increased firmly in rural areas, they declined in London – the region most affected by the virus and where evidence suggests that the housing market is the tensest. (Bricogne et. Al., 2021)

Due to the desire of people leaving London, the housing market has been affected tremendously. For the first time in 5 years London saw its real estate market prices going down. According to the data collected by ONS (2021), London recorded the lowest annual price growth by the end of 2021, where prices have decreased of around 7% from August

2021 to September 2021, to reach a value of 2.8% of price growth, as the national price increase of 11.8% over the same period. London's typical property prices, which were £507,000 on average in September 2021, remained the priciest of any location in the UK despite having the lowest yearly growth. (ONS, 2021)

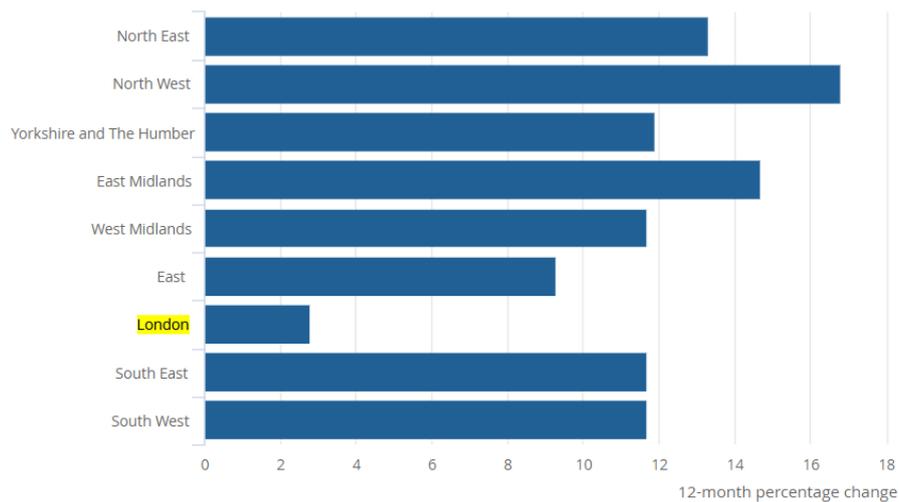


Figure 26: Annual house price rates of change, by English region – 2021, ONS, 2021

The variation and contrast of prices during the period of the pandemic was clear between the inner and outer London, where the values post-pandemic had been reversed. The real estate prices in the outer London increased, and on the contrary the prices in the inner London decreased, which created a so-called “doughnut-effect”. The overall property price change over the year 2021 in outer London increase of 5.7% versus 4.4% in the inner London over the same period. Based on the data collected by the Hamptons by the end of 2021: “The 13 boroughs in the capital with the strongest price growth in 2021 were all situated in Outer London. Redbridge led the field with a rise of 8.1%, followed by Waltham Forest (7.5%) and Harrow (6.9%). Prices fell in the following central boroughs: City of London (-11.8%), Kensington & Chelsea (-2.9%), Tower Hamlets (-2.6%), Westminster (-2.3%) and Wandsworth (-1.4%).”

Even though the house prices in outer London were increasing more than the house market prices in the inner London during the period of the pandemic, the property prices in the inner London had always been higher than the property prices in the outer region. More specifically, according to Plumplot (2022) the average price of a property in outer London is around 563 000 pounds in which the price of an established property costs more than a new built property (565000 pounds versus 505000 pounds) versus 874 000 pounds in inner London where the new built properties cost more than the established property as an average price (919000 pounds versus 871000 pounds). This gap in prices is mainly due to the central location of the capital in inner London in which most people who move there can afford living in new properties that are more available in this area, which led to a high demand and an increase in prices in this type of properties.

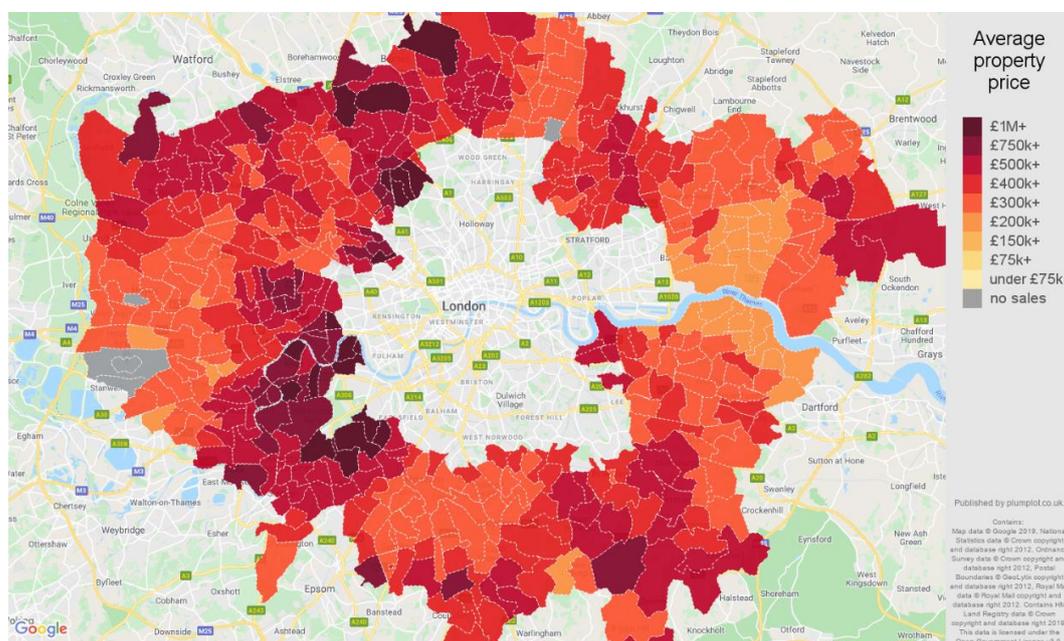


Figure 27: Average property price in outer London – 2021, Plumplot, 2022

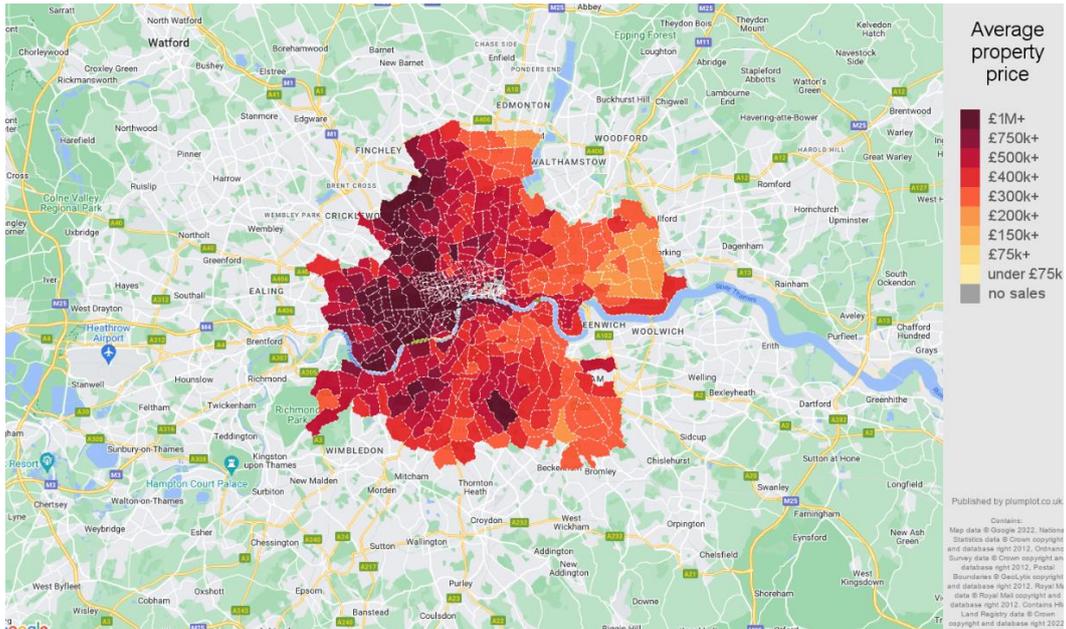


Figure 28: Average property price in inner London – 2021, Plumplot, 2022

2.4. Rental Market

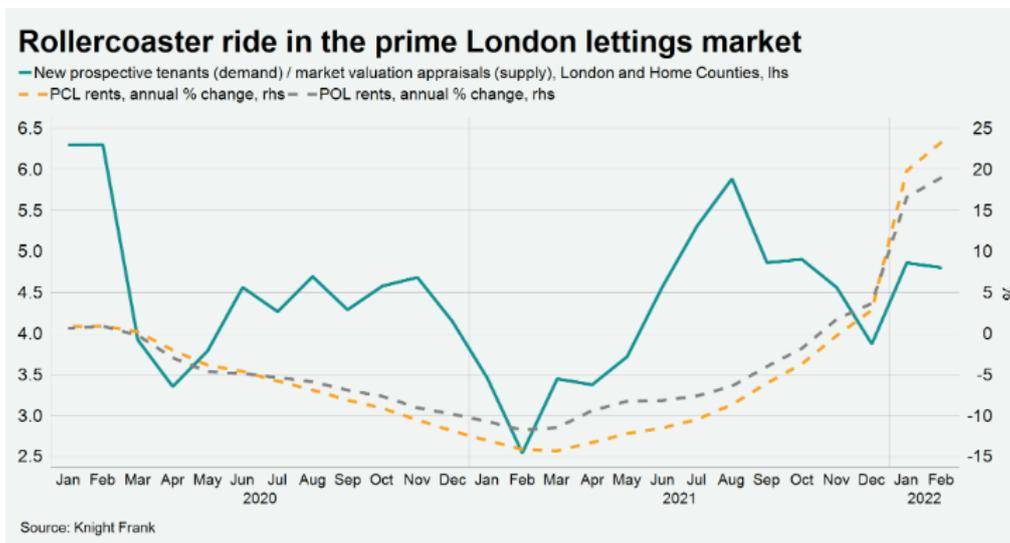


Figure 29: Annual Rents percentage change in PCL and POL– 2020 to 2022, Knight Frank, 2022

Based on the data collected by Knight Frank (2022), despite London's supply increased as short-term rentals transitioned to the long-term rental market, demand decreased as fewer foreign students and businesses rented during the pandemic's March

2020 to March 2021 period. In inner London (PCL), annual rental growth reached 23.3 percent, while in outer London (POL), it was 19 percent in February 2022, highlighting the sharpness of the decline that peaked in April 2021 (Figure 29). A rush of short-let properties entered the long-let market early the year 2021 as England began to lock down, but demand was subdued because many offices and institutions were still closed in the first quarter of 2021.

The reason behind this trend was due to some tenants moving further into the center of London as a result of dropping rents. (Knight Frank, 2022) As stated in the report of Knight Frank (2022): ““The last two years have been a rollercoaster ride in the prime London lettings market,” said Tom Bill, head of UK residential research at Knight Frank. “Demand has been generally strong while supply has ebbed and flowed quite dramatically, although more balance is now returning.”

2.5. Properties Outside the Capital

To dig more into details, most of these movers are moving out of London to settle in the outer London and in the outer area of the Greater London (outside the capital). London movers are traveling farther than it has ever been due to the possibility of doing teleworking. Londoners have traveled farther to leave the city since the real estate market resumed in May.

According to Hamptons (2021), Londoners bought 112,780 properties outside the city in 2021, which would be a 42,970 or 62 percent increase from 2020 and the greatest number since 2007 (when there were 1.7 million sales in all Great Britain). The amount paid on properties (a part of the buyers was 24% of Londoners) was £54.9 billion, a

record since 2015. This is due to the increase in the average purchase price from £450,460 in 2020 to £486,890 and to the first homebuyers in 2021.

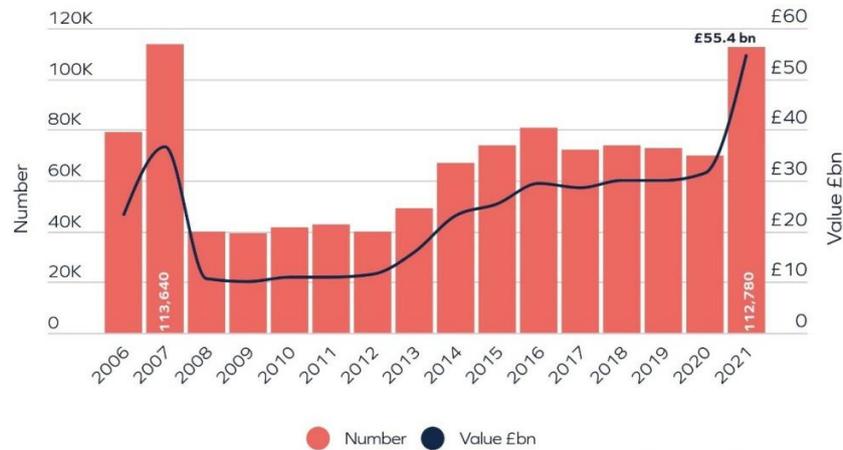


Figure 30: Number and Value of Homes bought outside the capital by Londoners, Hamptons, 2021

In 2020, the top Hotspots that the Londoners chose to move to were 28 miles far from the central London. Their demands and move lead to the increase in prices in the following areas: “Sevenoaks recorded the biggest increase in the share of homes bought by Londoners. This year, 62% of homes in the area were bought from a Londoner, 39% higher than in 2019. Windsor and Maidenhead (+27%), Oxford (+17%) and Rushmoor (+15%) in Hampshire follow”. (Hamptons, 2020)

Whereas in 2021, some new places that were 34.7 miles away recorded higher demands and prices such as Dartford and St Albans for first-time buyers, and Arun in West Sussex for second home buyers. (Hamptons, 2021)

2.6. Takeaways from Greater London Case Study

To sum up this case study, overall England has seen a major shift in its house market prices and values affected by the pandemic during 2020 and 2021. After the lockdown in

2020, more people decided to move out of their big cities, due to the bad experiences they went through while being locked in their small flats, so they decided to adopt new lifestyles by buying second homes in the countryside. Mostly Londoners decided to move out from London, looking for bigger houses with more outdoor spaces, located near greener areas considerably rural areas but with a strong connection to the central location of the capital London. This phenomena of decentralization of the housing market in London created by the new demands in the rural areas had led to some inequalities and unaffordability caused by the rise of house market prices there.

Gallent and Madeddu (2021) have interpreted this decentralization in a very reasonable way by analyzing every aspect of the market affected by the pandemic. According to these authors, people decentralizing London were putting pressure on the resources of the rural house market that might persist by leading to a “gentrification and counter-urbanization wave”. Gallent and Madeddu (2021) thought that this pressure on the rural and suburban property market will be challenging by “decreasing service pressure if more people decentralize their lives or decreasing service use if more people have second homes.” As a solution to ease the challenges and the disparities in responding to the accommodation needs of the various social classes, Gallent and Madeddu (2021) proposed that the system of the planning process would need to take into consideration not only through shifting market decisions but also with the abilities of various factions to satisfy stated or implied needs through established market procedures, which have produced imbalanced advantages and ingrained disparities over the past few decades. This is necessary in order to realize the government's goal of "building back better" and to “provide good quality homes at affordable rents” according to the “new working patterns and new lifestyle changes”. (Gallent and Madeddu, 2021)

3. UNITED STATES OF AMERICA – New York City



Covid-19 effect dec 2019- dec 2021
 -lockdown
 -virus spread in densely populated areas
 -low supply
 -job loss



Government Interventions 2020-2021
 -58% remote work
 -low interest rate
 -relaxed its national assessment requirements



migration
 -buying 2nd houses bigger and cheaper
 -living in low dense areas



price variation
 -(-13%) in new york
 -(+41%) in the suburbs



Legend

- price increase between 20 to 40 %
- price decrease between -5 to -10 %
- very dense area
- less dense
- rural
- migration between districts

3.1. COVID-19 and the USA Real Estate Market

The economy and society of the USA underwent great changes due to the pandemic. market sales in different regions are also changing. 2020 was anticipated as a big home buying year since a new wave of millennials were reaching the prime age to buy a home. Then, because of Covid, these millennials found themselves working remotely. Zillow found that about 2 million renters who could not afford to buy a house in the metropolitan areas before, can now buy further away from the city since they no longer must commute to work. This caused many renters to become homebuyers, causing fluctuations in the home and rental prices.

Lower-income households are more likely to have experienced job loss in hard-hit industries, such as retail trade and food services. Some had to turn to other alternatives, like shared apartments or moving back with their families (US Census Bureau, 2020).

In cities in the Northeast and West regions like New York and San Francisco, home value growth trailed the suburbs, but that was not the case for markets in the Midwest. For example, home values surged the city in the Kansas City and Cleveland metro areas, where urban prices were relatively affordable. People in bigger, more expensive metropolitan areas seem to be not willing to pay premium prices for benefits and amenities that were no longer available during the pandemic, for example, restaurants, museums, and entertainment. But demand increased significantly in the more affordable urban areas (Zillow and census burrow data, 2021).

Most home buyers used to decide where to buy based on affordability, amenities, and big life events such as a new job, growing family, or older kids moving out. The mass transition to remote work, even partial, is now another factor in homebuyers' decisions.

This part of the paper will dig deeper, to better understand the main drivers for what media refers to as the exodus of New York City, a primary example showcasing the effect of the pandemic on the real estate market of the metro areas. Then, it will showcase how these causes reflect on the actual market prices, to verify the hypothesis.

3.2. The United States and Work from Home

McKinsey (2022) worked alongside the market-research firm Ipsos to query 25,000 Americans in spring 2022, to collect statistics and data regarding the remote working situation for Americans. As seen in figure 31, results show that fifty-eight percent declared to have the chance to work from home at least one day a week. Out of those, thirty-five percent responded that they have the chance to work five days a week from home. In addition, survey subjects came from a vast range of jobs and sectors, including both blue-collar jobs and white-collar professions. Extrapolating these numbers in relativity to their sectors and employment typologies, ninety-two million people have the option to work from home for all or part of their week. This merely confirms the already established new norms of the working world and society in its functioning.

Of job holders in the United States, 58 percent—the equivalent of 92 million people—say they can work remotely at least part of the time.

Availability of remote-work options, % of employed respondents (n = 13,896)¹

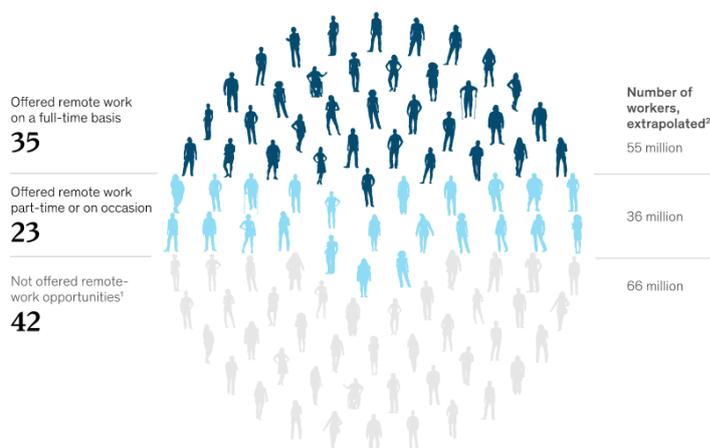
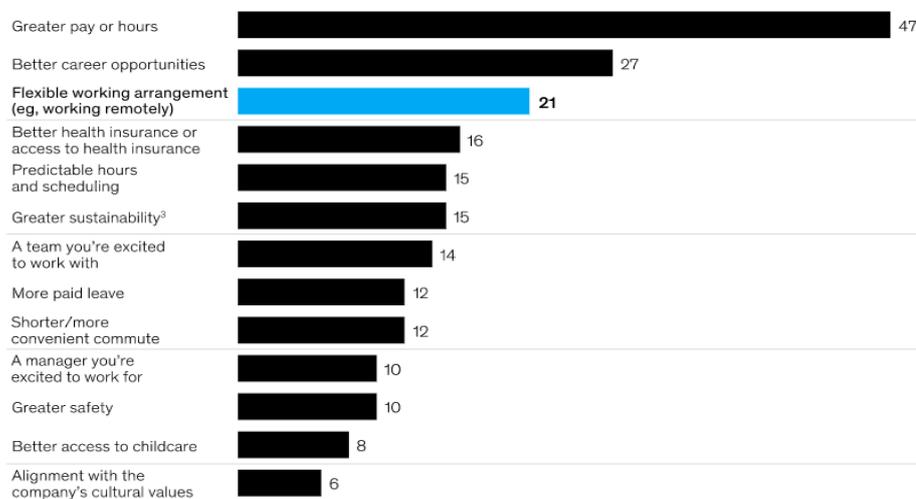


Figure 31: Statistics collected from survey regarding WFH in the USA, McKinsey and Company, 2022

Only thirteen percent of the survey subjects responded that they could work remotely in part but choose not to. Roughly forty-two percent do not have the choice since their employers or jobs demand on-site presence due to its physical nature. Notably, the work market was rushed into this transition, meaning it has not evolved yet to reach its definitive form.

A flexible working arrangement is a top three motivator for finding a new job.

Motivation for seeking a new job,¹ % of respondents looking for a job (n = 11,958)²



¹Question: Which of the following are reasons that have motivated you or would motivate you to seek a new job (select as many as 3)? The responses "Other" and "Nothing" are not shown.
²Only asked of respondents who reported having looked for a job in the last 12 months, are currently looking for a job, or plan to look for a job in the next 12 months.
³And ability to maintain mental health and well-being.
 Source: McKinsey American Opportunity Survey Spring 2022



Figure 32: Statistics showing the main factors for finding a new job according to survey, McKinsey and Company, 2022

Technology, comfort and safety standards will play a key role in how jobs nature will shift in the future.

According to the World Economic Forum's "The Future of Jobs Report 2020", AI is expected to replace 85 million jobs worldwide by 2025. It will also create 97 million new jobs in that same timeframe. How and why is still to be seen, but one thing is certain; new job norms are in play, and the natural trend will only proceed to converge.

Another side of the survey covered, whether people were currently or planning on searching for a job, and if so, what would be the main drivers for their decision-making. The most popular answers were a desire for higher pay, followed by a search for better

career opportunities, and third, the possibility of remote working. If a candidate is presented with two opportunities with similar pay, the possibility to be able to work remotely has most certainly become a determining factor.

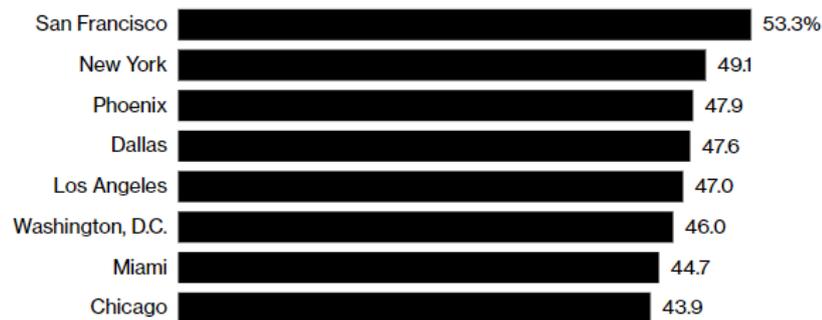
According to Nicholas Bloom, an economics professor at Stanford University, the average New York City office worker plans to cut down on office time by 49% to reduce their spending in the city from approximately 12,561\$ before the pandemic to roughly 6,731\$, as seen in figure 33. Bloom also suggested that New York could lose 5% to 10% of its center population, causing a softening in real estate values (Bloomberg, 2022).

“People used to live in cities because they had to come into the office five days a week,” said Bloom, who has surveyed about 5,000 workers and 1,000 companies about their work habits and policies throughout the pandemic. “If they don’t have to, and they want a backyard, they move out to the suburbs. We see that across cities and call it the doughnut effect.”

Working Remotely

New York City workers plan to be in their offices about half as often

■ Reduction of days on business premises



Source: Stanford University, Nicholas Bloom

*Note: Reflects survey data taken from January to March 2022 on working plans

Figure 33: Percentage of NYC workers aiming to WFH to reduce their city spending.

3.3. The Doughnut Effect in New York City

The Doughnut effect highlights the relocation of activities from city centers to the rural or suburban ring of the city. This is mainly evident within cities, rather than across cities. To highlight the factors justifying the doughnut effect, Prof. Bloom and co. (Nicholas Bloom, 2021) ran a zip-code level regression with Metropolitan statistical area fixed effects of the percentage of change in rent or price index between the time window of February 2020 and February 2021 on a set of different characteristics, that are density, the density in the central business district, the distance to the central business district and the percent variation of the price that was calculated using an arc percentage change methodology from Davis, Haltiwanger, and Schuh.

Results seen in figure 34 show that rents drop more in areas with higher densities, larger work-from-home opportunities, and shorter travel distances to the central business district. This is in accordance with the impact of covid on the real estate narrative for rent growth changes. This is further reinforced by the data in the following graphs, obtained from Zillow about the 12 largest US metro areas, including New York City, which confirms a positive relationship between net population flows and residential rental and price growth for zip codes in those areas.

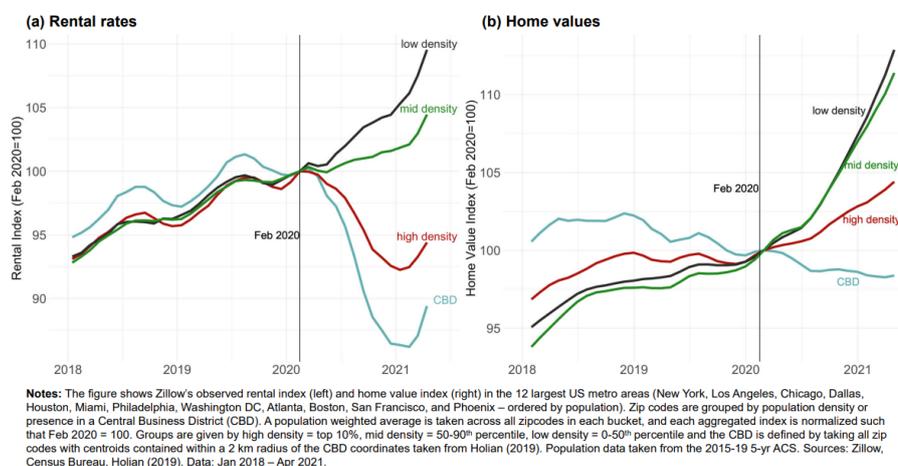


Figure 34: Home values and Rental rates variation across the years, depending on the population density in the 12 largest USA metropolitan areas. Zillow, Census Bureau 2021

The national bureau of economic research in their paper “FLATTENING THE CURVE: PANDEMIC-INDUCED REVALUATION OF URBAN REAL ESTATE “(2021), showed that the COVID-19 pandemic caused a drop in housing prices and rent declines in city centers, and price and rent increase away from the center, thereby flattening the bid-rent curve in most of the United States metropolitan areas. NBER observed that across MSAs, the flattening of the bid-rent curve is larger when working from home is more prevalent, housing markets are more regulated, and supply is less elastic.

Results show that properties away from the city center have become more valuable throughout 2020, flattening the bid-rent curve, and resulting in a positive estimate for price gradient between both periods. The urban core of Manhattan displays a severe drop in rents, while suburbs rent can be seen to increase, in the rich neighborhood of the Hamptons. Idem for prices.

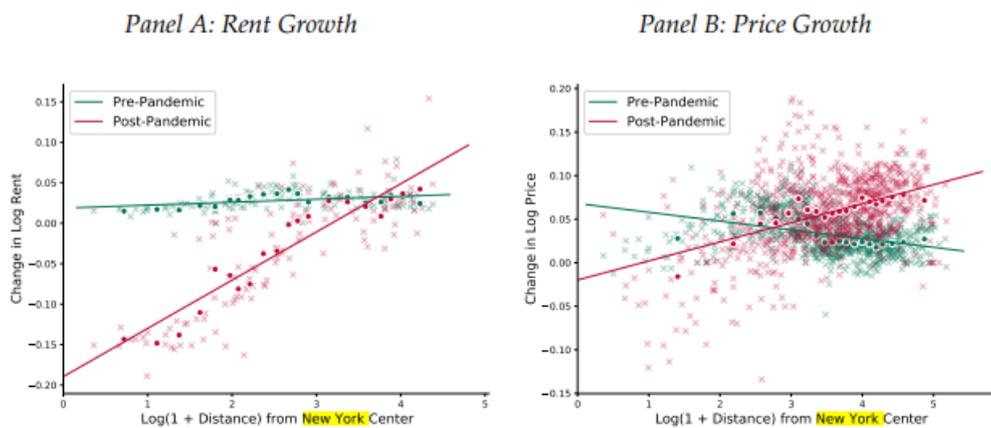


Figure 35: Graphs showing the correlation between rental and price growth as a function of the distance from the CBD of NYC in both the pre- and post-pandemic eras, NBER, 2021.

Panel A of figure 35 exhibits a significant change in rental growths between pre-pandemic periods and post-pandemic periods. Before the pandemic, the growth was steady both in the urban and the suburban areas of New York City. This changed drastically during the year 2020. Panel B shows the strong change in house price growth in that same period.

2.1. New York City Demography and COVID-19

New York city's demography has a median age of thirty-seven and half years, according to census data (United States government, 2019) highlighted in figure 36. Fifteen percent of the population lies in the age category of between 20 and 29 years old. This social layer is composed of neo-graduates and short-career individuals. The first, often referred to as the class of Corona, are graduating schools and universities with scarce chances of finding job opportunities. The latter already went through a heavy economic

	NYC	Manhattan	Bronx	Brooklyn (Kings)	Queens	Staten Island (Richmond)
Total Population	8,336,817	1,628,706	1,418,207	2,559,903	2,253,858	476,143
Sex						
Male	3,979,090	771,278	669,355	1,212,991	1,094,029	231,437
Female	4,357,727	857,428	748,852	1,346,912	1,159,829	244,706
Age						
Under 5 years	6.06%	4.7%	7.1%	7.1%	6.1%	5.3%
5 to 9 years	5.48%	3.7%	6.3%	5.9%	5.2%	6.3%
10 to 14 years	5.82%	3.8%	7.3%	6.2%	5.6%	6.2%
15 to 19 years	5.46%	4.2%	6.6%	5.3%	5.1%	6.1%
20 to 24 years	6.28%	6.8%	7%	6%	5.6%	6%
25 to 29 years	8.8%	11.5%	8.4%	9.2%	8%	6.9%
30 to 34 years	8.38%	10.7%	7.6%	9.1%	8%	6.5%
35 to 39 years	7.06%	7.8%	6.4%	7.5%	7%	6.6%
40 to 44 years	6.42%	6.6%	6.4%	6.5%	6.6%	6%
45 to 49 years	6.26%	6.1%	6%	5.9%	6.6%	6.7%
50 to 54 years	6.26%	5.9%	6.3%	5.6%	6.7%	6.8%
55 to 59 years	6.4%	5.8%	6%	5.5%	7.2%	7.5%
60 to 64 years	5.84%	5.5%	5.4%	5.7%	6.2%	6.4%
65 to 69 years	4.8%	4.8%	4.1%	4.4%	5.1%	5.6%
70 to 74 years	3.96%	4.3%	3.3%	3.8%	4.1%	4.3%
75 to 79 years	2.76%	3.1%	2.5%	2.5%	2.8%	2.9%
80 to 84 years	1.96%	2.4%	1.7%	1.8%	2.1%	1.8%
85 years and over	2.06%	2.4%	1.7%	1.8%	2.3%	2.1%
Median Age (years)	37.5	37.6	34.8	35.6	39.7	40.0
Sex Ratio (M per 100 F)	91.7	90.0	89.4	90.1	94.3	94.6

Figure 36: Table showing the demographic distribution of NYC, Census Bureau, 2019

crisis in their brief careers. Losses in skill development and preliminary working experience will heavily influence their work lives in terms of future opportunities and economic growth. This generation will also suffer the consequences of the high debt incurred by governments to reduce the current drastic economic consequences of the crisis (OECD, 2020).

From monthly data collected for the G20 countries, younger people hold jobs that are more insecure and overcrowded among workers in the hard-hit industries, in particular business services. Available data of G20 countries shows that job losses between December 2019 and April 2020 were far greater for young workers than for adults, as highlighted by figure 37 obtained from the international labor organization, in their paper discussing the impact of the COVID-19 pandemic on jobs and incomes in G20 economies. Hence, the unemployment rate for younger individuals has increased in comparison to their older peers.

% change in employment from peak to trough during the COVID-19 crisis and the Global Financial Crisis (GFC)

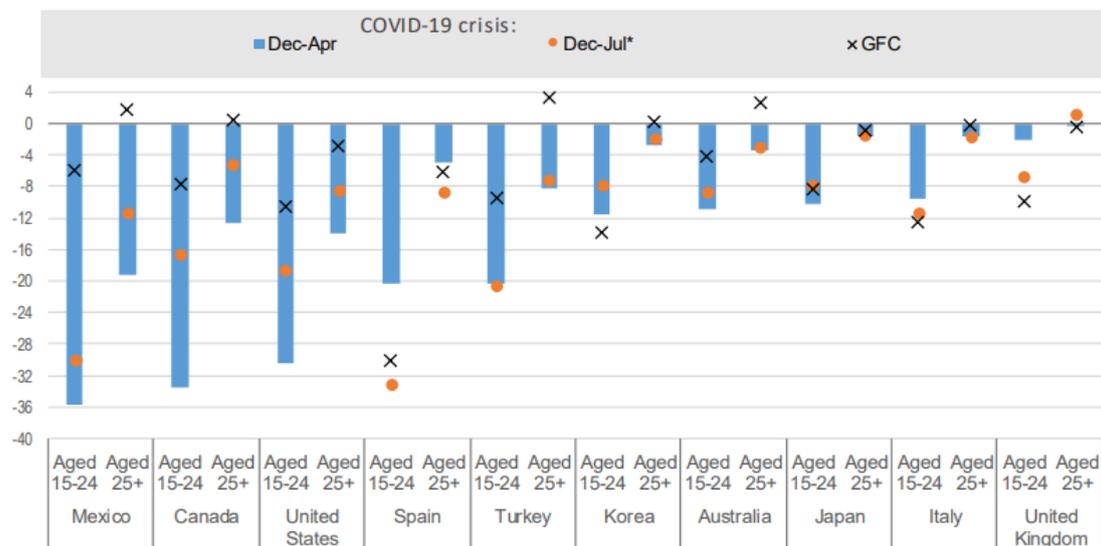


Figure 37: The impact of the COVID-19 pandemic on jobs and incomes in G20 economies ILO-OECD paper prepared at the request of G20 Leaders Saudi Arabia's G20 Presidency 2020

As of August 2021, it was estimated that 1.3 million New Yorkers worked in professional and business services. This sector contributed 195 billion dollars to New York's gross domestic product in the year 2020. This large domain includes many different groups of professions, including lawyers, mechanics, accountants, and whoever shares similar job traits and functions. This sector was heavily hit because of the social role it plays (Nasdaq, 2020). It is in principle supplementary to more critical sectors. The financial services

sector leads economic trends, whilst business services depend on the growth and success of other industries (Statista Research Department, 2022).

The lack of rigid constraints imposed by employment, and poor economic conditions caused the largest demographic age group of New York City to have to look elsewhere for opportunities. The high cost of living was no longer tolerable nor justifiable.

Migration of residents and its effects:

According to Unacast (2021), a location data platform, which analyzed anonymous cellular location data, roughly three and a half million people left the city of New York during the solar year of 2020. A net of seventy thousand left the metropolitan area, resulting in 34 billion dollars in income losses. In the wealthy neighborhood of Tribeca, the residents who migrated had an average income of 140 thousand dollars (Reuters, 2020).

“I can’t remember the last time we were this busy,” said Owen Berkowitz, with the Berkowitz Marrone Team at Douglas Elliman, who serves Westchester County, New York; Fairfield County, Connecticut, and other high-end markets around New York and Boston. (CNBC, 2020).

“It seems like everyone wants to leave the city,” said Steven Magnuson, a Douglas Elliman broker in Greenwich, Connecticut, “Our problem is not enough inventory for sale. We’ve been on the phone 24/7 and on email.”

According to the real estate agents, wealthy buyers did not want the larger properties and mansions because they required a lot of work to be maintained, and they preferred to be in the city. But since the covid crisis, larger homes with multiple rooms and amenities, bigger land parcels, and remote locations became favorable. “I’m seeing a

much higher wealth level of buyer than we've seen in the past right now," he said. "They're looking for the highest quality." (CNBC, 2020).

Whether the purchases were targeting second homes or primary residences, does not matter in the grand scope of property turnover and prices increase.

This trend can also be analyzed at the state level. Home sales in Connecticut increased by twenty percent between 2019 and 2020 because of the popularity of its suburban areas.

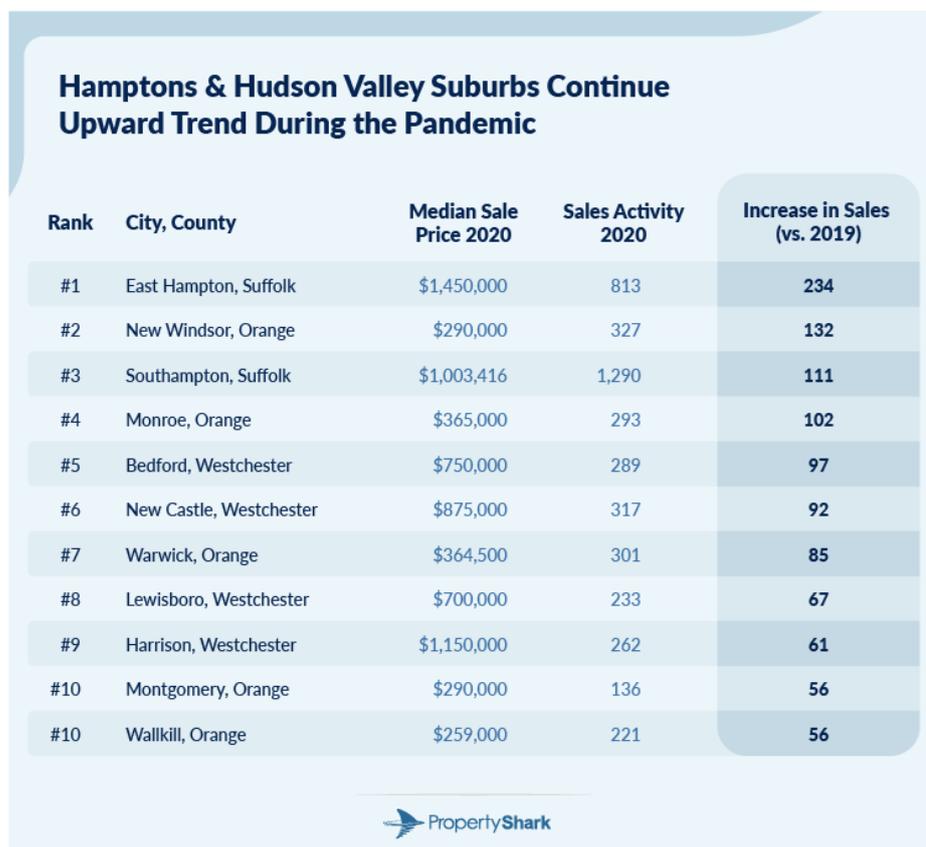


Figure 38: NYC Suburbs That Drew Homebuyers During COVID-19, LUCIAN ALIXANDRESCU, NEW JERSEY REAL ESTATE, 2021

In that same period, sales went down by 13% in the state of New York. Notably, home sales went down by roughly 21% in New York City due to the state's proper suburban areas. Performing a deep dive into suburban counties and how sales typology and prices were affected, it is found that, for example in Fairfield County, the average

home sold had 129 more square feet than the average of the year 2019. The same goes for Suffolk County where homes on average were 132 square feet larger. In Westchester County, the average size increased by 98 square feet. Simultaneously, apartment turnover in Fairfield saw an increase of 17%. Notably, house sales increased by 35%. In Litchfield County, 33% more standalone houses were sold. New Haven County saw an increase in sales of 15%. The pandemic changed the criteria for home requirements. Buyers are searching for larger unhinged properties with more outdoor spaces compared to the centralized estate with smaller dimensions (Alixandrescu, 2021).

The suburb that saw the largest increase in home sales was Toms River, New Jersey, located halfway between New York and Atlantic City. with 492 more houses sold than in the year 2019. In addition, the median sale price saw an increase of 12%, reaching 330,000\$ in 2020(Alixandrescu, 2021).

As seen in figure 38, New York's most popular suburbs were saturated in three counties in particular; Orange country had five destinations, Westchester four, and Suffolk two. Suffolk's East Hampton is the most expensive in New York with a median price of 1.45 million dollars in 2020, up from 1.1 million dollars in 2019. The town saw also an increase in sales of 40% compared to the previous year, further reinforcing the presented evidence of wealthier societies reallocating to the suburban areas of New York. Montgomery is the town that saw the highest increase in sales, with turnover in 2020 increasing by 70%. New Windsor is a close second at a 68% sales increase. (Alixandrescu, 2021).

2.2. Takeaways from NYC Case Study

In conclusion, the effect of the pandemic on the real estate market of New York City is evident. The integration of new norms for job requisitions has forced the hand of employers to promote remote work in their talent research and acquisition. The strong economic hit to the business sector has caused the most widely present age demography of New York City to have to look elsewhere for accommodation and opportunities for growth. Wealthier societies, previously generating heavy income for New York City, are now more in favor of the suburban spacious life. The media is referring to this phenomenon as the Exodus of New York City. However, this is merely a natural reaction to a history-altering pandemic, aiding humankind to grow more resilient to any future threats or challenges.

3. PEOPLE'S REPUBLIC OF CHINA – Hangzhou

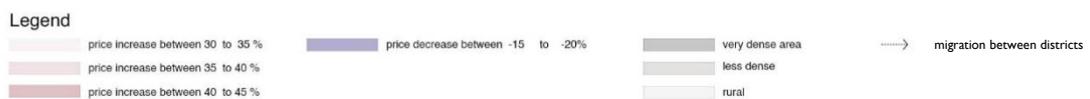


Figure 39 Map of Hangzhou, China. Source: Author

Housing Market in Hangzhou

Hangzhou, one of the oldest cities in China, has transitioned into a highly developed and urbanized metropolitan area. This high development in the area caused a tremendous increasing in the price of housing in the district in general. According to Tsai et al (2022), alongside transportation and scenery, tourism is a must discuss factor when highlighting the housing prices in Hangzhou district. This case study is going to discuss the effect of COVID-19 on the housing market and housing prices in the district characterized by the central districts of Shangcheng, Xiacheng, Xihu, Gongshu, Jianggan, and Binjiang and the suburbs of Xiaoshan and Yuhang.

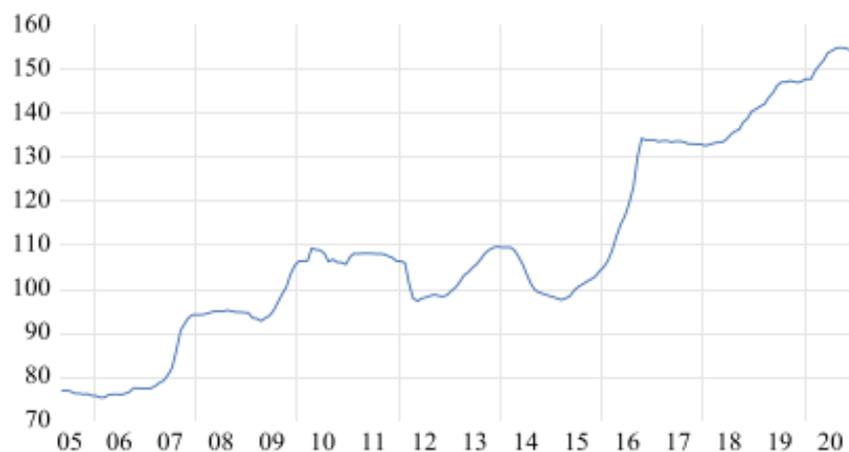


Figure 40: Housing Price Index in Hangzhou

This graph shows the increase of housing prices over the years from 2005 till 2020. It portrays that the housing price graph exhibited a sharper increase towards the 2019-2020 from 132 housing price index to 155 housing price index which could be explained by the COVID-19 crisis. Moreover, as discussed above, the Hangzhou

metropolitan area has exhibited a touristic boom starting from 2007 recording 95 housing price index compared to the 78 in 2006.

3.1. Effect of COVID-19 on housing prices

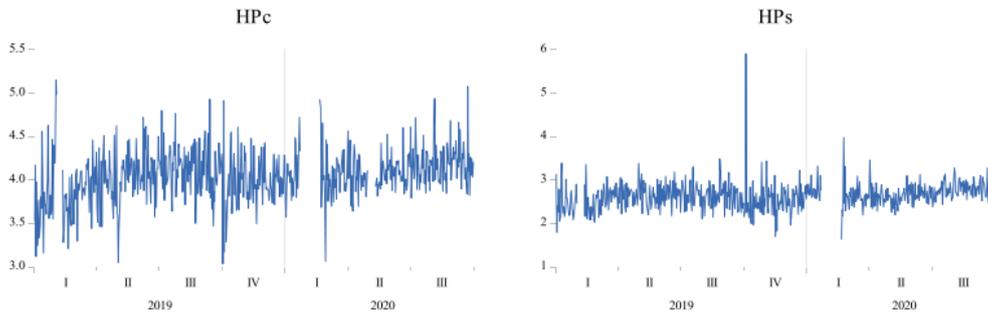


Figure 41: Average Unit price in city districts and suburbs respectively

The data collected by Tsai et al (2022) shows that housing prices are relatively larger than those of suburban districts and this is due to the flourishing tourism of the area and the economic powerhouse that the city districts form. The calculation for each data period reveals that the average housing price per m² is higher in the city than in the suburbs by CN¥14,000 (i.e., by 53%) (Tsai et al, 2022). Taking the first quarter of 2020 into analysis, housing prices in cities recorded a peak value of CN¥5 per m² while the peak value in suburbs was at CN¥4 per m² (Graphically). Nevertheless, this study and the graph provided above show that the housing prices in suburbs increase after the lockdown decision (September 2019) with a peak increase at CN¥5.8 per m² in the first month when lockdown was enforced. This could largely be due to the population density of the city districts and how COVID-19 was spreading easily and faster in densely populated cities (Tsai et al, 2022). Thus, in contrast to people's previous preference of living downtown, studies have revealed increased residential migration towards areas with less populated density such as suburbs which will affect the housing prices in both downtowns and

suburbs because these two districts are differently affected by the lockdown decision and COVID-19 and these two will furthermore converge in terms of housing prices (Tsai et al, 2022). Gupta et al (2021) state in their study in the United States that the regional housing prices differences will continue to decrease, suggesting a flattening phenomenon due to COVID-19. Concerning downtown housing prices, owners of downtown housing properties may be affected the most by the pandemic because it has tremendous effect on the fluidity and informativeness of the downtown housing market which forces these owners to sell their properties on a short notice (Tsai et al, 2022). Hence, this will lead to a decrease in the price of downtown short-term rentals.

4. CANADA – Toronto & Montréal



Covid-19 effect dec 2019- dec 2021

- lockdown
- virus spread in densely populated areas
- low supply increase in demands



Gouvernement Interventions 2020-2021

- remote work
- relaxed its national assessment requirements
- high amount of vaccination
- low mortgage interest rate



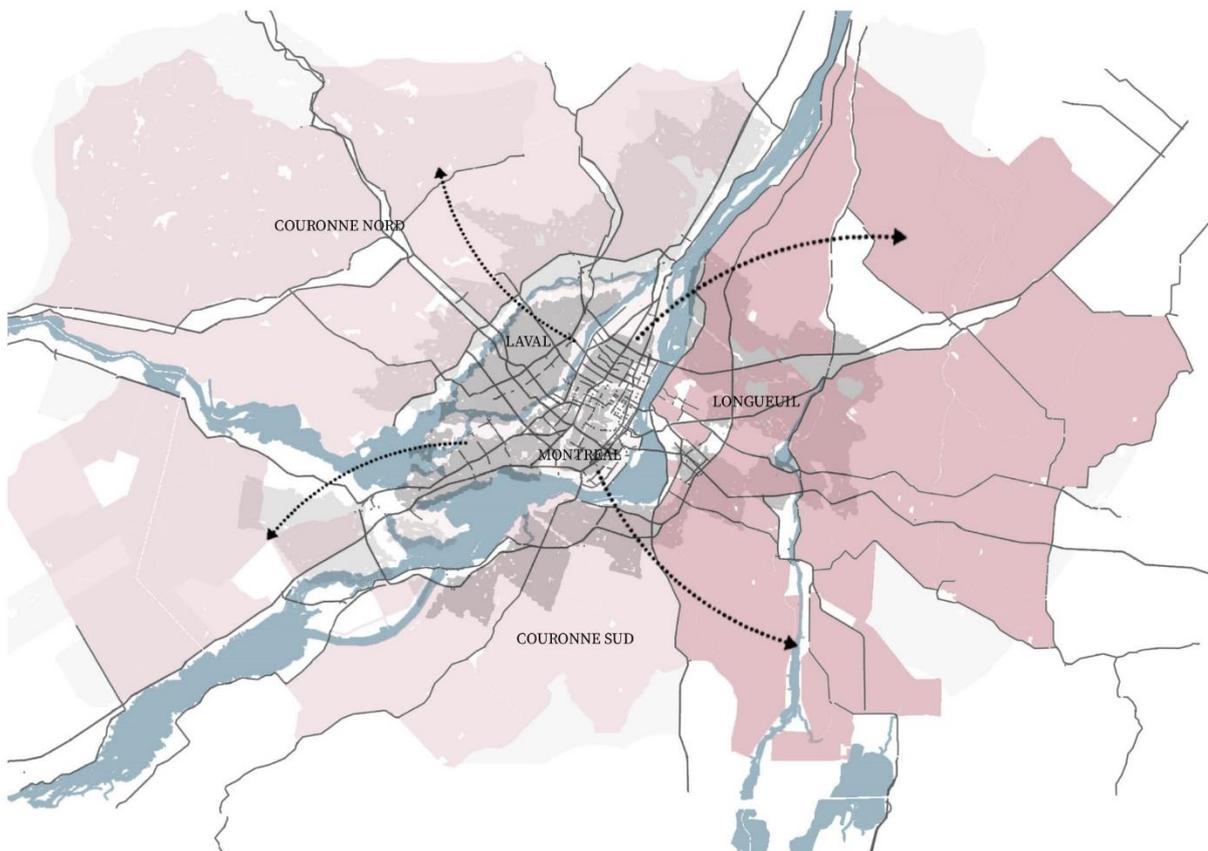
migration

- economic growth and high consumer purchase power
- buying 2nd houses bigger and cheaper
- living in low dense area close to the city



price variation

- (+20%) in the city
- (+46%) in the suburbs



Legend

- | | | |
|-----------------------------------|-----------------|-----------------------------|
| price increase between 10 to 25 % | very dense area | migration between districts |
| price increase between 25 to 35% | less dense | |
| price increase between 35 to 45% | rural | |

As discussed in previous case studies conducted in this paper, prices in downtown districts tend to be high and gradually go down as one moves away from the city center. This is known as the bid rent theory, introduced by American economist William Alonso in 1964 where it is based on two facts: (National Bank of Canada, Morel, 2022).

1. land is scarce in downtown areas.
2. the potential for high foot traffic implies that retailers are willing to bid big money to secure a lease.

Where downtown living is characterized by shorter commutes and easy access to public transportation and services offered by the government.

Regarding the research conducted by the National Bank and Bank of Canada in 2022, it focused on the 15 major metropolitan areas in Canada such as St. John's, Québec, Ottawa, Montréal, and Toronto. All of these regions (the city and its suburbs) have shown a same trend regarding housing price during COVID-19 and regarding the change in suburb housing prices, mostly focusing on Montréal and Toronto. Noting that prior to the pandemic, the housing prices in city districts were higher than those in suburbs, however, the gap was closing steadily but in a slow trend. As a result of the pandemic, this house price gap narrowed faster as preference shifted towards more living space and rural areas (National Bank of Canada, Morel, 2022).

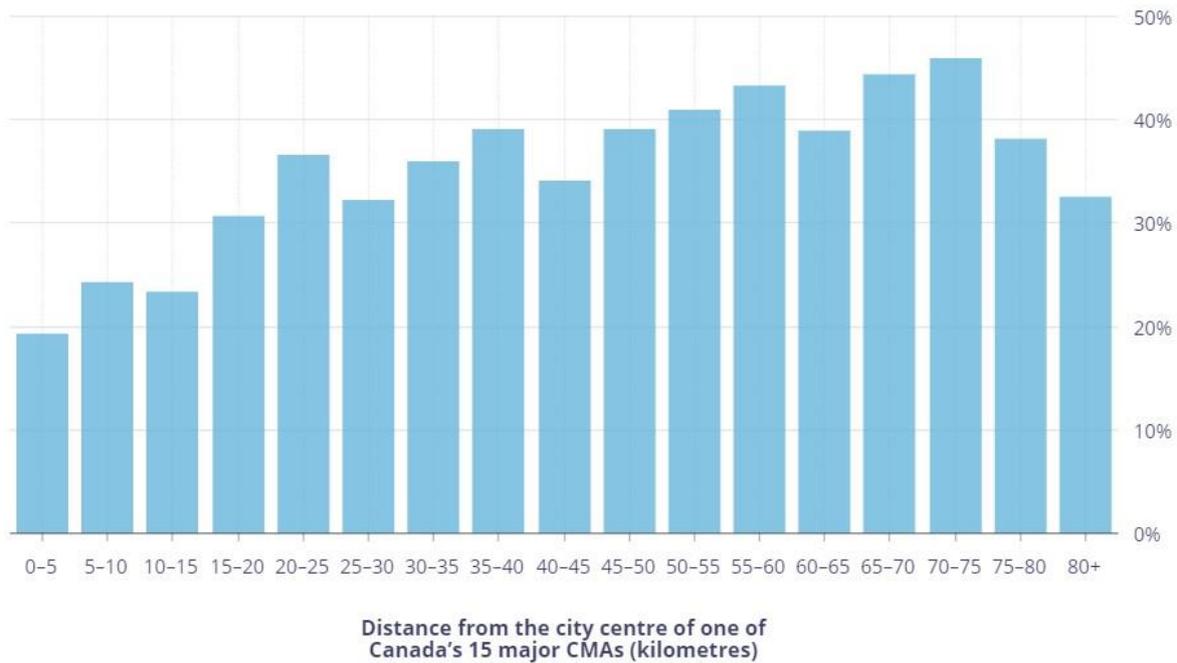


Figure 42: Average increase in house prices between 2019 and 2021 as a function of the distance from downtown area in the 15 major cities conducted upon

To support what was mentioned above, this graph shows that the areas within the Metropolitan region of these cities (0 -5 kilometers) exhibited the lowest average housing price increase between 2019 and 2021 at 19.39% while areas at a distance of 65 -70 kilometers and 70 – 75 kilometers measured the highest average housing price increase at 44.47% and 45.98% respectively. It also illustrates that in these 15 major cities including Toronto and Montréal within the study, the housing price trend was an increase even within the city centers although the gap between the percentage of increase was huge with a maximum range of 26.59%. As people were moving towards the suburbs more and more. The demand on residential areas increased causing a major increase in the prices of houses located in these suburbs (supply and demand).

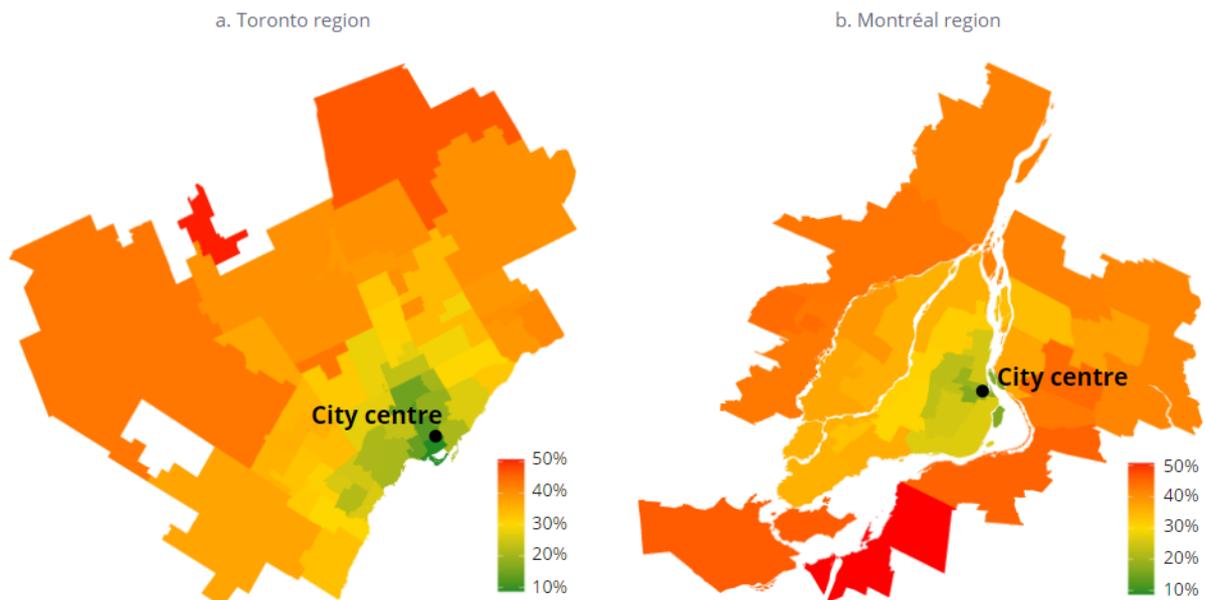


Figure 43: Growth in house prices between 2019 and 2021 (%) for all property types, by forward sortation area

Focusing on the districts of Montréal and Toronto, these two figures provide a regional overview of growth in house prices according to the distance from city center district. Even though the metropolitan areas of Toronto and Montréal exhibited a housing price increase, it was the lowest near 10% (could be lower or higher in few). And as housing areas moved away from city centers thus growth in housing prices increased gradually as the color on the map of the two regions indicate along with the numbers. The regions farthest away from the city districts are displayed with a dark red color indicating an increase of around 50% in housing prices. This has been also proved in the previous graph where values of 44.47% and 45.98% were recorded for the far away suburbs. Regions with an intermediate distance away from the metropolitan areas exhibited a moderate increase in housing prices ranging between 25% and 40%. This proves that housing price increase during COVID-19 is in function of the distance from the city centers due to several reasons.

These two figures prove that the house price gap between suburbs and city centers have majorly flattened during the COVID-19 pandemic. This could be the result of people shifting their preference to reside in more housing space due to the fact that COVID-19 could spread more easily in regions with a relative heavy density population such as city districts (National Bank of Canada, Morel, 2022). Moreover, with the increase in housing prices in general, some households especially first-time homebuyers, are preferring to move away further from downtowns to purchase houses with more reasonable prices (National Bank of Canada, Morel, 2022).

With the shift to remote work as COVID-19 lockdowns were enforced, living close to the office was less advantageous and many of the services that downtown residents are provided with such as restaurants and hotels were closed numerous times due to continuous outbreaks of the disease (National Bank of Canada, Morel, 2022). All this combined with online education and public health restrictions, Canadians were spending a lot of time at their homes. Thus, the desire for more living space encouraged them to seek out houses in suburbs as they are more affordable and larger for the same price in city districts.

5. JAPAN – Greater Tokyo

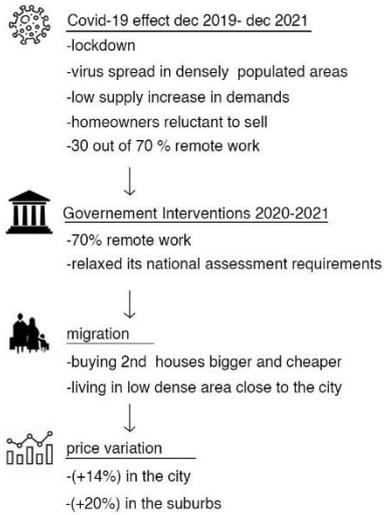


Figure 44: Map of Greater Tokyo. Source: Author

5.1. Tokyo Metropolitan Area

Tokyo metropolitan area is located in the southern Kanto region, in the center of Japanese archipelago. The greater Tokyo area consists of Tokyo and three other prefectures including Kanagawa, Saitama, and Chiba. This area alone is home to 30% of Japan's population and is considered the largest metropolitan area in the world in terms of population density (Tokyo Metropolitan Government, 2015). Along the three prefectures mentioned, the national region of the capital includes four other prefectures that can be considered as the suburbs of the city of Tokyo. These include Ibaraki, Tochigi, Gunma and Yamanashi. This case study is going to discuss the effect of COVID-19 on housing prices in the greater Tokyo and its suburbs along with the population migration trend. Tokyo, unlike the other case studies in this research, did not exhibit a very similar housing price change and population migration trends. (Tokyo Metropolitan Government, 2015).

5.2. Housing Prices and Migration in Tokyo

Like any other country, Japan and its citizens have been trying to adapt to the new normal emphasizing on remote work and education. Thus, according to the Japanese real estate company Wealth Park, during the first stages of the pandemic in 2020, the demand for single rooms in Tokyo declined as a result of shops and offices being closed and recording a vacancy rate of 6% in July 2021 (Wealth Park, 2021).

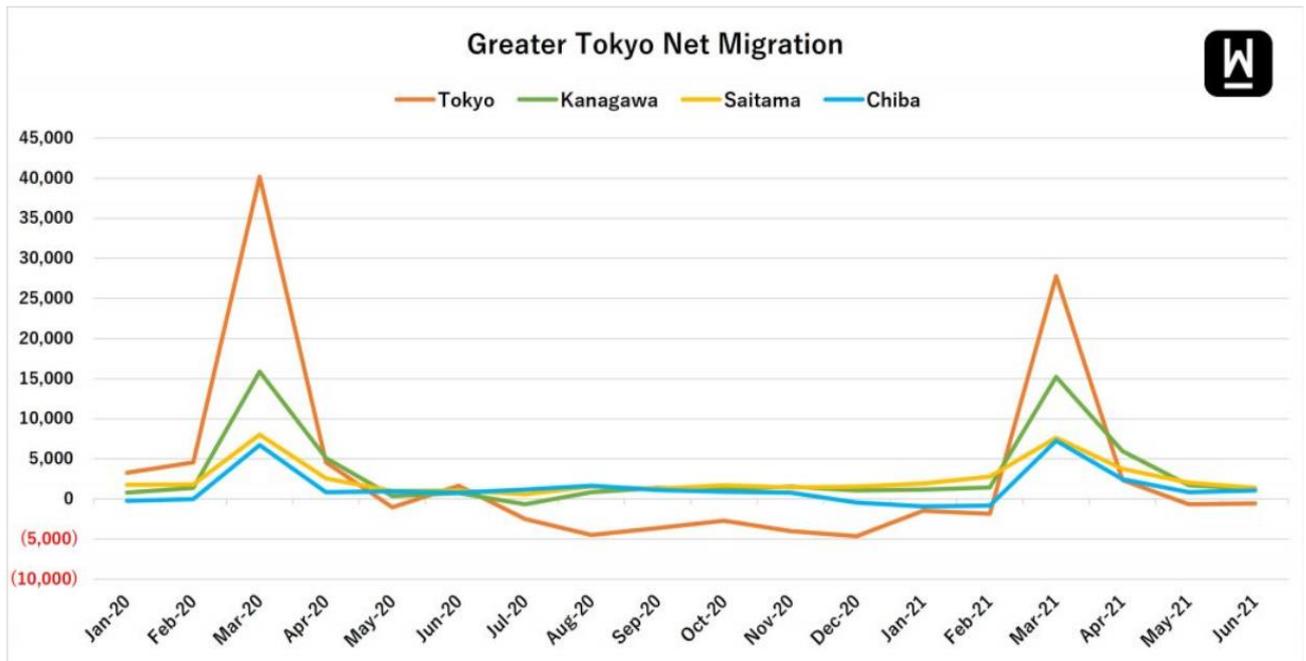


Figure 45: Greater Tokyo net migration (Statistics bureau of Japan)

The increase in the number of immigrants at a peak value of 40,000 immigrants in March 2020 was the result of new students and fresh graduates moving to the city center according to the statistics Bureau of Japan (Wealth Park, 2021). However, following this period of migration, the net migration of Tokyo between May 2020 and February 2021 was negative at a peak of -5,000 immigrants which means that more people were leaving the city than people entering it. With remote work being the trend during the first waves of the pandemic, employees preferred living in more rural areas, for example Chiba, which experienced a minor increase in net immigrants of around 2,000 immigrants, where rent is cheaper and population density is lower (Wealth Park, 2021).

Concerning housing prices, they took a hit at the beginning of the pandemic but started to recover fast as signs of ease regarding the pandemic and with the net migration in greater Tokyo started returning to its normal numbers. This could be the result of

remote work not becoming a thing in Japan where only 30% of the companies actually followed the goal the Japanese government has set of transforming 70% of work to remote style.



Figure 46: Average unit price of existing properties in Greater Tokyo (REINS)

From the chart above, the average unit price fell in greater Tokyo the most in April and March of 2020, recording about -¥12 per m² in Chiba (lowest value). The average unit price of existing properties has continued to increase ever since recording a peak value of ¥32 per m² in April 2021 in the prefecture of Chiba. It is significant to mention that the average unit price in the other prefectures (Tokyo, Kanagawa, and Saitama) have also increased to ¥17, ¥11 and ¥18 per m² respectively. However, Chiba has exhibited the highest increase of average unit price of ¥44 per m² due to the fact that it measured the highest number of net migrations during the pandemic (Statistics Bureau of Japan, 2021). Thus, the fast-housing price recovery increase in Japan could be explained by the fact that Japanese homeowners are optimistic about the continued rise in these due to the continuous decrease in supply and their reluctance to sell (Wealth Park, 2021).

6. GEORGIA – Tbilisi

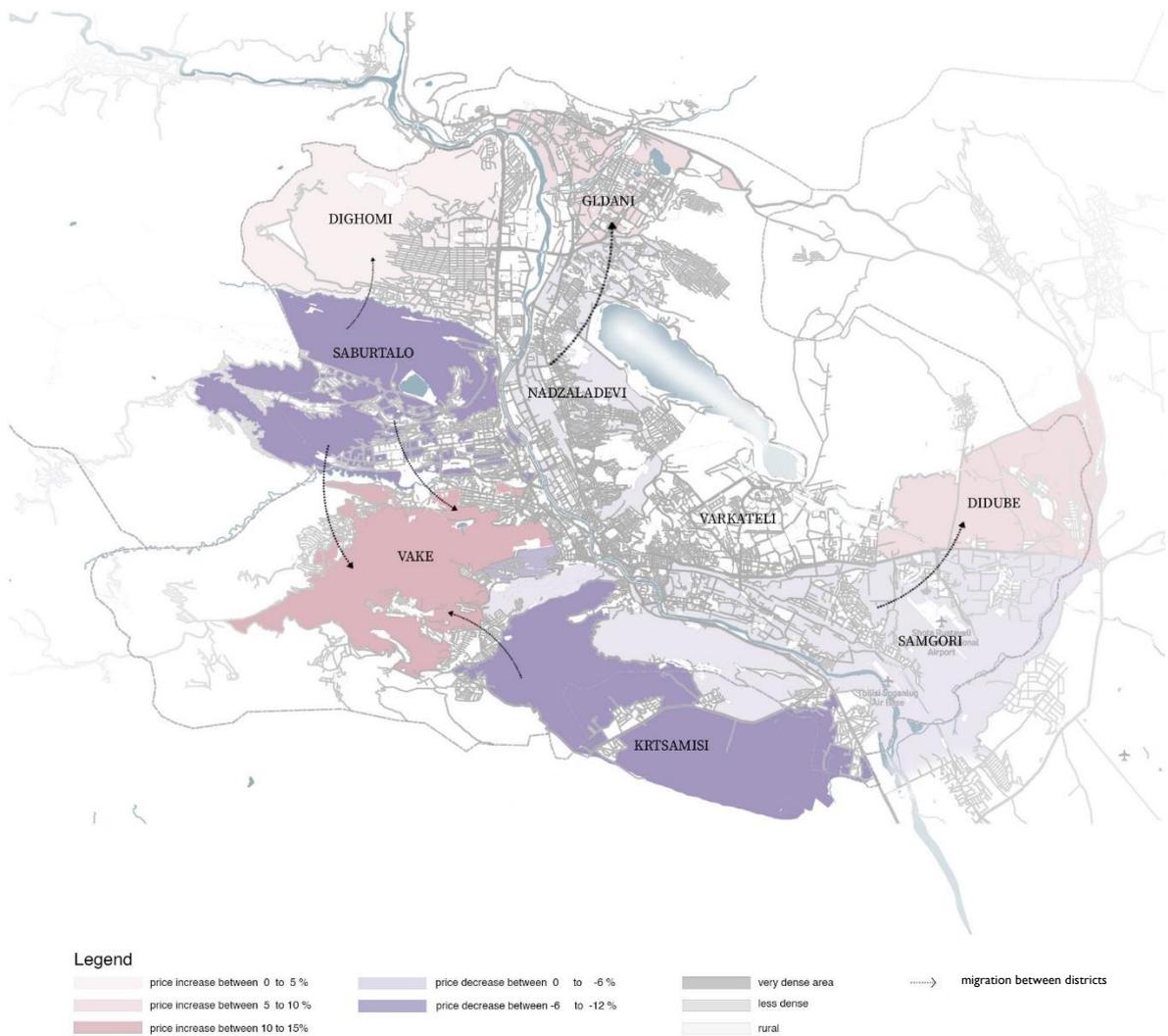
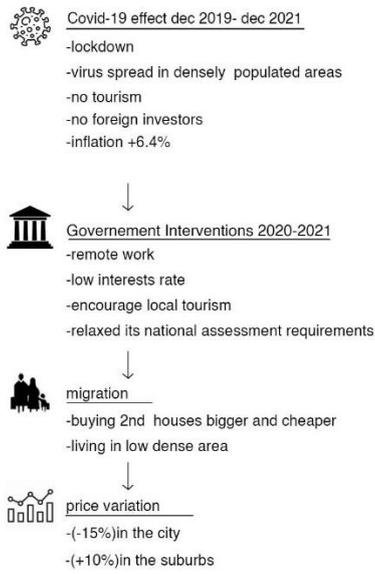


Figure 47: Map of Tbilisi, Georgia. Source: Author

6.1. Introduction

COVID-19 could be described as catastrophic for Georgia, a country mainly depending on tourism and services as its main economic growth factor and currency support. According to Kipiani (2022), branded midscale hotels have witnessed the highest occupancy in the history of the capital, Tbilisi, at 62% which later dropped to 20% in 2020 and reached 48% in 2021. This major decrease in the occupancy rates in Tbilisi reflected a decrease in the average daily rate which recorded \$68.27 in 2019 which decreased \$58.87 in 2020 and continued its decline in 2022 to reach \$47.12 on an average daily rate (Kipiani, 2022). This major decrease in occupancy rates in Tbilisi's hotels is the result of the pandemic as tourism became people's least concerns amidst the crisis. However, the real estate market in Georgia and especially Tbilisi have always been unstable with the absence or presence of the pandemic and that is why the real estate market is one of the key factors why investors are interested in the destination (Afifi, 2021).

6.2. Effect of COVID-19 on Housing Prices in Tbilisi and Its suburbs

For Tbilisi as a whole, Real estate market has deteriorated due to COVID-19 where compared to the first quarter of 2020, the real estate market measured a severe decline in the second quarter measured by 45.5% and the annual decrease as a whole was less by 56.3% compared to 2019 (Afifi, 2021). What is helping the real estate sector in Georgia is the fact that developers and private investors are not rushing to increase the prices of houses and are willing to adapt to the new situation. This is why the price volatility is higher in the central districts and remains stable in the suburbs.

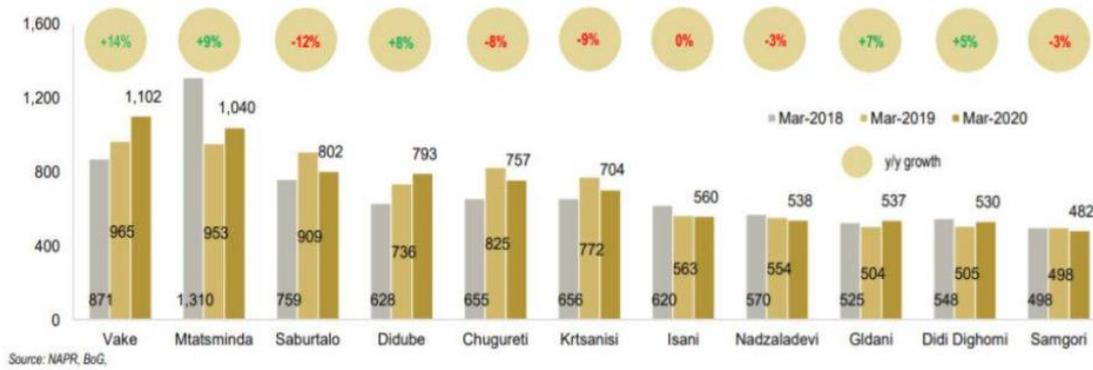


Figure 48: Average selling price of apartments in Tbilisi by districts (NAPR, BoG)

As seen in the Figure 49, unlike the other case studies discussed previously, the variation in prices of houses in the districts of Tbilisi does not show a specific pattern. Some of its suburbs recorded an increase in the average selling price between 2019 and 2020 while others exhibited a decline in this price. For instance, Vake and Mtatsminda’s average housing price increased from \$965 to \$1,102 and from \$953 to \$1,040 respectively in addition to the suburbs of Gldani and Didi Dighomi (7% and 5% respectively). Nevertheless, Subartulo’s average selling price of a house decreased from \$909 to \$802 from 2019 to 2020. Thus, this could be interpreted by another factor which is inflation because the real estate sector is third highest sector in the Georgian economy consisting of 11.4% of the country’s GDP making it sensitive to currency fluctuation. COVID-19 took its toll in the Georgian economy where the economic growth rate was at -4% in 2020 which severely affected the housing prices in the country and the variation that was discussed above and showed in the chart.

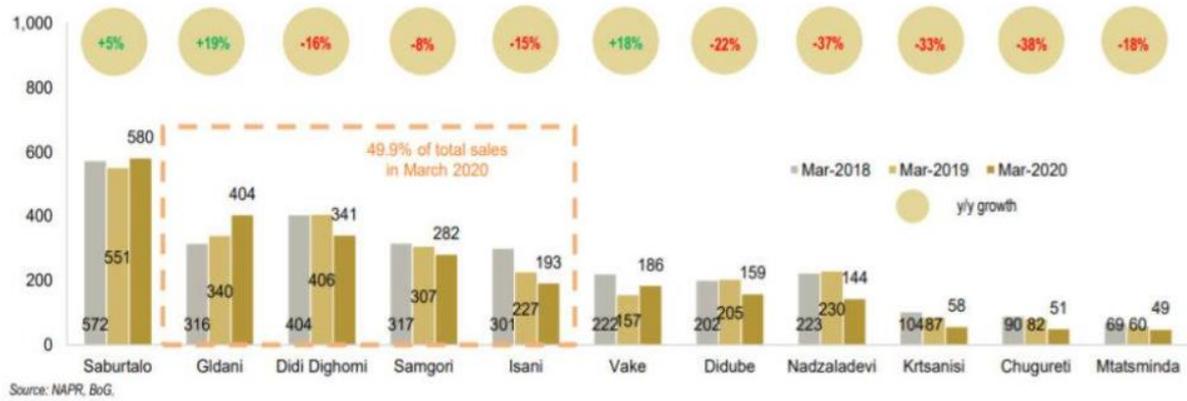


Figure 49: Apartment sales by districts in Tbilisi, March 2020 (NAPR, BoG)

To discuss whether people in Georgia preferred settling in suburbs or in the city districts close to Old Tbilisi, the following chart is provided. Ignoring whether the district recorded a positive or negative net increase in apartment sales, Saburtalo recorded the highest number of sales in March 2020 and Gldani, Didi Dighomi, Samgori and Insani made up 49.9% of the total sales in March 2020. Looking at the map of Tbilisi, Saburtalo and Gldani are the two furthest suburbs away from the city center and recorded the two highest numbers of apartment sales at 580 and 404 respectively with Dighomi, Samgori and Insani being at also respectable distances from the city center. Hence, people during COVID-19 preferred moving to rural suburbs of the capital to avoid high rents and the heavy population density of the city districts especially with work being transitioned to remote work. In terms of migration, Tbilisi followed the other cities discussed before in this paper but lacked the same pattern in terms of housing prices increase or decrease.

7. POLAND – Cracow

 Covid-19 effect dec 2019- dec 2021

- lockdown
- virus spread in densely populated areas
- landlords lowering their property prices
- student remote working
- job loss decrease in GDP

 Government Interventions 2020-2021

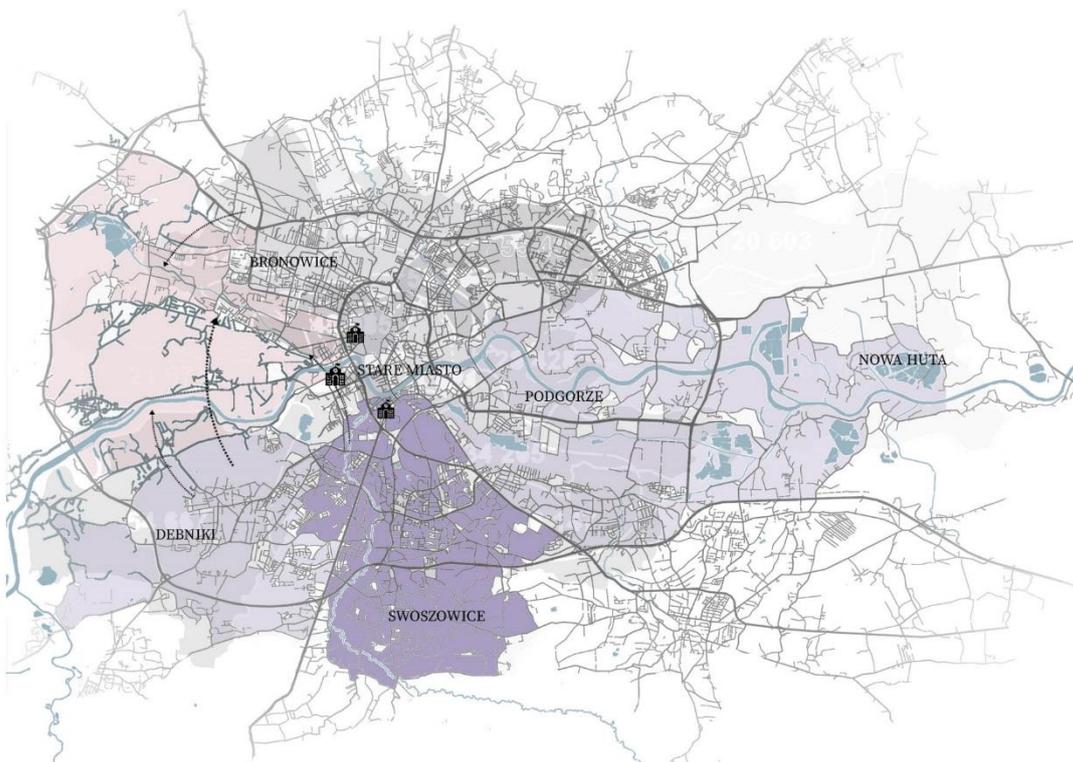
- remote work
- prohibition of the rent increase
- enabled the extension of rent lease and rent reduction for employees

 migration

- students and unemployed migration
- buying 2nd houses bigger and cheaper
- living in low dense area ,far from the city

 price variation

- (-47%) in the city
- (+9%) in the suburbs



Legend

- | | | | |
|---|---|---|---|
|  price increase between 0 to 10% |  price decrease between 0 to -15% |  very dense area |  migration between districts |
| |  price decrease between -15 to -30 % |  less dense |  university |
| |  price decrease between -30 to -45 % |  rural | |

Figure 50: Map of Cracow, Poland. source: Author

7.1. Introduction

Poland, like many other countries, has endured difficulties caused by the pandemic. People migrated from cities and into cities while the economic downturn in the country was not being stagnated due to the severe health caution. Thus, COVID-19 has altered the segmentation of the rental market in a way very different from what was conventional before the pandemic. (Tomal and Helbich, 2022). What was considered conventional is that rentals in city districts are relatively expensive compared to those of the suburbs because of their proximity to all city hubs, offices, and jobs which reflected higher rental/purchase prices of houses in those city districts. (Tomal and Helbich, 2022). This case study is going to discuss how COVID-19 altered those conventions in the region of Cracow with its suburbs in Poland, along with the migration trends in the region. The map of Cracow showcased in figure 51 emphasizes this trend by the fact that dwelling rental locations are mostly located in the city center (Miasto and Grzegorzki) constituting more than 50% of the total rentals in the region of Cracow whereas rural suburbs and the countryside such as Nowa Huta has little to no rentals present there.

7.2. Effect of COVID-19 on Housing Prices and Migration Trends

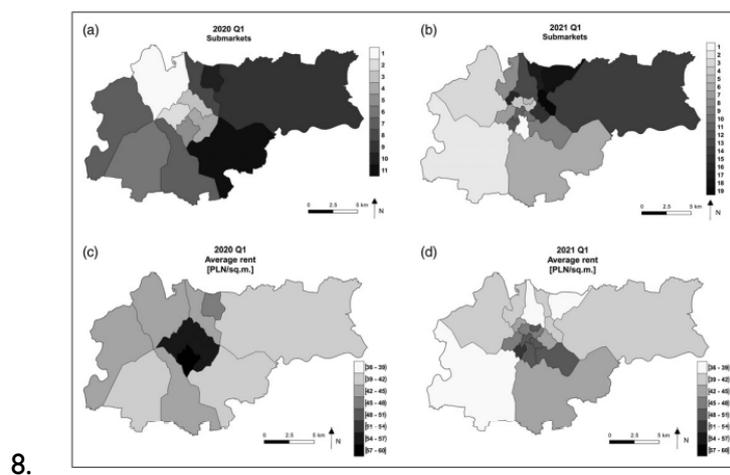


Figure 51: Segmentation of Cracow's rental housing market (a) before the COVID-19 pandemic, and (b) 1 year after as well as average rent level within the submarkets (c) before the COVID-19 pandemic, and (d) 1 year after, source Tomal and Helbich, 2022

Tomal and Helbich (2022) conducted this case study to test the segmentation residential market in Cracow before and after COVID and its effect on house prices and Migration trends. Figures 52 (a) and (b) are not the main topic of concern as they show the different market segmentation development in the region before and after COVID. As the distance to the city center decreased per district, the number of submarket segmentations increased (Tomal and Helbich, 2022). Regarding figures (c) and (d), it is clear that the city center measured the highest average rental price between 57 and 60 PLN/m² (Polish zloty per meter squared of land) and this number decreased as distance from the city center increased; for instance, the district of Debniki has an average rental price between 39 and 42 PLN/m² which is relatively far from the urban centers. Comparing these numbers of the first quarter of 2020 to the first quarter of 2021 (during COVID), the average rental prices generally decreased in most districts and this decline was critical in city districts. No district in the city center recorded an average rental price between 51 and 54 PLN/m² other than Grzegorzki while all the other districts recorded between 51 and as low as 24 PLN/m². However, the southeast districts of Cracow recorded an increase in the average rental price from 39 and 42 PLN/m² to 42 and 45 PLN/m².

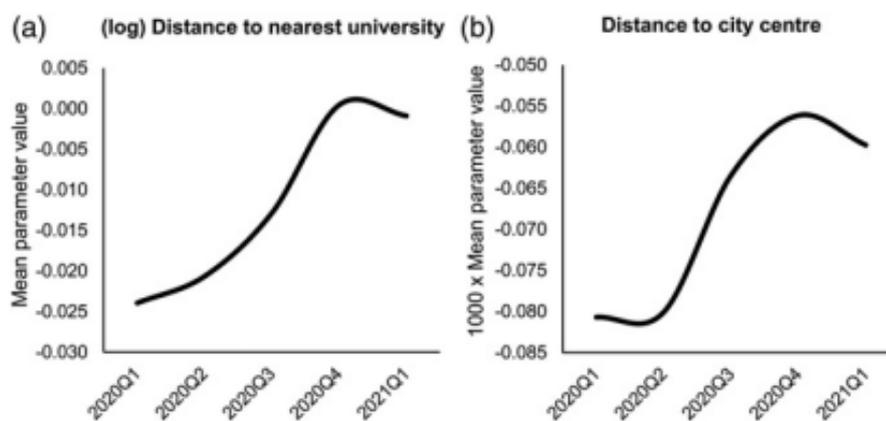


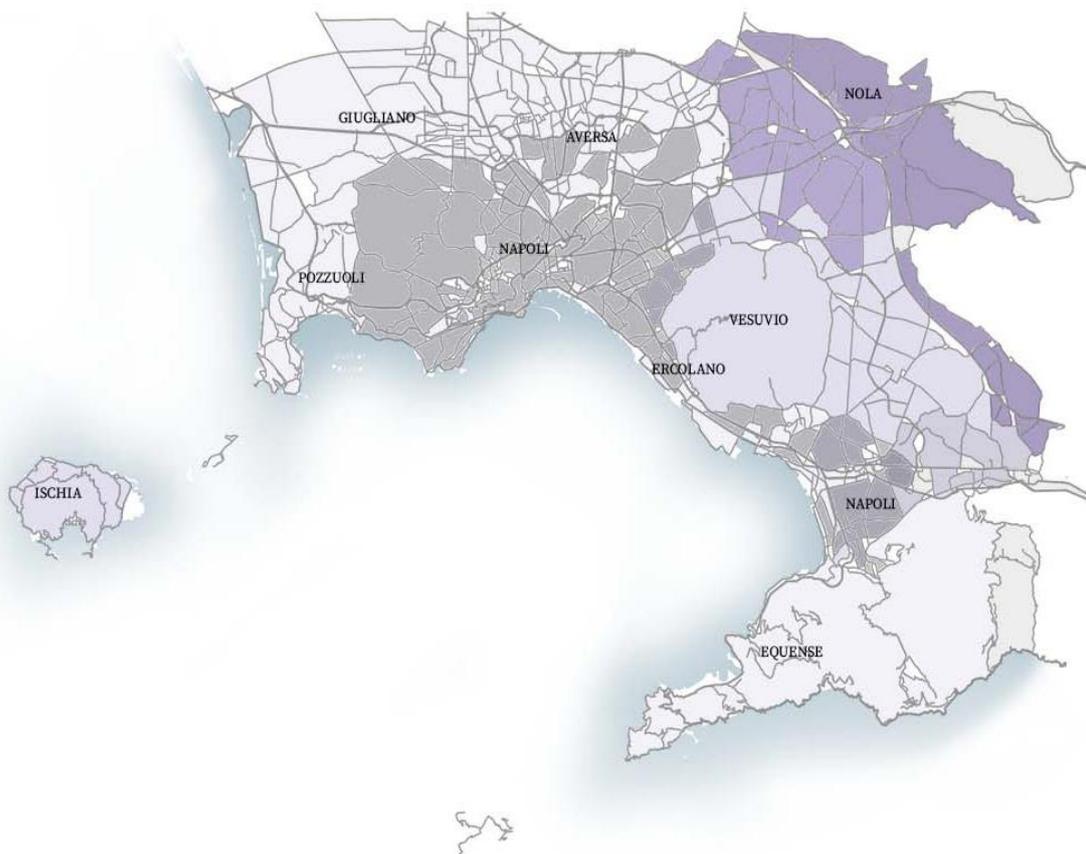
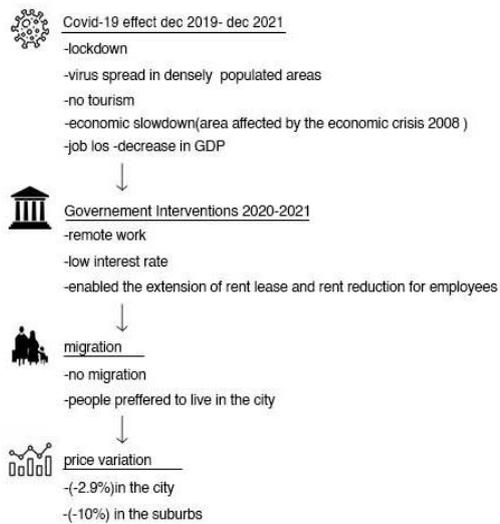
Figure 52: Change of influence over time for (a) the logged distance to the nearest university and (b) the distance to the city center, source: Tomal and Helbich, 2022

Regarding the migration trends, we can see in figure (a) that the logged influence of distance to the nearest university kept increasing from -0.025 in the first quarter of 2020 to 0 in the last quarter of the same year until it failed the repressor and decreased to -0.002 in the first quarter of 2021. Moreover, the logged influence of distance to the city center also followed the same trend for 2020 as it increased from -0.08 to -0.067 then it increased to -0.06 in the first quarter of 2021.

According to Tomal and Helbich (2022), the reason why the influence of the distance to the nearest university and the city center decreased is that several facilities switched to remote work which reduced the number of people wanting to change their place of work and thus their place of residency; hence, the demand for rental apartments close to the city center decreased. In addition to that, the outflow of students from the residential areas of Cracow reduced the importance of an apartment being close to the university due to online learning (Tomal and Helbich, 2022). This decrease in the demand for these apartments leads to a decrease in average rental prices. Not only the rental market was affected, however the sales housing market was affected as well by the pandemic. According to a study carried out by Szczepek (2021), the districts situated far from the city, in the suburbs saw their housing prices increase by 9% whereas the prices of properties located near the city have decreased by around 38%. (Szczepek, 2021)

To sum up this case study, the secondary sales and rental markets saw a price decline, which could be a result of owners decreasing their asking prices to draw in a tenant or buyer. (Szczepek, 2021) These impacted apartments are close to the city's center. Contrastingly, the market for primary sales tends to see long-term price increases, specifically, the brand-new apartments in the suburbs had the biggest price increase. (Szczepek, 2021)

9. ITALY – Metropolitan Area of Naples



Legend			
	price decrease between 0 to -3 %		very dense area
	price decrease between -3 to -7 %		less dense
	price decrease between -7 to -10 %		rural

Figure 53: Map of the metropolitan area of Naples, Italy. Source: Author.

9.1. Introduction

Italy was one of the nations in the euro zone that was most impacted by the financial and economic crisis in 2008–2009. Due to a sharp increase in the yields on its national bonds, Italy became one of the EU members that are considered to be contenders for a sovereign debt crisis in 2010. Financial market pressures and the nation's long-standing fundamental economic issues are interwoven. (Cencig, 2012)

Over the past ten years, structural factors and the severity of the economic crisis have caused the employment gap between southern Italy and northern and central Italy to steadily widen. Only 40.2% of those between the ages of 20 and 64 were employed in the province of Naples in 2013, which is 3.3 percentage points less than in 2008, according to the most recent statistics from the Italian National Institute of Statistics (ISTAT). (De Toro et al, 2021)

This employment level is 19.6 points below the national average and 5.4 points below that of southern Italy. Problematic facts are also seen in the economic well-being of households, which is related to the state of the labor market. Consumer households' per capita disposable income declined by 138 euros over the four-year period 2009–2012, while the national average saw a growth of 28 euros. (De Toro et al, 2021) Consumer households' per capita disposable income in the province in 2012 was EUR 12,314, which was higher than the regional value of EUR 11,932 but lower than the values in the south (EUR 12,775) and nationally (EUR 17,307). Along with income disparities, households are facing more financial hardships as a result of rising bank non-performing loans and a high percentage of residents living in homes with no one working or receiving a pension—both of which are higher than in other territorial contexts. (De Toro et al, 2021)

Adding up to the financial and economic crisis, during the early phase of the pandemic of COVID-19 in 2020, all business activities ceased, except for those connected to healthcare, pharmacies, and food delivery. The limitations negatively impacted trade, investments, and consumption, which led to a demand and supply shock in the real estate market (De Toro et al, 2021). Therefore, the lockdown has raised a number of issues regarding the fluctuating demand for housing. Italy was one of the countries whose real estate market was affected by the COVID-19. But there haven't been many studies recently that have looked at the data acquired on the pandemic's effects on the housing market (De Toro et al, 2021). With the housing sector leading Italy's GDP at 18%, concerns have been raised in the country to monitor and control those fluctuations so that the economy would not have to face a potential crisis or collapse. Thus, the housing market, Italian and global, is facing slowdown that would most likely affect the prices of houses in metropolitan areas and urban areas differently due to migration trends. (De Toro et al, 2021) This case study aims to analyze the trends in the residential market in Italy and in particular in the metropolitan area of Naples (Italy).

9.2. Effect of COVID-19 in Naples and its Suburbs

Macro-Areas	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	Variation 2009–2020 (%)
Area 1	1530	1490	1580	1577	1461	1426	1332	1208	1191	1193	1203	1163	–23.97
Area 2	2710	2720	2628	2393	2230	2070	1935	1883	1825	1825	1660	1633	–39.76
Area 3	2924	3045	3056	2828	2731	2604	2535	2450	2381	2366	2145	2082	–29.01
Area 4	1426	1504	1508	1488	1425	1377	1353	1276	1271	1259	1153	1134	–20.51
Area 5	1089	1125	1149	1090	1053	1016	1017	979	911	911	963	851	–21.86
Area 6	1494	1500	1865	1421	1344	1276	1264	1274	1231	1245	1179	1087	–27.22
Area 7	2049	2029	1925	1862	1840	1743	1701	1679	1622	1605	1665	1670	–18.50
Area 8	3031	2962	2754	2633	2812	2717	2608	2505	2532	2520	2552	2535	–16.35
Area 9	5260	4958	4630	4388	5072	4873	4473	4320	4122	4101	3941	3769	–28.34
Metropolitan area	2134	2111	2107	1961	2002	1921	1840	1775	1729	1724	1690	1628	–23.73

Figure 54: Real estate values for the metropolitan area of Naples (EUR/m²)

Naples' metropolitan area has seen significant economic and financial hardship since 2008, making it tough to function. This urgency was also felt in the real estate market, which has been showing indications of weakness recently. Between 2009 and 2019, home values fell sharply, reaching peaks of 50% in some localities. This may indicate that the impacts of the financial crisis of 2008 are still felt today. (De Toro et al, 2021)

Figure 55 shows that market values for home sales in the Naples metropolitan area have dropped by -23.73% during the 12 years from 2009 to 2020. Due of its proximity to the 2008 global financial crisis, 2009 is selected as the trend's initial reference year. In absolute terms, the Isles (area 9) had the most elevated real estate prices in 2009 and 2020, and the Nolana region (area 5) located in the suburbs of Naples, had the lowest prices (figure 55). In terms of price variation as a percentage, the Flegrean region was the most negatively affected, with a drop in prices of -39.76%. The Sorrento Peninsula suffered the least, falling just by 16.35%. Although the lockdown in Italy lasted from March till May 2020 and life began to restart gradually, the real estate sector was widely affected when comparing the prices between 2019 and 2020. Residential real estate sales improved near the end of 2019 after years of decrease due to declining prices. The difference between the decline in prices and the rise in sales is primarily the result of a bigger supply of properties than there is demand, and because of the ongoing crisis, the supply has been forced to adjust to what consumers can afford. Mortgage rates are also still at historically low levels. As a result, there is an increasing demand for mortgages, particularly for starter residences. (De Toro et al, 2021)

However, between 2019 and 2020, the average housing unit in the Isles (the most expensive municipality) decreased from €3941 per m² to €3769 per m² which is about a

4.4% decrease in the housing price on average. This decrease was realized in all the nine regions and in the metropolitan area overall, where it saw its prices decrease from €1690 per m² to €1628 per m² from 2019 to 2020 in the latter. The most notable decrease percentage was recorded in the Nolana region where housing prices decreased from €963 per m² to €851 per m² between 2019 and 2020 respectively which almost accounts to a 12% decrease in the housing prices in the municipality.

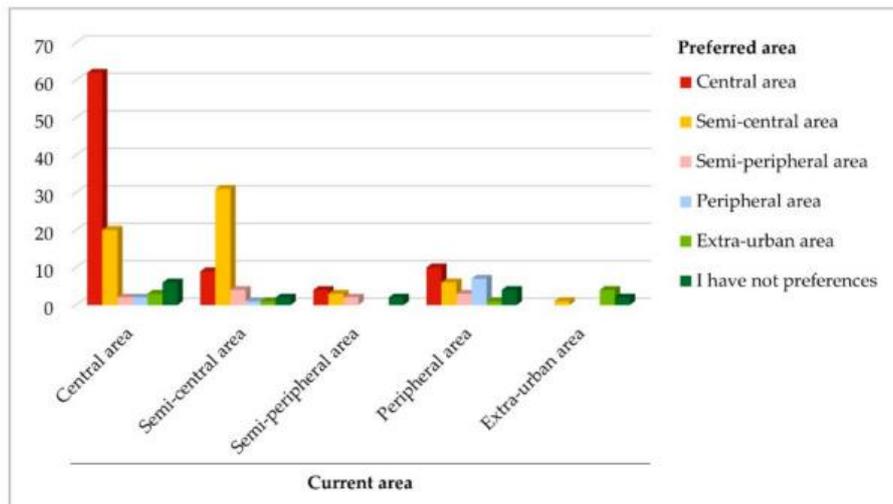


Figure 55: Relationship between current area and preferred area

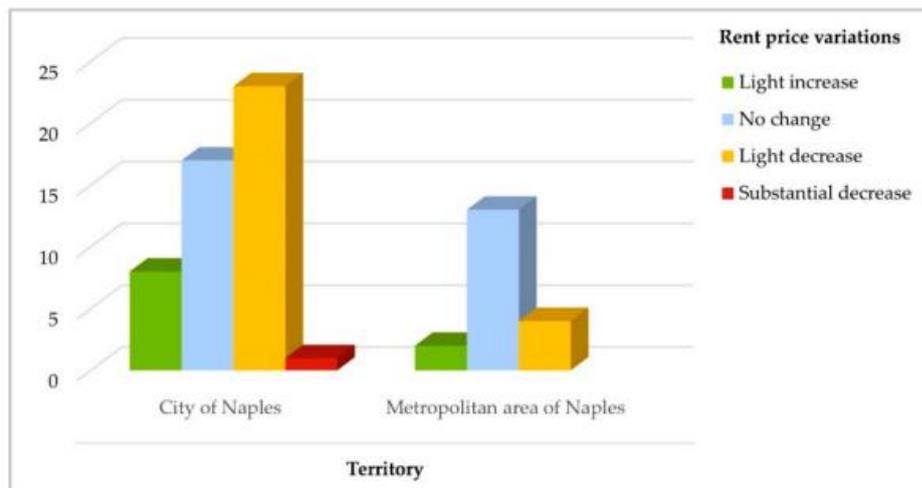


Figure 56: Relationship between territory and rent price variations

The region of Naples doesn't show a similar pattern compared to the other case studies presented in this research. According to the survey conducted by De Toro et al (2021), most of the people who lived in a certain area would prefer to keep living there, whether they lived in central areas, semi-central areas, semi-peripheral areas, peripheral areas, and extra-urban areas. The highest percentage of residents wanting to stay where they live was recorded in central areas at 62% approximately while people residing in semi-central areas recorded a notably high percentage of 30% willing to stay in the area and the second highest (8%) was recorded for moving from peripheral areas to central areas. People living in extra-urban areas preferred staying there as well. Linking it to figure 57, agents report that the cost of renting hasn't changed in 43.5% of cases, gone down in 39.1% of cases, and gone up in 14.5% of cases. Rental rates are correlated with how the real estate firms who took part in the study were distributed geographically. These numbers show that while rental costs were more stable in the metropolitan area, they drastically decreased in the City of Naples. Because people preferred living in metropolitan areas (central areas), the rental price has not changed because supply and demand was still in equilibrium while across all the city of Naples, prices have changed due to people moving to central districts.

10. AUSTRALIA – New South Wales

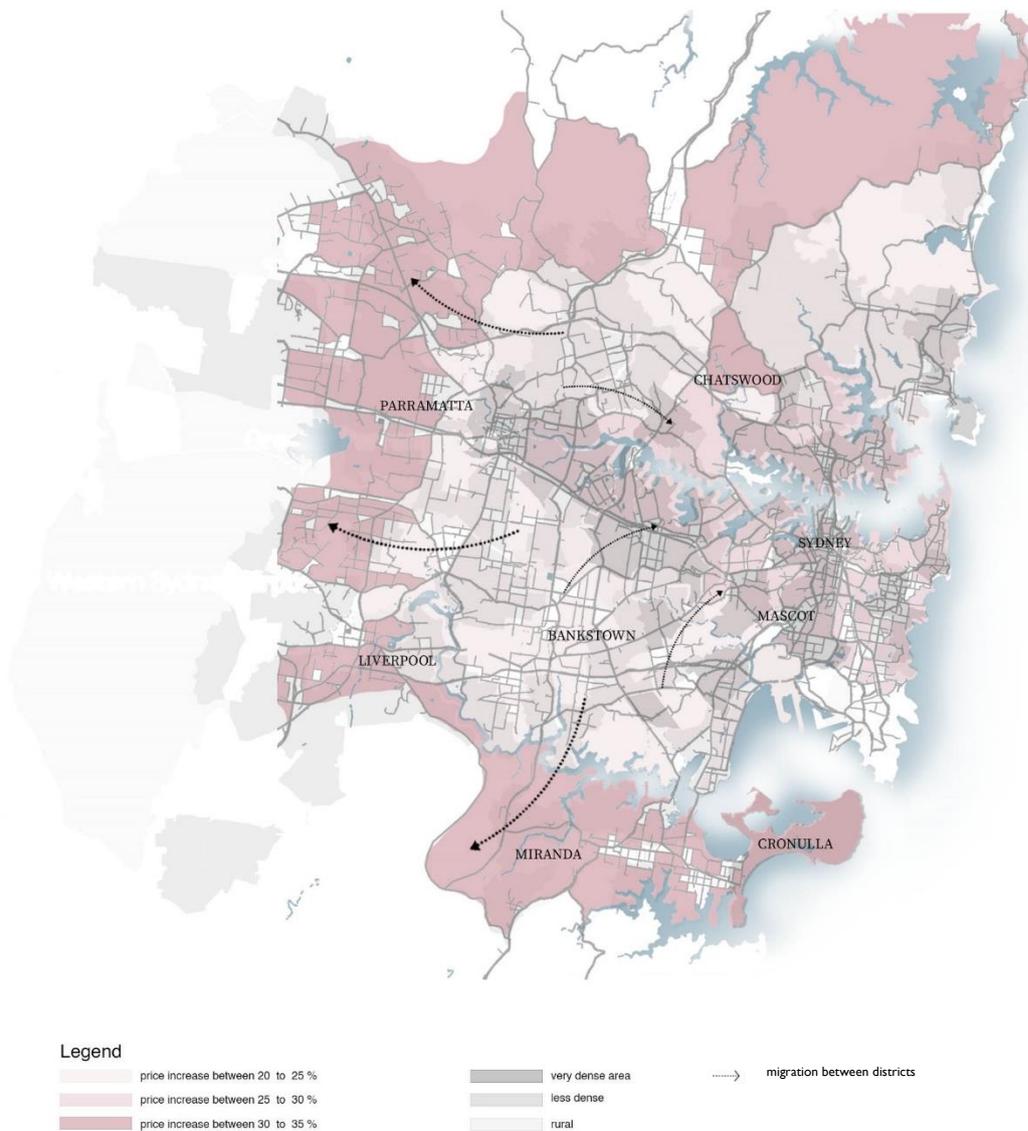
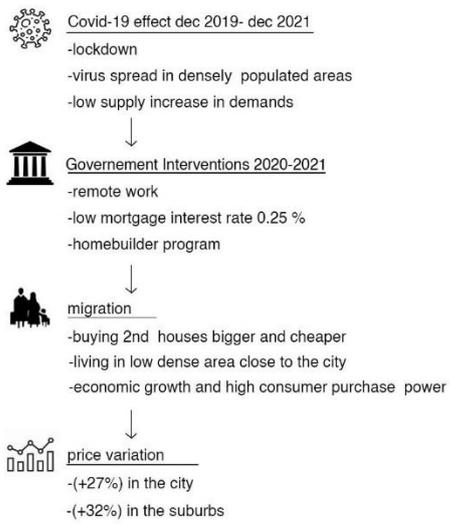


Figure 57: Map of New South Wales, Australia. source: Author

10.1. Introduction

The commencement of the worldwide coronavirus pandemic has had an impact on many of the variables that affect the short and long-term pricing of residential property. By the conclusion of this decade, Australia's population is expected to have decreased by around 1 million from pre-pandemic predictions. (Rynne and Malakellis, 2021) A number of factors, including a decrease in the immediate demand pressures for housing while Australia's border remains closed to both returning travelers and foreign migrants, will result from this slower population increase in the real estate market. Due to the cumulative effect of fewer new immigrants settling in Australia and loss of following natural population rise from these new migrants, the longer the borders are closed, the more of an impact they will have on Australia's population. (Rynne and Malakellis, 2021) This confluence of slowing population growth, rising unpredictability, and escalating economic upheaval creates an environment that is not favorable to nominal price increases in asset markets. Given these factors, Australia's stock market saw asset values free fall at the onset of the pandemic, and residential property prices also saw nominal drops of about 3% in the second quarter of 2020, except for Canberra. (Rynne and Malakellis, 2021)

The Reserve Bank of Australia and the Commonwealth and State governments launched a number of policy solutions to bolster the domestic economy in response to the COVID-19-induced economic slowdown. (Rynne and Malakellis, 2021) Direct assistance for the residential construction industry has been provided through the HomeBuilder program. For contracts signed between 4 June 2020 and 31 March 2021, the HomeBuilder program offered grants to eligible owner-occupiers (including first-

time homebuyers) for the construction of new homes or the considerable renovation of existing homes. When everything else is equal, this policy will boost the housing supply in the short term and drive down house prices over the long term. In addition, the economy has benefited from the adoption of very supportive monetary policy settings, by lowering the mortgage interest rates to 0.25% in March 2020. This intervention done by the Australian's government has led the property prices to rise dramatically during the year 2021. (Rynne and Malakellis, 2021) The median property price in the weighted average capital city in Australia, climbed by 25.1% during the course of a year to the fourth quarter of 2021. As of September 1996, this is the largest annual rise. (Real Estate Institute of Australia, 2021) In this case study, New South Wales including the city districts and the suburbs (Sydney inner, middle, and outer rings) will be discussed to show these price variations in the real estate market.

10.2. Effect of COVID-19 on Housing Prices in New South Wales

	Capital City				Metro				Regional						
	1st Half 2018	2nd Half 2018	1st Half 2019	2nd Half 2019	1st Half 2020	1st Half 2018	2nd Half 2018	1st Half 2019	2nd Half 2019	1st Half 2020	1st Half 2018	2nd Half 2018	1st Half 2019	2nd Half 2019	1st Half 2020
NSW	-9.7%	-7.7%	-8.6%	5.7%	10.8%	-3.4%	-4.7%	-9.9%	0.3%	12.2%	2.5%	0.5%	-2.8%	3.8%	5.3%
QLD	1.5%	1.8%	0.7%	0.7%	3.6%	2.7%	2.3%	1.1%	0.9%	1.2%	0.5%	-1.1%	-1.2%	2.8%	0.0%
VIC	6.3%	-15.2%	-17.6%	8.4%	14.3%	6.2%	-1.8%	-8.8%	1.1%	5.4%	5.5%	6.6%	3.3%	4.4%	4.4%
WA	-9.6%	9.1%	37.5%	-9.4%	-9.1%	-0.4%	-1.0%	-3.9%	-2.7%	-2.1%	-3.6%	-3.4%	1.5%	-0.1%	-0.5%
TAS	9.5%	4.4%	3.4%	1.6%	9.0%	14.5%	9.4%	4.8%	6.4%	10.2%	9.1%	7.0%	4.7%	9.3%	9.8%
NT	-8.3%	-3.8%	-3.5%	-5.8%	-6.0%	-5.8%	-2.5%	-2.6%	-6.2%	-3.6%	-4.3%	-4.5%	1.3%	-11.7%	2.5%
SA	-9.8%	32.9%	34.7%	-10.5%	-15.4%	2.5%	2.5%	2.0%	-0.2%	-4.5%	-1.7%	2.6%	1.4%	0.8%	2.2%
ACT						5.8%	1.8%	1.1%	0.3%	1.6%					

Figure 58: Average Growth in Median House Price 2018-2021, source: PRD, 2020.

Focusing on New South Wales region, according to the Figure 59 provided by PDR, an Australian Real estate agency, the capital city markets together with the metropolitan and regional markets have seen a rise in the median house prices 10.8%, 12.2% and 5.3% respectively, in the 1st half of the year 2020. This increase in prices is due to the intervention of the Australian Government discussed previously, that gave the opportunity to more people to purchase affordable houses during the pandemic. (Brasier

and Hadley, 2020) This intervention was done in order to protect the real estate market and the Australian economy, since it was facing a major recession during the years 2018 and 2019, in which bushfires and floodings were attacking some major regional Australian cities. (Brasier and Hadley, 2020)

	Number of sales	Median price (\$'000)	Quarter % change	Annual % change	Lower quartile (\$'000)	Upper quartile (\$'000)
Sydney	15,527	1,601.5	6.0%	33.1%	905.0	2,150.0
Sydney Inner	2,070	2,600.0	0.0%	27.3%	1,900.0	3,700.0
Sydney Middle	4,278	1,727.5	2.8%	23.4%	1,220.0	2,753.0
Sydney Outer	12,040	1,080.0	9.1%	31.7%	830.0	1,600.0
Wollongong	815	1,012.5	4.9%	30.4%	790.0	1,315.0
Newcastle	932	851.0	7.7%	25.1%	700.0	1,150.0

Figure 59: New South Wales House Sales in 2021, source: Real Estate Institute of Australia, 2021

According to the figure 60 provided by the Real Estate Institute of Australia (2021) and taking Sydney and its neighboring districts (city districts and suburbs) into consideration, it is evident that an increase in median price is almost present in all of the districts except for Sydney inner (0.0%), in the 4th quarter of 2021. Moreover, Sydney outer recorded an alarming number of sales of 12,040 with Sydney middle coming at second place with 4,278 sales. This means that outer Sydney has recorded approximately 200% sales than the second region on the list and made up around 80% of all the total sales (15,527 sales). Sydney outer has also recorded both the highest quarter change of 9.1% and the highest annual change of 31.7% between all the regions. These outstanding number that Sydney Outer has showed over the year and quarterly could all be related back to its name and being a less densely populated suburb compared to Sydney Middle and Sydney Inner that constitute the city center of Sydney. Sydney Outer is a suburb of Sydney with a relatively less density population than the other regions of Sydney making it an attractive housing location for people during COVID-19. With remote work becoming the trend during the years of the pandemic, location of the house near

economic activities and in city districts became less significant compared to the importance of its price and density population; for instance, Sydney Outer recorded an average median price of \$1,080 while Sydney Middle and Sydney Inner recorded values of \$1,727.5 and \$2,600 respectively. Thus, Australians citizens would prefer buying cheap alternative properties that are bigger in order to accommodate their needs with the work from home. Finally, for all of Sydney, in the December quarter, the median house price in Sydney increased to \$1,601,467. This is an increase of 6.0% over the quarter and 33.1% over the previous year. This increase is due to the policies applied by the Australian Government in 2020 and the low interest mortgage rates that made purchasing a new house more affordable.

	LGA Name	Jun-22	Annual change
1	Murray River	\$656,000	49.1%
2	Snowy Monaro Regional	\$650,000	47.7%
3	Lithgow	\$507,000	44.9%
4	Narromine	\$335,000	44.1%
5	Snowy Valleys	\$445,000	42.4%
6	Kempsey	\$596,000	39.6%
7	Bellingen	\$902,500	36.7%
8	Cessnock	\$620,000	33.3%
9	Hilltops	\$410,000	32.3%
10	Leeton	\$350,000	32.1%

Figure 60: Top 10 Regional increase of housing prices in NSW in June Quarter 2022, source: Domain House Price Report, 2022

The property price increase continued growing in 2022. The figure provided by Razaghi (2022) states that the typical home price in regional NSW grew 1.5%, or \$11,000, to \$740,000 in the three months before to June 2022. It increased 23.3%, or \$140,000, over the previous year 2021. Since the outbreak entered Australia, it has climbed by 43.7 percent, or \$225,000. Leading the way was the Murray River Council region, which borders Victoria to the north of the Murray River. Its median home price rose to \$660,000 in the year that ended in June, up 49.1% or \$216,000 from the previous year. The

following group was the Snowy Monaro Regional Council, which also comprises the towns of Berridale, Cooma, and Jindabyne. To reach \$650,000, its median house value climbed by 47.7%, or \$210,000. Thus, most of the regional council regions saw considerable price increases following the pandemic and the acceleration of the sea- and tree-change trend by working from home. (Razaghi, 2022)

	Number of bedrooms	Median \$ per week	Quarter % change	Annual % change	Lower quartile \$ per week	Upper quartile \$ per week
Sydney Inner	2 b/r house	700.0	0.0%	7.7%	620.0	785.0
	3 b/r house	900.0	-1.4%	5.9%	790.0	1,150.0
	1 b/r other dwell	480.0	0.0%	6.7%	400.0	550.0
	2 b/r other dwell	640.0	2.4%	8.5%	530.0	750.0
Sydney Middle	2 b/r house	460.0	2.2%	2.2%	400.0	540.0
	3 b/r house	600.0	0.0%	5.3%	510.0	720.0
	1 b/r other dwell	425.0	1.2%	3.7%	360.0	470.0
	2 b/r other dwell	450.0	0.0%	0.0%	370.0	550.0
Sydney Outer	2 b/r house	400.0	2.6%	5.3%	360.0	450.0
	3 b/r house	500.0	2.0%	8.7%	440.0	580.0
	1 b/r other dwell	400.0	0.0%	1.3%	356.0	460.0
	2 b/r other dwell	440.0	2.3%	4.8%	360.0	520.0
Wollongong	2 b/r house	470.0	4.4%	10.6%	420.0	550.0
	3 b/r house	580.0	5.5%	16.0%	520.0	650.0
	1 b/r other dwell	340.0	6.3%	9.7%	290.0	415.0
	2 b/r other dwell	420.0	5.0%	5.0%	370.0	500.0
Newcastle	2 b/r house	480.0	6.1%	11.6%	430.0	535.0
	3 b/r house	560.0	1.8%	12.0%	500.0	650.0
	1 b/r other dwell	350.0	-2.8%	2.9%	260.0	430.0
	2 b/r other dwell	472.5	-1.6%	9.9%	410.0	560.0

Figure 61: New South Wales Rent in 2021, source: Real Estate Institute of Australia, 2021

As seen in the figure 62 provided by the Real Estate Institute of Australia, the rents for two- and three-bedrooms houses are as well increasing in the New South Wales region from 2020 to 2021. Sydney Outer has recorded the highest annual percentage change 8.7% increase from 2020 to 2021 for the category of three-bedroom house in contrast with 5.9 and 5.3% corresponding respectively to the Sydney Inner and Sydney Middle. This increase in rental prices in the Outer Sydney, is the result of Covid-19's spread in densely populated areas, work from home that led to the need of bigger houses, and the fact that the houses in outer Sydney were already more affordable than in inner and middle Sydney.

11. U.S.A – Greater Los Angeles, California



Covid-19 effect dec 2019- dec 2021

- lockdown
- virus spread in densely populated areas
- low supply, increase in demand



Government Interventions 2020-2021

- remote work
- high amount of vaccinations
- low mortgage interest rate
- relaxed its national assessment requirements



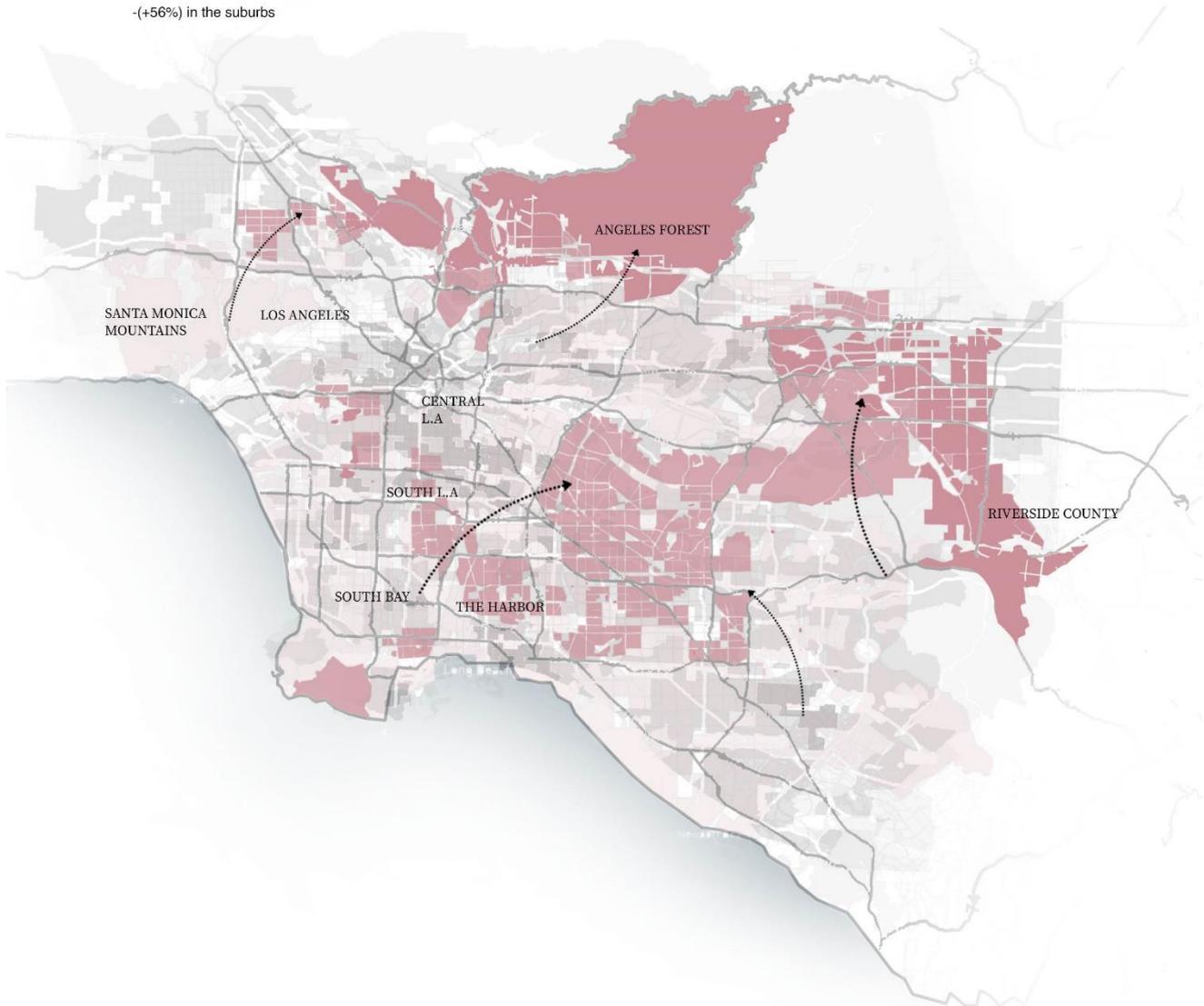
Migration

- Buying 2nd houses bigger and cheaper
- living in low dense areas, closer to the city
- economic growth and high purchase power



Price Variation

- (+13%) in the city
- (+56%) in the suburbs



Legend

price increase 0 to 20 %	very dense area	migration between districts
price increase 20 to 40 %	less dense	
price increase 40 to 60 %	rural	

The COVID-19 pandemic has affected many sectors and real estate is no exception. While median prices and new listings have increased over the last year, as of April 2021, the total active inventory has declined in the Los Angeles region (United Dwelling). This case study is going to discuss certain increases and decreases in housing prices and rental fees in Los Angeles, California.

11.1. Decline in Certain Aspects of the Real Estate Sector

11.1.1. Decline in Single-Family Housing

Pending home sales have dropped by 25.6% in April 2021 compared to March as stay-at-home orders were enforced to record the largest month-to-month since 1979. This sharp drop continued during April 2021, but the median household remained above \$600,000.¹ This statistic is especially significant in Los Angeles where 75% of homes are single-family houses compared to 15% in New York concerning this category. (United Dwelling, 2021)

11.1.2. The Rental Market Has Slowed

The typical cost of renting an apartment fell from \$2,524 in February 2021 to \$2,499 in March 2021. In April 2020, a rent freeze for the 624,000 rent-stabilized apartments in Los Angeles went into force. Lawmakers are now exploring making the rent freeze statewide. Even a little drop in rental prices has an impact on the real estate market. Furthermore, although lower loan rates are typically attractive to purchasers because the Federal Reserve cut its interest rate nearly to zero, lenders are becoming more selective when it comes to approving applicants. The needed FICO scores and the down payments have also increased. (United Dwelling, 2021)

11.1.3. Increase in Housing Prices

According to Li et al (2021), the COVID-19 crisis has had an impact on housing prices in general in the United States and this can be seen by comparing the prices of houses in the nine years to the past two years. This can be seen from this figure:

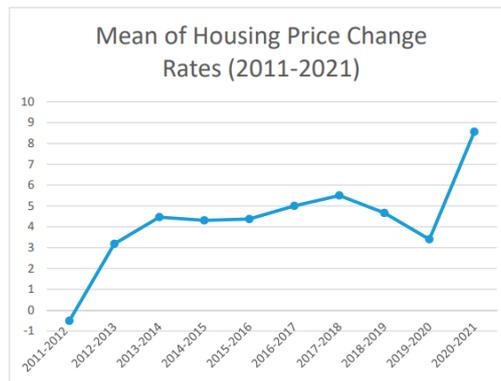


Figure 62: Mean values of housing price change rates during the nine normal years and the COVID19 pandemic year

A small dip can be noticed during 2019 and this was explained by Li et al as the precautions were strict in the beginning of the crisis, social distancing precautions reduced intentions for house viewing which is a key process in the buying process. This can also explain the dip that was discussed above during the first quarter of 2021 where another COVID wave struck the United States of America, and such precautions were re-enforced.



Figure 63: The trends of housing price changes (2019–2021) Los Angeles

Comparing the Region of Los Angeles and its suburbs between 2019-2020 and 2020-2021, the region exhibited an increase in the housing price change rates, and with the above graph showing an increase in the housing prices, then it is an increase in the change rate. In addition, Figures 65 show that real estate prices during the pandemic year of 2020–2021 demonstrated clearer spatial patterns in comparison with those of the year 2019–2020 (Prior to the pandemic). Price changes showcased a ring-like behavior, meaning that the change had a radial trend flowing from the urban center of the city towards the suburbs in a crescent pattern. Zones with the highest increase in prices were predominantly located in the suburban areas, while more central urban areas exhibited little to no increases during the crisis year of 2020–2021.

East Los Angeles and Inglewood showed a tremendous increase in housing prices and the rest of the region also showed an increase (minor/major) in housing prices. Li et al (2021) explained that during the COVID-19 crisis, Americans became more concerned about living in urban districts with a high-density population. Thus, they acted upon their concern and moved to suburbs such as East Los Angeles and Inglewood. Due to COVID-19's contagiousness, some office workers were able to work from home instead of making the long drive into busy cities. Even now, some businesses are allowing staff to work remotely on a long-term basis. Many Americans, especially many millennials, are ready to live further outside of cities and in the suburbs to afford larger houses and discover shared facilities like community gyms and pools (Li et al, 2020). Thus, an increase in the demand for houses in suburbs will cause an increase in their prices.

DISCUSSION

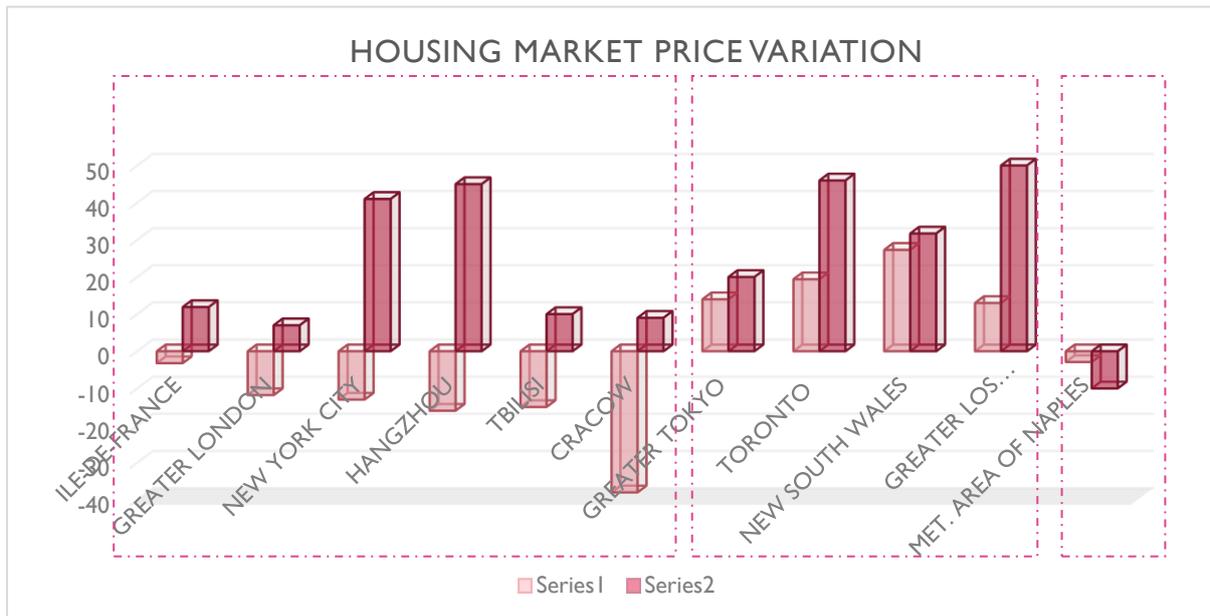


Figure 66: The Housing Market Price Variation (%) during COVID-19 in the city and the suburbs. Source: Author

After analyzing the eleven case studies in the previous section, it is evident that the pandemic of Covid-19 has affected the economy, the way of living, the real estate market and the migration of people in each region, but in different ways. In some regions the housing market price variation has decreased in the city and the suburbs, in other regions it has increased in both and in some cases the housing market prices in the suburbs were increasing more than the prices in the city. For this reason, the figure 66, was done to illustrate and to compare the data analyzed previously in each case study. Formed on this chart, it is possible to classify the analyzed regions into three categories based upon the values of their housing market price variation. The first category will be related to the regions in which the prices in the housing market have decreased in the city and increased in the suburbs such as the case of Ile-de-France in France, Greater London in England, New York City in the United States, Tbilisi in Georgia, Cracow in Poland and Hangzhou in China. The second category is related to the regions in which the

housing market prices have increased in both the city and the suburbs such as: Toronto and Montreal in Canada, Greater Tokyo in Japan, New South Wales in Australia and Greater Los Angeles in the United States. The third category represents the regions in which the housing market prices have decreased in both the city and the suburbs such as the case of the Metropolitan Area of Naples in Italy.

To begin with, the first category, Ile de France, Greater London and New York City had a very similar behavior, in these regions, the implementation of the lockdown during the pandemic had led their governments to set some policies and a goal of switching 60% and more of the services and jobs to remote work. (Rightmove,2021, Meilleur Agents, 2021, Nicholas Bloom, 2021). In addition, people were feeling the need to escape from the densely populated areas in which the virus was spreading the most, such as Paris, London, and New York to live in bigger houses that can accommodate all their activities in the suburbs, where the population density is lower. (Rightmove,2021, Meilleur Agents, 2021, Nicholas Bloom, 2021). This migration from the city to the suburbs led the housing market prices to decrease in the big cities and to increase in the areas located outside the city. However, the increased demands for buying bigger houses in the suburbs were facilitated by the policies implemented by the governments such as lowering the interest rates. This policy made buying houses in the rural areas that were already more affordable than the ones in the city, easier to afford and cheaper. Moreover, a study conducted by Gupta et al (2021) in the United States states that the regional housing prices differences will continue to decrease, suggesting a flattening phenomenon due to COVID-19. As people are migrating towards suburbs and rural areas, the demand on houses increased in suburban areas while the demand on houses in city districts decreased. The shift in increase and decrease in demand resulted in a respective increase and decrease in supply which ultimately led to the increase in housing prices in suburban

areas and a relative decrease or neutral change in city districts. (Gupta et al, 2021). The same variation of prices and the migration from cities to suburbs happened in the regions of Hangzhou in China, Cracow in Poland, and Tbilisi in Georgia, but there were different major factors and reasons that led to this variation. For instance, Tbilisi is known to be a very touristic place, in which the real estate market depends on tourists and foreign investors to enrich it. (Afifi, 2021) During the pandemic, the borders of the countries were closed, stopping all tourists and foreign investors from entering; hence the demands were decreasing in the main cities of this region leading the prices of the housing markets to drop. (Afifi, 2021) Whereas in the case of Hangzhou, the Chinese government has made it harder for the demands and prices to increase by implementing a strict policy. According to Shanxi (2021), the government restricted developers' financing by placing strict criteria (the "three red lines") on them. New property lending concentration requirements for banks and regional efforts to limit the number of new mortgage approvals were added to these. These regulations not only slowed real estate investment and sales, decreased inventories, and restrained the increase in home prices, but they also revealed weaknesses among real estate developers. (Shanxi, 2021). A sector-wide tightening of borrowing conditions, particularly in the bond markets, has contributed to certain large and highly indebted developers experiencing acute liquidity stress since they are unable to adhere to the "three red lines" framework. These pressures are endangering their capacity to repay debts and finish the substantial number of unfinished homes that households have already paid for. (Shanxi, 2021). On the other hand, Cracow in Poland is known to be as an academic region, in which universities are located in the main cities of this region. (Tomal et al., 2022). The adoption of remote work at several facilities, which decreased the number of people looking to change their place of employment and, as a result, their place of residence, is cited by Tomal et al. (2022) as

the cause of the decline in the importance of the proximity to the nearest university and the city center. Renting and purchasing flats near to the city core is thus less popular. Additionally, when students fled the city's residential areas due to the popularity of online education, the value of living close to a university declined (Tomal et al, 2022). The decrease in demand for these apartments led to a decrease in average rental rates and in average housing prices.

Unlike the first category, the second category exhibited a different behavior in the real estate market during the pandemic. The regions of Toronto and Montreal in Canada, Greater Tokyo in Japan, New South Wales in Australia, and Greater Los Angeles in the United States, have all seen their housing market prices increase across the entire region. However, the increase of house prices in the suburbs and rural areas were still higher than the houses in the city, for instance, in Toronto and Montreal the prices in the city increased of 20%, whereas the prices in the suburbs increased of 46%, in Greater Tokyo the price increase in the city was 14% whereas in the suburbs, it was around 20%, in New South Wales the price increase in the city and suburbs was 27% and 32% respectively and Greater Los Angeles the increase was around 13% and 56% respectively in the city and the suburbs. This increase in prices, was explained in the case studies of Greater Tokyo, Toronto, Montreal, and Los Angeles, in which there was not enough supply to comply with the demands, hence the continuous decrease in supply in these regions led to an increase in the housing market prices. However, in the case of Greater Tokyo, the new listings were decreasing in the suburbs, due to the implementation of remote work that led to the migration of people, leading to higher demands in these areas.(Wealth Park, 2021) Thus, the fast-housing price recovery increase in Japan could be explained by

the fact that Japanese homeowners were optimistic about the continued rise of prices in these regions due to the continuous decrease in supply and their reluctance to sell (Wealth Park, 2021). Whereas the price increase in the city was due to the fact that the remote work was not becoming completely applied in Japan, where only 30% of the companies followed the goal, the Japanese government has set of transforming 70% of work to remote style, hence a big proportion of Tokyo's residents preferred to reside near their workplaces. (Wealth Park, 2021)

However, in the regions of Toronto, Montreal and Los Angeles, Li et al (2021) explained this increase as a result of people trying to return to pre-pandemic norms with a growing expectation of vaccination; as a result, economic growth and consumer spending followed a positive trajectory where the stock market increased, and consequently, the US and the Canadian housing market followed a similar trend. Because of low mortgage rates and rising consumer purchasing power, the desire for homes has unexpectedly grown, pushing up the Federal Housing Finance Agency of the United States and the National Bank of Canada to relax its national assessment requirements, allowing households to apply for larger mortgages, as home prices increased. (Li et al, 2020, National Bank of Canada, Morel, 2022) Nevertheless, in New South Wales, Australia, the major increase in prices was because of the governmental policies applied during the pandemic period. The Reserve Bank of Australia and the Commonwealth and State governments launched several policy solutions to bolster the domestic economy in response to the COVID-19-induced economic slowdown. (Rynne and Malakellis, 2021) Direct assistance for the residential construction industry has been provided through the HomeBuilder program. For contracts signed between 4 June 2020 and 31 March 2021,

the HomeBuilder program offered grants to eligible owner-occupiers (including first-time homebuyers) for the construction of new homes or the considerable renovation of existing homes. When everything else is equal, this policy will boost the housing supply in the short term and drive down house prices over the long term. In addition, the economy has benefited from the adoption of very supportive monetary policy settings, by lowering the mortgage interest rates to 0.25% in March 2020. This intervention done by the Australian's government has led the property prices to rise dramatically during the year 2021. (Rynne and Malakellis, 2021) This intervention was done in order to protect the real estate market and the Australian economy, since it was facing a major recession during the years 2018 and 2019, in which bushfires and floodings were attacking some major regional Australian cities. (Brasier and Hadley, 2020).

Contrasting the second category, the third category exhibited an opposite behavior in the real estate market during the pandemic. The Metropolitan area of Naples has seen its real estate prices decrease all over the region, -3% in the city of Naples and around -10% in the suburbs of the region. This decrease in prices was due to several factors dating back to the economic and financial crisis of 2008/2009, that caused a high unemployment rate. Only 40.2% of those between the ages of 20 and 64 were employed in the province of Naples in 2013, which is 3.3 percentage points less than in 2008, according to the most recent statistics from the Italian National Institute of Statistics (ISTAT). (ISTAT, 2014) This employment level is 19.6 points below the national average and 5.4 points below that of southern Italy. Problematic facts are also seen in the economic well-being of households, which is related to the state of the labor market. Consumer households' per capita disposable income declined by 138 euros over the four-

year period 2009–2012, while the national average saw a growth of 28 euros. (De Toro et al, 2021) Consumer households' per capita disposable income in the province in 2012 was EUR 12,314, which was higher than the regional value of EUR 11,932 but lower than the values in the south (EUR 12,775) and nationally (EUR 17,307). Along with income disparities, households are facing more financial hardships as a result of rising bank non-performing loans and a high percentage of residents living in homes with no one working or receiving a pension—both of which are higher than in other territorial contexts. (De Toro et al, 2021)

Adding up to the financial crisis and the low purchase power, during the pandemic of COVID-19 in 2020, the prices of the real estate properties continued decreasing due to the fact that people preferred living in metropolitan areas (central areas), therefore there were no increased demands in the suburbs, compared to the previous categories of regions in which the demands were increasing in the suburbs due to people migrating there. Moreover, the low prices in the Metropolitan Area of Naples, are due to the bigger supply of properties than there is demand, and because of the ongoing crisis, the supply has been forced to adjust to what consumers can afford. Mortgage rates were also still at historically low levels. (De Toro et al, 2021)

The results obtained from these case studies show that the pandemic of COVID-19 alone did not trigger all these fluctuations of the real estate market prices and the urban to rural migration, but also the initial economic state of each region and what this economy depends on (tourism, students,..) had impacted those events panned out along with the governmental policies implemented during the pandemic that played an important role in the decision making of the individual's location.

The urban rural migration has benefitted the real estate market of the suburbs and rural areas as seen in most of the case studies in which the property market prices were increasing in places they haven't increased before, however the prices in the cities were decreasing. For this reason, we must reflect on the role of the governments, architects, and urban planners in securing the urban built environment in contrast to future threats, and their role in changing the urban and rural form and system to prevent future fluctuations in the real estate market in case of future pandemics. (Florida et al., 2021)

RE-THINKING THE CITIES AND RURAL AREAS:

With the emergence of the pandemic, and as young people, artists, and creatives take advantage of potential reduced housing costs, some neighborhoods losing wealthy residents to the suburbs might acquire a new identity. However, given that the pandemic and its economic repercussions disproportionately affect the least advantaged, cities may become even more unequal than they are now. (Florida et al., 2021) Hence, we must remain aware of the basic line that separates an unjust and bunkered urbanism from a new urbanism that strives for inclusion and a more equitable economic and social revival—a truly resilient new post-COVID city—during this new open and experimental moment. Moreover, the occurrence of the COVID-19 pandemic, which—due to multiple challenges—prompted the need for creative and innovative ways for cities to pursue their economic operations while imposing rigorous health standards, provided one unexpected "boost" towards achieving sustainability in cities. (Allam and Jones, 2020) But before technological advances like the usage of virtual communication channels,

communities that were partially or completely under lockdown faced previously unheard-of difficulties including a lack of essential supplies like food. Because of the low demand and availability of essential goods and services, a sizable portion of urban people also experienced unemployment. (Allam, 2020) The rise of this pandemic revealed the vulnerability of cities in their current configuration and the requirement for a radical rethink. (Rocklov and Sjodin, 2020) To guarantee that urban residents can deal and proceed with their basic activities, along with cultural ones, revolutionary initiatives must be adapted to help ensure that cities continue to stay both resilient and livable in the short and long-term. (Moreno et al., 2021) The necessity for this radical rethink, along with severe socioeconomic difficulties, prompted cities to implement urban planning procedures to ensure that quality of life is retained beyond the cracks that the virus may leave in cities as a legacy. On that point, policymakers see it as a necessity to provide residents with proximity-based services through examining urban regulations, notably transportation, which is considered as a connecting thread to resolving other concerns. (Moreno et al., 2021)

Based on the idea of the proximity-based services, many planning models have been suggested in order to design the post-COVID-19 cities, these solutions are not recent or new, they are based on previous design strategies such as the Smart City and the 15-minute city. The latter is based on the notion of "chrono-urbanism," which states that the quality of urban life is inversely related to the amount of time spent on transportation, particularly driving. This notion originated with the original author, Carlos Moreno, who advocates for an urban environment in which residents can access all their basic necessities in less than 15 minutes by foot or bicycle. (Moreno et al., 2021) The concept is seen to stem from his tenets outlined in his version of a "living city," which outline how it is important to "fix"

urban and social fractures, which are mostly driven by modernist approaches. Moreno believes that the current "15-minute" approach will provide inhabitants with a superior quality of life by allowing them to effectively fulfill six fundamental urban social functions necessary to sustain a decent urban living. Living, working, trade, healthcare, education, and entertainment are examples of these. To achieve those objectives, the urban constructed landscape must be restructured to assure compliance with components such as closeness, diversity, density, and ubiquity, which Moreno believes are important in the development of cities giving a high-value urban existence. (Moreno et al., 2021) For instance, in Paris, Anne Hidalgo, through the initiative "Paris en Commun," turned to the "15-Minute City" notion (in French: "La Ville du 1/4 d'Heure"), created by Carlos Moreno in 2016, in her attempt to win a second term as Mayor, which she accomplished in June 2020. (Reid, 2020) Just after its victory there, this idea has now been seen to be recreated in numerous cities around the world, piquing the attraction of international organizations, such as the C40 Cities, the World Health Organization (WHO), UN-Habitat, and the Organization for Economic Co-operation and Development (OECD), with the goal of enhancing quality of life within the setting of COVID-19 and beyond. (OECD, 2020, UN Habitat, 2020)

Hence, the "15-Minute City" idea supports closer proximity, social interaction reflected by the "density" dimension, digitalization, and diversity pillars, all of which would ultimately result in more tightly woven community fabrics. (Moreno et al., 2021) This would be aided by significant technology breakthroughs, which have resulted in the creation of such revolutionary urban planning models as the Smart City concept, which is built on the popularity of the digital revolution. (Cocchia, 2014) The use of technological developments to enhance various urban fabrics is the core idea behind the Smart City

approach. (Allam and Newman, 2018) However, this approach has its limitations; the Smart City concept has, in some cases, been shown to increase some challenges as a result of this single-minded quest, which is based on economic goals rather than addressing problems like non-inclusiveness and socioeconomic inequality. (Moreno et al., 2021) In addition, Pandey (2018) argues that metropolitan districts that have undergone change and are touted as being "smart" are too expensive for the majority of urban residents to purchase. The author adds that this issue is driven by the focus on smart technology instead of the social and economic element that such technologies are designed to solve, diverging from the SDGs' directives, especially SDG 11 that states "Make cities and human settlements inclusive, safe, resilient and sustainable". (Pandey, 2018) In agreement, Adkins et al. (2018) point out that the idea of the smart city has functioned as a catalyst for the escalating inequality in the housing market, as it is perceived that real estate is rising at a rate that is not related to the growth in resident income. Because it also adheres to the grid planning systems that have been established in many cities, the rise of the real estate sector, which is largely dominated by high-income earners, has been instrumental in advancing the problem of inaccessibility in cities. (Adkins et al., 2018)

Therefore, the concepts of the "15 - minute city" and the Smart City alone, are not enough since they both have their shortcomings. (Moreno et al., 2021) Instead, a combination of both concepts would make a good solution, however it is not sufficient, we must take into consideration the sustainability and the density, since corona virus was spreading the most in the highly dense areas which led to the urban sprawl. (Rocklov and Sjodin, 2020) Therefore, we as architects and urban planners, need to design in a way to provide enough resources for a certain amount of people in a certain specified area. Hence, further investigation is now necessary to show how this idea and its components

can be replicated in cities and rural areas in the global south and those who might not have the financial resources to carry out the extensive urban regeneration exercise that this kind of planning model demands. Since, without comprehensive and sufficient support of an architectural and urban planning type, least developed and developing economies and regions, with little capacity to establish emergency facilities and cater for their inhabitants' fundamental survival needs, would be disproportionately impacted.

In addition to taking into consideration the underdeveloped world, the suburbs and the countryside or rural areas must be included as well in the regeneration plan, in order to attain a social coherent development. Since the 1992 Rio de Janeiro, Brazil, Earth Summit (United Nations Conference on Environment and Development), improving rural residents' quality of life has been a major priority for global development. The Agenda 21 initiative made it clear that local governments should build their local development plans on their communities' unique needs and aspirations. The Agenda 21 project offered optimism to the world's poor rural populations, encouraging them to mobilize their resources and forge connections in order to get resources for their development. (United Nations, 1992)

Moreover, the COVID-19 outbreak has brought attention to the tendency of cities losing residents to rural and suburban areas. While prospective opportunities in rural areas are becoming a big topic of discussion by important players in the real estate market, it is having a detrimental effect on the urban housing market. (Chigbu et al., 2021) The tendency of cities losing residents to rural and suburban areas was due to the fact that while urban residents were constrained to cramped apartments during the first wave of lockdowns, the pandemic has brought attention to the benefits of living in rural areas, particularly the affordability of single homes with greater internal spaces and

access to private outdoor areas. Aside from that, official initiatives to restrict the virus' spread drove remote working—which had been rising gradually for decades—to previously unheard-of heights. (Eurofound, 2020). Hence, according to Magel and Miosga (2021), the COVID-19 outbreak has made society more conscious of how precarious and exposed the current economic arrangements are. Additionally, it states that urban and rural areas must be treated equally and as integral parts of the development process if sustainable development is to be realized. (Magel and Miosga, 2021) Based on this idea, many studies have suggested potential plans regarding the development of the rural areas, however these studies were focusing more on the idea of the productivity of these areas rather than their livability. (Chigbu et al., 2021) Among these studies, Halfacree (2007) have analyzed the idea of productivism and post-productivism, which he described them as a way of capitalizing the agriculture and in which these dynamics were typically covered up with apolitical technocratic/modernization terms. (Halfacree, 2007) He suggested that the LID (low impact development) could be a better solution in order to attain the sustainability goals and development, by studying well the impacts of the building developments in the countryside and the impacts of the urbanization on the climate change and the environment. In addition, he proposed the idea based on Lefebvre's studies of "trial by space for a radical rural", in which he explored the conceptualized formal representations of the radical rural, and its perceived locales, and imperfectly experienced daily lives. (Halfacree, 2007) In an article written by Monika Krauze in 2012, she suggested that we must examine present socio-spatial alterations from the viewpoint of that which is purportedly being acted upon or transformed in order to completely understand them. We can only truly disaggregate the various divisions that have been lumped into the categories of urban and rural, and think about the various ways they can be put together in forms of social settlement, when we ruralize the way we

think. Only from this angle can we study the various ways they are reassembled as a result of modern global developments. Urban agriculture, urban wildlife, farmers in suburbia, and uninteresting towns are all results of a ruralization focus. Moreover, she states that a ruralization method also enables us to examine recent changes that are only apparent after we move away from a narrow focus on urbanization, such as the creation of novel improvisational techniques in the face of deteriorating infrastructure. (Krauze, 2012)

Hence, it will take forceful political and administrative measures to participate in a renewed kind of rural development if reverse migration becomes steady and rural returnees stay in rural areas. Additionally, it will change how people view rural places. This is due to the fact that it will become clear that rural regions are much more than just settings for agricultural or natural resource extraction for the benefit of urban and general development demands. Therefore, to ensure that individuals returning to rural regions are safe and do not add to the socioeconomic burdens already present in rural areas, it is crucial to ensure that rural development is improved. (Chigbu et al., 2021)

However, other ways of making a living must also be developed if people do not wish to exclusively work as farmers in the countryside in order to be able to support their families. Innovations that enhance people's living conditions in ways that foster intergenerational wealth should be the foundation for the development of rural areas. It must include non-farm activities that have a multiplier effect on the neighborhood in addition to the traditional definition of rural development, which mostly emphasizes the farming part. The COVID-19 pandemic experience has demonstrated that it is now more important than ever to develop and rethink rural areas as desirable locations to live and work.

CONCLUSION

To sum up, this paper's aim was to discuss the impacts of COVID-19 on the internal migration and on the real estate prices. Throughout the analysis of eleven case studies, it was evident that the pandemic had led many residents from the urban areas to move to the rural areas and the suburbs. This move was due to many factors, among which the policies implemented by the governments such as lockdown, the decrease of interest rates, the spread of the virus in densely populated areas and the implementation of the remote work. These policies led to some shifts in our daily lifestyle and played a key role in the decision making of the individual's location. Hence this migration and the studies conducted were during the years 2020 and 2021. However, after the year 2021 some people started going back to the cities and to the so called "normal" life and routine. Therefore, it is now the duty of the architects, urban planners together with the governments to implement solutions regarding the planning of cities and suburbs, to guarantee a safe place in which the population density and their amenities are distributed equally among the different districts, limiting the spread of future pandemics.

However, some questions would remain untreated: Will the cities have back their important initial roles? Will the suburbs become the new cities? Are architects and urban planners able to prevent the people from new shifts in their lives in the case of future pandemics? What can be changed now that there are notable tendencies of urban-rural migration occurring globally?

REFERENCES

- Amro, A. (2020). Woningmarktmonitor.
- Adkins, L.; Cooper, M.; Konings, M. (2019) Class in the 21st century: Asset inflation and the new logic of inequality. *Environ. Plan. A Econ. Space* 2019.
- Afifi, H. (2021). Is Tbilisi Real Estate Market Growing?
- Alexander, A., Cracknell, R., De Smet, A., Langstaff, M., Mysore, M., & Ravid, D. (2021). What executives are saying about the future of hybrid work. *McKinsey & Company*.
- Alixanderscu, L., (2021). NYC Suburbs That Drew Homebuyers During COVID-19. *Property Shark*.
- Allam, Z. (2020). Surveying the Covid-19 Pandemic and Its Implications: Urban Health, Data Technology and Political Economy; *Elsevier Science: Amsterdam, The Netherlands, 2020*
- Allam, Z.; Jones, D.S. (2020). Pandemic stricken cities on lockdown. Where are our planning and design professionals [now, then and into the future]? *Land Use Policy* 2020, 97, 104805.
- Allam, Z.; Newman, P. (2018). Redefining the smart city: Culture, metabolism and governance. *Smart Cities* 2018, 1, 4–25.
- Alraouf, A. (2020). The new normal or the forgotten normal: contesting COVID-19 impact on contemporary architecture and urbanism.
- Amerio, A., Brambilla, A., Morganti, A., Aguglia, A., Bianchi, D., Santi, F., Costantini, L., Odone, A., Costanza, A., Signorelli, C., Serafini, G., Amore, M., & Capolongo, S. (2020). *COVID-19 Lockdown: Housing Built Environment's Effects on Mental Health*.
- Andersson, E., Abramsson, M., Malmberg, B. (2018). Patterns of changing residential preferences during late adulthood. *Ageing and Society*.
- Anxiety UK. (2020, May 11). Anxiety UK survey indicates a further rise in anxiety levels can be expected with easing of lockdown restrictions.
- Arcaya, M. C., Nidam, Y., Binet, A., Gibson, R., & Gavin, V. (2020). Rising home values and Covid-19 case rates in Massachusetts. *Social Science and Medicine*.
- Arcaya, M. C., Nidam, Y., Binet, A., Gibson, R., & Gavin, V. (2020). Rising home values and Covid-19 case rates in Massachusetts. *Social Science and Medicine*.
- Azevedo, J. C., Luque, S., Dobbs, C. et al. (2020). The ethics of isolation, the spread of pandemics, and landscape ecology. *Landscape Ecology*, 35, 2133–2140.
- Balemi, N., Füss, R., & Weigand, A. (2021). COVID-19's impact on real estate markets: review and outlook. *Financial Markets and Portfolio Management*.
- BBC (2021) 'Urban Flight' raises house prices in villages
- BBC News. (2020, March 17). Coronavirus: chancellor unveils £350bn lifeline for economy.
- Bell, M., Charles-Edwards, E., Ueffing, P., Stillwell, J., Kupiszewski, M., & Kupiszewska, D. (2015). Internal migration and development: Comparing migration intensities around the world. *Population and Development Review*, 41(1), 33–58.
- Benbasat, I., Goldstein, D. K., & Mead, M. (1987). The case research strategies in studies of information systems. *MIS Quarterly*, 11(3), 369–386.
- Benson, M. et al. (2016) From lifestyle migration to lifestyle in migration: categories, concepts and ways of thinking. *Migr. Stud.*
- Blau, A., and Simon, E., (2020). Coronavirus: How deadly and contagious is this COVID-19 pandemic? *ABC News*.
- Bloom, N., Ramani, A., (2021). The donut effect of Covid-19 on cities.
- Bloomberg, (2022). More People Are Moving to Manhattan Than Before the Pandemic.

- Blustein, D. L., Duffy, R., Ferreira, J. A., Cohen-Scali, V., Cinamon, R. G., & Allan, B. A. (2020). Unemployment in the time of COVID-19: A research agenda. *Journal of Vocational Behavior*, 119, 103436.
- Bogue, E. G. (1969). The context of organizational behavior: A conceptual synthesis for the educational administrator. *Educational Administration Quarterly*, 5(2), 58-75.
- Boterman, W. R. (2020). Urban-rural polarisation in times of the corona outbreak? The early demographic and geographic patterns of the SARS-CoV-2 epidemic in the Netherlands. *Tijdschrift Voor Economische En Sociale Geografie*, 111(3), 513–529.
- Bouma, A. (2022) Influence of the COVID-19 Crisis on Housing Preferences of Homeowners in the Netherlands.
- Brandén, M., Aradhya, S., Kolk, M., Härkönen, J., Drefahl, S., Malmberg, B., Rostila, M., Andersson, G., & Mussino, E. (2020). Residential context and COVID-19 mortality among adults aged 70 years and older in Stockholm: A population-based, observational study using individual-level data. *The Lancet Healthy Longevity*, 1(2), 80–88.
- Brasier, T. and Hadley, T. (2020), Australian economic and property report 2020. *PRD*.
- Bricogne, M., Gaha, R., Nicolet, P. M., & Eynard, B. (2021). Teaching experiments for engineering education based on cloud cad software. *Proceedings of the Design Society*, 1, 2951-2960.
- Brodeur, A., Gray, D., Islam, A., Bhuiyan, S. (2020). A literature review of the economics of COVID-19. *Working paper, IZA Institute of Labor Economics*.
- Burton, E., Jenks, M., & Williams, K. (2003). *The compact city: a sustainable urban form?*. Routledge.
- Cabinet Office, (2020). Survey of the changes in attitudes and behaviors during the COVID-19 effects.
- Carlsson-Szlezak, P., Reeves, M., Swartz, P. (2020). What coronavirus could mean for the global economy? *Harvard Business Review*, 3
- Caron, C. (2020) Are Cities a Safe Place to Live during a Pandemic? The New York Times.
- Carr, S.J., (2020). Is the Coronavirus Changing How We Look at Public Spaces? in The Takeaway; COVID-19: Ongoing Coverage of the Coronavirus Pandemic. Case study on real estate values in Turin. *Cities*. Volume 91, Pages 71–92.
- Cave, B.; Kim, J.; Viliani, F.; Harris, P. (2020). Applying an equity lens to urban policy measures for COVID-19 in four cities. *Cities Health* 2020, 1–5.
- Cenar, H. C. (2021) Arbeidsledigheten gjennom ett år med korona: Hvordan har korona og smittevernstiltakene påvirket arbeidsledigheten i Oslo?. *Oslospeilet* 1/2021. Oslo kommune.
- Cencig, E., (2012). Italy's economy in the euro zone crisis and Monti's reform agenda. *SWP Berlin*.
- Cevik, M.; Bamford, C.G.G.; Ho, A. (2020). COVID-19 pandemic-a focused review for clinicians. *Clin. Microbiol. Infect.*
- Chandna, R.C. (1998). *Population, Kayani Publishers*.
- Chapman, K. (1979). *People, Pattern and Process: An Introduction to Human Geography*.
- Chen, W., & Wellman, B. (2004). The global digital divide—within and between countries. *IT & Society*, 1(7), 39–45.
- Cheung, K. S., & Yiu, C. Y. (2021). Housing Market in the Time of Pandemic : A Price Gradient Analysis from the COVID-19 Epicentre in China.
- Chiang, Y.H., Lin, S.Y., & Tsai, I.C. (2022). Effect of COVID-19 lockdowns on city-center and suburban housing markets: Evidence from Hangzhou, China. *Journal of Asian Economics*, 83 (2022), 101544
- Chigbu, U.E. , Klaus, M. and Magel, H. (2021). New Hope and Future for Rural Areas under COVID-19 Circumstances? Rural Development, Pandemic Liveability and Reverse Migration.

- Clark, G., Cummins, N. (2009). Urbanization, mortality and fertility in Malthusian England.
- CNBC (2020). Coronavirus: Wealthy New Yorkers flee Manhattan for suburbs and beyond.
- Cocchia, A. (2014). Smart and digital city: A systematic literature review. *In Smart City; Springer International Publishing: Cham, Switzerland, 2014; pp. 13–43.*
- Cohn, D. (2020). About a fifth of U.S. adults moved due to COVID-19 or know someone who did. *PEW Research Center.*
- Connolly, C., Keil, R., & Ali, S. H. (2021). Extended urbanisation and the spatialities of infectious disease: Demographic change, infrastructure and governance. *Urban Studies*, 58(2), 245–263.
- Cordes, J., & Castro, M. C. (2020). Spatial analysis of COVID-19 clusters and contextual factors in New York City. *Spatial and spatio-temporal epidemiology*, 34, 100355.
- Cottey, W.J. (1981). *Geography: Towards a General Spatial Systems Approach. Methuen & Co. Ltd. London.*
- Cramer, V., Torgersen, S., Kringle, E. (2004). Quality of life in a city: the effect of population density. *Soc. Indicat. Res.* 69, 103–116.
- Creswell, J. W. (2007). *Qualitative inquiry and research design: Choosing among five approaches (2nd ed.)*. New Delhi, India: Sage.
- Crosby, A.W., (2003). *America's forgotten pandemic: the influenza of 1918. Cambridge University Press.*
- Davies, A. (2021). Has COVID really caused an exodus from our cities? In fact, moving to the regions is nothing new. *The Conversation.*
- 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. <https://doi.org/10.3390/urbansci5010023>
- Denham, T. (2021). The limits of telecommuting: Policy challenges of counterurbanisation as a pandemic response. *Geographical Research*, 59(4), 514-521.
- Denzin, N. K., & Lincoln, Y. S. (2005). *The SAGE handbook of qualitative research (3rd ed.)*. Thousand Oaks, CA: Sage.
- Desai, D. (2020) *Urban Densities and the Covid-19 Pandemic: Upending the Sustainability Myth of Global Megacities.*
- Deshpande, C.D., Arunchalam, B., Bhat, L.S. 1980. Impact of Metropolitan City on the Surrounding Region: A case study of South Kolaba, Maharashtra. *Concept Publishing Company, New Delhi.*
- Dingle, H., & Drake, V. A. (2007). What is migration? *Bioscience*, 57(2), 113-121.
- Elsedawy, Y., (2020). Is the Real Estate Market in Italy Disrupted due to the COVID-19 Outbreak?
- Eltarabily, S., & Elghezanwy, D. (2020). Post-pandemic cities-the impact of covid-19 on cities and urban design. *Architecture Research*, 10(3), 75–84.
- Eurofound (2020) *Living, working and COVID-19*. Luxembourg: Publications Ofce of the european Union. Available at: <https://doi.org/10.2806/467608>.
- Fernie, J., Pitkethly, A.S. 1985. *Resources: Environment and Policy. Harper & Row Ltd, London*
- Fielding, A.J. (1982) Counter urbanisation in western Europe. *Prog. Plann.*
- Fielding, T., & Ishikawa, Y. (2021). COVID-19 and migration: A research note on the effects of COVID-19 on internal migration rates and patterns in Japan. *Population, Space and Place*, 27(6).
- Filotto, U., Giannotti, C., Mattarocci, G. & Scimone, X. (2018). Residential mortgages, the real estate market, and economic growth: evidence from Europe. *Journal of Property Investment & Finance*, 36(6), 552–577.
- Florida, R., Rodríguez-Pose, A., & Storper, M. (2021). Cities in a post-COVID world. *Urban Studies.*

- Frankema, E.; Tworek, H. (2020). Pandemics that changed the world: Historical reflections on COVID-19. *J. Glob. Hist.*, 15, 333–335.
- Fuguitt, G.V., et al. (1978) Population trends of nonmetropolitan cities and villages in subregions of the United States. *Demography*.
- Gallent, N., & Madeddu, M. (2021). Covid-19 and London's decentralising housing market—what are the planning implications?. *Planning Practice & Research*, 36(5), 567-577.
- Garber, M. (2020). Homes need to be practical now: One of the ironies of social distancing is that it can put privacy in short supply. *The Atlantic*.
- Ghosh, B.N. (1987). *Fundamentals of Population Geography*. Sterling Publishers Pvt. Ltd. New Delhi.
- Glaeser, E. (2020). Cities and pandemics have a long history. *City Journal*.
- Gonzalez-Leonardo et al. (2022). Understanding patterns of internal migration during the COVID 19 pandemic in Spain.
- Goodman, L., & Magder, D. (2020). Avoiding a COVID-19 Disaster for Renters and the Housing Market. *Urban Institute*, 13.
- Gordon, P. (1979). Deconcentration without a “clean break”. *Environ. Plan. A*
- Gosnell, H. et al. (2011) Amenity migration: diverse conceptualizations of drivers, socioeconomic dimensions, and emerging challenges. *Geojournal*
- Guadagno, L. (2020). Migrants and the COVID-19 pandemic: An initial analysis. *International Organization for Migration*.
- Guglielminetti, E., Loberto, M., Zevi, R., Zizza, R. (2021). Living on my own: the impact of the Covid-19 pandemic on housing preferences.
- Gupta A, Mittal V, Peeters J, et al. (2021) Flattening the curve: pandemic-induced revaluation of urban real estate. *NBER Working Papers*.
- Gür, G., Siriwardhana, Y., Ylianttila, M., & Liyanage, M. (2021). The role of 5G for digital healthcare against COVID-19 pandemic: Opportunities and challenges. *ICT Express*, 7(2), 244-252.
- HA, N., (2021) Factors Affecting Real Estate Prices During the COVID–19 Pandemic: An Empirical Study in Vietnam. *Journal of Asian Finance, Economics and Business* Vol 8 No 10 (2021) 0159–0164
- Halfacree, K. (2007). Trial by space for a ‘radical rural’: Introducing alternative localities, representations, and lives. *Journal of Rural Studies* 23 (2007) 125–141
- Hamidi, S., Sabouri, S., & Ewing, R. (2020). Does density aggravate the COVID-19 pandemic? *Journal of the American Planning Association*, 86(4), 495–509.
- Hamptons (2021) “Londoners spend a record £54.9BN on property outside the Capital”
- Hamptons (December 2020), “LONDON LEAVERS BUY 73,950 HOMES OUTSIDE THE CAPITAL”
- Hamptons, June 2021 “Rural price growth twice the urban average”
- Hamptons. (2020) London leavers buy 73,950 homes outside the capital, Hamptons, December.
- Hansen, H.K. & Aner, L.G. (2017). On the location dynamics of highly educated people migrating to peripheral regions of Denmark. *Popul Space Place*, 23:2076. <https://doi.org/10.1002/psp.2076>
- Hays, J.N., (2005). Epidemics and pandemics: their impacts on human history. *Abc-Clio*. Healthy and Happy Working from Home? Effects of Working from Home on Employee
- Helbich, M. & Tomal, M. (2022). The private rental housing market before and during the COVID-19 pandemic: A submarket analysis in Cracow, Poland. *Urban Analytics and City Science*, 2022, Vol. 49(6) 1646–1662.
- Hemnet (2021). This is how we want to live after restrictions and teleworking.

- Hernández-Morales, A., Oroschakoff, K., & Barigazzi, J. (2020). The death of the city. *Politico*.
- Honey-Rosés, J., Anguelovski, I., Chireh, V. K., Daher, C., Konijnendijk van den Bosch, C., Litt, J. S., Nieuwenhuijsen, M. J. (2020). The impact of COVID-19 on public space: An early review of the emerging questions—design, perceptions, and inequities. *Cities & Health*, 1–17.
- Hu, M.R., Lee, A.D., Zou, D., (2021). COVID-19 and housing prices: australian evidence with daily hedonic returns. *Financ. Res. Lett.* 43.
- Hua, J., Zhang, X., Ren, C., Shi, Y., & Lee, T.-C. (2021). Spatiotemporal assessment of extreme heat risk for high-density cities: A case study of Hong Kong from 2006 to 2016. *Sustainable Cities and Society*, 64, Article 102507. <https://doi.org/10.1016/j.scs.2020.102507>
- Hughes, C. (2020). Coronavirus escape: To the suburbs. *The New York Times*.
- Hughes, C., et. Al. (2022). Emerging trends in real estate. *PWC*
- INSEE, (2021). In Q3 2021, the rise in prices of second-hand dwellings continued, in a stronger way for provincial France than for Île-de-France.
- Internetstiftelsen (2020). Svenskarna och internet 2020. [Swedes and the internet] <https://svenskarnaochinternet.se/app/uploads/2020/12/internetstiftelsen-svenskarna-och-internet-2020.pdf>.
- IOM. (2020). COVID-19 Analytical Snapshot #3: Travel restrictions & mobility. *Understanding the migration & mobility implications of COVID-19. International Organization for Migration*.
- Jabareen, Y. (2005). Culture and housing preferences in a developing city. *Environment and Behavior*, 37(1), 134–146.
- Jamshidi, S., Baniasad, M., & Niyogi, D. (2020). Global to USA county scale analysis of weather, urban density, mobility, homestay, and mask use on COVID-19. *International Journal of Environmental Research in Public Health*, 1–17. DOI: <https://doi.org/10.3390/ijerph17217847>
- Jansen, Silvia J. T., Coolen, Henny C. C. H., & Goetgeluk, Roland W. (2011). The measurement and analysis of housing preference and choice. *London: Springer*.
- JCHS (2021). The pandemic reveals the need for space, but building smaller units remains essential.
- Kam, K. J., Lim, A. S. H., Al-Obaidi, K. M., & Lim, T. S. (2018). Evaluating Housing Needs and Preferences of Generation Y in Malaysia. *Planning Practice & Research*, 33(2), 172–185.
- Kang, Y.-J. (2020). Lessons learned from cases of COVID-19 infection in South Korea. *Disaster Medicine and Public Health Preparedness*, 1–20.
- Kipiani, N. (2022). Georgia real estate market view. *Cushman & Wakefield*.
- Knight Frank 2022, Rental value growth reaches new highs as pandemic recovery continues
- Knight Frank, (2022). The Residential Property Market.
- Kokubun, K. (2022). Factors That Attract the Population: Empirical Research by MultipleRegression Analysis Using Data by Prefecture in Japan. *Sustainability 2022*, 14, 1595. <https://doi.org/10.3390/su14031595>.
- Kolko, J., Badger, E., & Bui, Q. (2021). How the pandemic did, and didn't, change where Americans move? *The New York Times*.
- Krauze, M.(2012). The ruralization of the world.
- Lawford, Melissa. (2020, March 27). What should I do if I am selling a house during the coronavirus outbreak? The Latest Property Advice.
- Lenzen, M., Moran, D., Kanemoto, K., Foran, B., Lobefaro, L., Geschke, A., (2012). International trade drives biodiversity threats in developing nations. *Nature* 486,109–112.
- LePan, N. and M. Routley. Visualizing the History of Pandemics. *Visual Capitalist*, COVID-19 2020 May 12, 2020]; Available from: <https://www.visualcapitalist.com/history-of-pandemics-deadliest/>.

- Li, X., & Zhang, C. (2021). Did the COVID-19 Pandemic Crisis Affect Housing Prices Evenly in the U.S.? *Sustainability*, 13(21), 12277. <https://doi.org/10.3390/su132112277>
- 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, Federal Reserve Bank of Dallas*
- Löhmus, M., Stenfors, C.U.D., Lind, T., et al. (2021). Mental Health, Greenness, and Nature Related Behaviors in the Adult Population of Stockholm County during COVID-19-Related Restrictions. *International Journal of Environmental Research and Public Health*, 18(6), 3303. <https://doi.org/10.3390/ijerph18063303>
- Magel, H. and Miosga, M. (2021) Does countryside now have a future again?
- Magel, H. (2019). Country in lust, country frustration or both? – Current comments on equivalent living conditions in town and country. *Magazine for Geodesy, Geoinformation and Land Management*, 144 (3), 147 – 156. DOI: 10.12902/zfv-0258-2019.
- Mahoney, E. and D. Nardo, (2016). *The Black Death: Bubonic Plague Attacks Europe*. 2016: Greenhaven Publishing LLC.
- Malakellis, M. and Rynne, B. (2021), The impact of Covid-19 on Australia’s residential property market. *KPMG*.
- Marché locatif en France: les chiffres de 2021 dévoilés, OBSERVATOIRE LOCERVICE 2022.
- Marsh, S. (2020). Escape to the country: How COVID is driving an exodus from Britain's cities. *The Guardian*.
- Marte, J., (2020). Fleeing New Yorkers resulted in an estimated \$34 billion in lost income - study. *Reuters*.
- McIntyre, N. (2009) Rethinking amenity migration: Integration mobility, lifestyle and social-ecological systems.
- McKinsey, (2022). Americans are embracing flexible work—and they want more of it.
- McKinsey. (2020). *Commercial real estate must do more than merely adapt to coronavirus*.
- Meen, G. (1999) Regional house prices and the ripple effect: A new interpretation, *Housing Studies*, 14(6), pp. 733–753.
- Megahed, N. A., & Ghoneim, E. M. (2020). Antivirus-built environment: Lessons learned from Covid-19 pandemic. *Sustainable Cities and Society*, 61, 102350.
- Meilleurs Agents, Barometre National des Prix de L’Immobilier, March 2022
- Meilleurs Agents, Bienvenue Dans Le Monde D’apres, September 2021
- Meilleurs Agents, Marche Immobilier: A Qui Profite La Crise Sanitaire?, January 2022
- Meilleurs Agents, Pas D’exode Urbain Mais une Nouvelle Geographie Immobiliere, September 2021.
- Miller, N., Peng, L. & Sklarz, M. (2011). House Prices and Economic Growth. *The Journal of Real Estate Finance and Economics*, 42, 522–541. <https://doi.org/10.1007/s11146-009-9197-8>
- Morel, L., (2002). Analyzing the house price boom in the suburbs of Canada’s major cities during the pandemic. *Bank of Canada*.
- Moreno, C. (2020). La Ville du Quart D’heure: Pour un Nouveau Chrono-Urbanisme.
- Moreno, C., Allam, Z., Chabaud, D., Gall, C., & Pratlong, F. (2021). Introducing the “15- minute city”: Sustainability, resilience and place identity in future post-pandemic cities. *Smart Cities*, 4(1), 93–111.
- Moreno, C.; Allam, Z.; Chabaud, D.; Gall, C.; Pratlong, F. (2021). Introducing the “15-Minute City”: Sustainability, Resilience and Place Identity in Future Post-Pandemic Cities. *Smart Cities* 2021, 4, 93–111.
- Morris, E. W. & Winter, M. (1975). A Theory of Family Housing Adjustment. 37(1), 79–88.
- Muhyi, M. and Adianto, J. (2021) Literature Review: The Effects of Covid-19 Pandemic-Driven Home Behavior in Housing Preference, *Smart City: Vol. 1: Iss. 1, Article 2*.

- Nathan, M., & Overman, H. (2020). Will coronavirus cause a big city exodus? *Environment and Planning B: Urban Analytics and City Science*, 47(9), 1537–1542.
- Nathan, M., & Overman, H. (2020). Will coronavirus cause a big city exodus? *Environment and Planning B: Urban Analytics and City Science*, 47(9), 1537–1542.
- Newman, J.L., Matzke, G.E. 1984. Population: Pattern, Dynamics, and Prospects. *Prentice-Hall, Inc, Englewood Cliffs, New Jersey*.
- Nguimkeu, P., & Tadadjeu, S. (2021). Why is the number of COVID-19 cases lower than expected in Sub-Saharan Africa? A cross-sectional analysis of the role of demographic and geographic factors. *World Development*, 138, Article 105251. <https://doi.org/10.1016/j.worlddev.2020.105251>
- Notaires de France (2020), French Property Market, no. 47 April 2020
- Notaires de France (2021), French Property Market, no. 52 July 2021
- Notaires de France (2022), French Property Market, no. 54 January 2021
- Notaires de France (2022), French property prices: indexes and maps
- Núñez-López M, Alarcón Ramos L, Velasco-Hernández JX. (2021). Migration rate estimation in an epidemic network. *Appl Math Model*. 89:1949-1964.
- Odagiri, T., Tsutsui, K., 2016. Return to Rural Living: Community Development with Migrants into Rural Areas, Rural Culture Association Japan. *The Association of Japanese Geographers, Tokyo, Japan*.
- OECD (2020). The impact of the COVID-19 pandemic on jobs and incomes in G20 economies.
- OECD (2020). The impact of the COVID-19 pandemic on jobs and incomes in G20 economies.
- ONS (2021). UK House Price Index Report 2021.
- Palicki, S. (2020). Housing preferences in various stages of human life cycle. *Real Estate Management and Valuation*, 28(1), 91-99.
- Pandey, N. (2018) Smart Cities Could Result in Social Inequality, Say Experts.
- Paris Je Te Quitte. (2021). Impact du confinement: +42% de franciliens prêts à quitter la capitale au plus vite.
- Paris Property Group, (2021). Real estate prices rise slightly in Paris and surrounding suburbs.
- Patnaik, S., & Pandey, S. (2019). Case Study Research. Doi: 10.1108/978-1-78973-973-220191011.
- Paybarah, A., Bloch, M., & Reinhard, S. (2020). Where new yorkers moved to escape coronavirus. *The New York Times*.
- Plumplot 2022 outer London property prices
- Plumplot 2022, Inner London Property Prices
- Pomeroy, R., & Chainey, R. (2020). Has COVID killed our cities? *Forum World Economic*.
- Quealy, K. (2020). The richest neighborhoods emptied out most as coronavirus hit New York City.
- Raj, H. 1981. Fundamentals of Demography. *Surjeet Publications, Delhi*.
- Razaghi, T. (2022). The popular NSW tree-change towns where house prices have soared. *SMH*.
- Reid, C. (2020). Anne Hidalgo Reelected as Mayor of Paris Vowing to Remove Cars and Boost Bicycling and Walking.
- Ren, H., Zhao, L., Zhang, A., Song, L., Liao, Y., Lu, W., & Cui, C. (2020). Early forecasting of the potential risk zones of COVID-19 in China's megacities. *Science of the Total Environment*, 729(January). <https://doi.org/10.1016/j.scitotenv.2020.138995>
- Rightmove (2021). New Year resolution sellers gearing up for 2022 as closer to normal market beckons.
- Rightmove (2022). Rents grow at fastest annual rate in 16 years.

- Rocklov, J., Sjodin, H., 2020. High population densities catalyse the spread of COVID-19.
- Rogers, D., & Power, E. (2020). Housing policy and the COVID-19 pandemic: The importance of housing research during this health emergency. *International Journal of Housing Policy*, 20(2), 177–183.
- Rosenthal SS, Strange WC, Urrego JA, (2021) JUE insight: Are city centers losing their appeal? Commercial real estate, urban spatial structure, and COVID-19. *J Urban Econ*, 103381.
- Sagnard, A. (2021). Aujourd'hui, les enfants ont tout le temps le rose aux joues: Ces Français qui quittent la ville pour changer d'air. *L'OBS*.
- Salama, A. M. (2020). Coronavirus questions that will not go away: interrogating urban and socio-spatial implications of COVID-19 measures. *Emerald Open Research*, 2, 14.
- Sbakhi, B., Mohd S., Mohd, W., Esa, M. (2018). Investigation study towards housing attributes effect house buyers. *International Journal of Engineering and Technology*. 7. 47-50
- Shanxi, H. (2021). People's Republic of China: 2021 Article IV Consultation—Press Release; Staff Report; and Statement by the Executive Director for the People's Republic of China.
- Sharifi, A., & Khavarian-Garmsir, A. R. (2020). The COVID-19 pandemic: Impacts on cities and major lessons for urban planning, design, and management. In *Science of the total environment* (Vol. 749). Elsevier B.V..
- Shaw, V. (2022) "The areas of the UK with the highest house prices revealed". *The Independent*.
- Sinha, B. R. K. (2005). Human migration: concepts and approaches. *Foldrajzi Ertesito*, 3(4), 403-414.
- Stankowska, A. and Stankowska-Mazur, I. (2022). The Third Wave of COVID-19 versus the Residential Preferences in Poland: An Assessment of Economic Factors and Psychological Determinants. *Sustainability*, 14, 1339.
- Stevenson, M., Thompson, J., de Sá, T. H., Ewing, R., Mohan, D., McClure, R., ... & Woodcock, J. (2016). Land use, transport, and population health: estimating the health benefits of compact cities. *The lancet*, 388(10062), 2925-2935.
- Stier, A. J., Berman, M. G., & Bettencourt, L. M. A. (2020). COVID-19 attack rate increases with city size. *MedRxiv*, 1–23.
- Storper, M., & Venables, A. J. (2004). Buzz: Face-to-face contact and the urban economy. *Journal of Economic Geography*, 4(4), 351–370.
- Subramanian Rama Iyer, Betty J. Simkins, (2022) Finance Research Letters, COVID-19 and the Economy: Summary of research and future directions.
- Szczepek, M. (2021). Changes in the Housing Market in Cracow During COVID-19 Pandemics. *World of Real Estate Journal*, 115(1), 20-47.
- Takahashi, Y. et al. (2021). Diverse values of urban-to-rural migration: A case study of Hokuto City, Japan. *Journal of Rural Studies* 87 (2021) 292–299
- Tamborrino, R. (2020), Here's how locking down Italy's urban spaces has changed daily life.
- 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.
- 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.
- Team TNCPERE. The epidemiological characteristics of an outbreak of 2019 novel coronavirus diseases (COVID-19) d China. 2020.
- Teller J. (2021). Urban density and Covid-19: towards an adaptive approach. *Buildings and Cities*, 2(1), pp. 150–165. DOI: <https://doi.org/10.5334/bc.89>
- The Economist (2021, October 30). Remote-first is taking over the rich world.

- The Economist (2021, September 11). The new economics of global cities.
- The Guardian 2021, by Robert Booth “Rural house prices in England and Wales rise twice as fast as in cities”
- The London Assembly March 2021, “Survey shows people want to move house but still stay in the capital”
- The Real Estate Institute of Australia (2021), Real Estate Market facts: December quarter 2021.
- The World Bank, 2019. Data: urban population (% of total population).World Bank IBRD IDA.
- Tokyo Metropolitan Government. (2015). Tokyo’s history, geography, and population.
- Tønnessen, (2021) Movers from the city in the first year of Covid. *Nordic Journal of Urban Studies*. Volume 1, No. 2-2021, p. 131–147
- UN-Habitat. (2020). Un-Habitat Key Message on Covid-19 and Public Space; *UN-Habitat: Nairobi, Kenya, 2020*.
- United Dwelling. (2021). How Has COVID-19 Affected the Los Angeles Housing Market?
- United States Census Bureau and Zillow (2021). Remote Working, Commuting Time, Life Events All Affect Home Buyers’ Decisions.
- Vogiazides, L. and Kawalerowicz, J. (2022). Urban exodus in COVID times: Who moves out of the inner city of Stockholm and where do they go? *Stockholm Research Reports in Demography*
- Vogiazides, L., & Kawalerowicz, J. (2022). Urban exodus in Covid times: Who moves out of the inner city of Stockholm and where do they go? *Stockholm Research Reports in Demography, 2022:4. Stockholm University*.
- Wang, T., & Gu, J. (2011). Lifetime income and housing affordability in Singapore. *Urban Studies* (Edinburgh, Scotland), 48(9), 1875–1891.
- WealthPark (2021). The Impact of COVID-19 on Tokyo’s Population Migration and Housing Market.
- Weeks, J.R. (1989). Population: An Introduction to Concepts and Issues. *Words worth Publishing Company, Belmont, California*.
- Wheaton, William C, and Anne Kinsella Thompson. 2020. “The Geography of COVID-19 growth in the US: Counties and Metropolitan Areas.”
- White, M.P., Alcock, I., Wheeler, B.W., Depledge, M.H. (2013). Would you be happier living in a greener urban area? A fixed-effects analysis of panel data. *Psychol. Sci.* 24(6), 920–928.
- Wilder-Smith, A., & Freedman, D. O. (2020). Isolation, quarantine, social distancing and community containment: Pivotal role for old-style public health measures in the novel coronavirus (2019-nCoV) outbreak. *Journal of Travel Medicine*, 27(2).
- Xavier, G., Malézieux, A., Spiegelman, E., Tisserand, J.C. (2022). Preferences After Pan(dem)ics: Time and risk in the shadow of Covid-19. *Technical report, working paper*.
- Xie, J., Luo, S., Furuya, K., Sun, D. (2020). Urban Parks as Green Buffers During the COVID-19 Pandemic. *Sustainability*.
- Yin, R. K. (2009). Case study research: Design and methods (4th ed.). Thousand Oaks, CA: Sage Publications.
- You, H., Wu, X., & Guo, X. (2020). Distribution of covid-19 morbidity rate in association with social and economic factors in Wuhan, China: Implications for urban development.
- Yu, H., Fujii, R. (2022). Housing design during COVID-19: effects of psychological states on Japanese architecture students. *Journal of Asian Architecture and Building Engineering*.