

Dynamics of Industrial Gentrification: A Review of Literature

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Abstract

The phenomenon of gentrification has been widely studied in urban research, with a particular focus on residential neighbourhoods. However, industrial gentrification, which Chris Hamnett refers to as the social and spatial manifestation of the transition from an industrial economy to a post-industrial economy, has received relatively less attention. This paper aims to address this gap by examining industrial gentrification in four cities: Chicago in the United States, Williamsburg-Brooklyn in New York, Glasgow in the United Kingdom, and Haifa City in Israel. The study adopts a case study approach to do a comparative analysis and gain an in-depth understanding of the drivers, effects, and interventions of industrial gentrification in these cities. This methodology was chosen due to its ability to provide rich and context-specific insights into the complex process of industrial gentrification, taking into account the unique social, economic, and historical factors at play in each city. Four (4) models of industrial gentrification emerge namely Policy Intervention Model; Decline/Dwindling Opportunities Model; Relocation/Space Restriction Model; and Complimentary Needs Model. These models are re-examined to draw lessons that may be useful in shaping sustainable urban transformation particularly for rapidly urbanising cities in developing countries. The study recommends adoption of inclusive zoning and mixed-use development, implementation of strategic land use plans, creation and enforcement of displacement policies, and community participation in the planning process.

Keywords: Industrial gentrification, urbanization, Chicago, Williamsburg, Glasgow, Haifa.

INTRODUCTION

Gentrification has been extensively researched in urban research, with a special emphasis on residential neighbourhoods (Smith N. , 1996; Lees, Slater, & Wyly, 2008; Atkinson & Bridge, 2005). However, industrial gentrification has gotten less attention. Hamnett (2003) posits that it refers to the social and spatial manifestation of the transition from an industrial economy to a post-industrial economy based on financial, business, and creative services, with changes in the nature and location of work, the structure of occupational class income, and the housing market (Hamnett, 2003; Clark, 2005; Hirt & Sager, 2018). Despite the limited study on industrial gentrification, there is growing evidence of it occurring in cities of the global north. For example, Chicago (Bess, McManus, & Wilson, 2019), Williamsburg-Brooklyn (Curran, 2007; Zukin, 2010), Glasgow (McKee & McKeown, 2014; Berry & Giovannini, 2020), and Haifa City (Mansfeld, 1992; Bar-El & Modai-Snir, 2018) have all experienced significant industrial gentrification in recent years. As such,

many authors argue that the phenomenon has drawn interest of academia, urban practitioners, and policy makers due to its impact on the social and economic fabric of urban areas (Smith N. , 1996; Atkinson & Wulff, 2009; Atkinson & Bridge, 2005; Hirt & Sager, 2018; Nezer & Hershkovitz, 2013; Zukin, 2010).

Atkinson and Wulff (2009) argue in favour of industrial gentrification, alluding that it leads to economic revitalization, creates job opportunities, boosts local economies, and transforms industrial spaces into mixed-use developments enhancing the quality of life for residents through improved amenities, services, and increased cultural and recreational opportunities (Atkinson & Bridge, 2005; Hamnett, 2003; Hirt & Sager, 2018). Smith and Ley (2008) contends that industrial gentrification displaces low-income residents and small-scale businesses, often erases the cultural and historical identity of the neighbourhood, and results in increased housing costs (Smith

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N.,1996; Hamnett, 2003). Slater (2011) affirms that the process may lead to the loss of industrial land that could have been repurposed for sustainable and environmentally friendly industrial activities (Smith N. , 2007a). According to Zukin (2010), to support coexistence, efforts should be made to integrate new businesses and housing developments with existing industries, rather than completely replacing industrial activities (Nezer & Hershkovitz, 2013; Mansfeld, 1992). Given the global scope of industrial gentrification and the potential social, economic, and environmental impacts (Atkinson & Bridge, 2005), a comparative case study analysis of these four cities provides a diverse range of perspectives on the phenomenon in different urban contexts. This research paper explores four distinct models of industrial gentrification which have been derived from a comprehensive analysis of the four case studies. They include the Decline/Dwindling Opportunities, Relocation/Space Restriction, Complimentary Needs, and Policy Intervention Models.

Each of the models is presented in detail, examining the factors that contribute to its emergence, the potential implications for affected urban spaces, and the response measures to industrial gentrification, with reference to the specific four (4) case studies in the Global North. The comparative analysis of these case studies will help us understand the dynamics of industrial gentrification in various urban environments, as well as shed light on the opportunities and challenges this process may present. Moreover, the emerging models of industrial gentrification from the selected case studies are vital in drawing lessons that may be useful in shaping sustainable urban transformation particularly for rapidly urbanising cities of the Global South.

Industrial Gentrification: Towards a Theoretical and Conceptual Framework

Definition of Industrial Gentrification

Ruth Glass, a Marxist planner and sociologist, used the term gentrification to describe changes in the property markets and social structure of London's inner suburbs. She warned of the exodus of the impoverished from London and the establishment of upper-class ghettos (Slater, 2011; Glass, 1964). According to Smith (2007b), by the 1980s, the term was seen as a dirty word

by Europe's and North America's metropolitan ruling elites, or it was feared it might become such (Slater, 2011). Smith maintains that their concern was the name itself, whose origin from the term 'gentry' seemed to let the cat out of the bag in terms of social position. During this time, the New York Times ran the headline, 'Is Gentrification a Dirty Word?' Gentrification's language was class and other types of social difference (Hamnett, 2003; Atkinson & Bridge, 2005; Visser & Kotze, 2008). Gentrification's universality made it an extraordinary occurrence by the conclusion of the first decade of the twenty-first century (Hirt & Sager, 2018). Until the 1960s and 1970s, the term "gentrification" was undefined and unrecognized, therefore the process was uncommon among Persian or New York intellectuals (Ley, 1996). In contrast, it is now widely known among academics and the general public in Mumbai, Cape Town, Beijing, and Sao Paulo - they know who it enriches, what it does, and whose life it shatters (Atkinson & Bridge, 2005; Lindner & Sandoval, 2021).

Gentrification has extended globally since its inception in western cities, as indicated by the middle-class colonizing and modifying communities around the world (Lindner & Sandoval, 2021; Atkinson & Bridge, 2005). Compared to the 1970s, Slater (2006) suggests that, in comparison to the 1970s, a new interscalarity is emerging, with today's cities having a more global presence and global forces manifesting differently. According to Smith (1996), gentrification has gradually and purposely converted from a negative word into a sign of promise (Ley, 1996), bringing about unavoidable urban progress together with new forms including super gentrification, commercial gentrification and industrial gentrification (Slater, 2006). According to Hamnett (2003), industrial gentrification is the social and spatial manifestation of the transition from an industrial economy to a post-industrial economy based on financial, business and creative services, with changes in relation to the nature and location of work, the structure of occupational class income, and housing market. As Clark (2005) underlines, gentrification is any process of change that fits this criterion (Slater, 2006).

Dynamics and Process of Industrial

Gentrification

Generally, gentrification occurs when earlier

disinvestment in urban infrastructure creates prospects for profitable redevelopment in urban areas. Societies experiencing a growth in service employment and a loss of manufacturing employment also face gentrification with the number of middle-class professionals expanding with a preference for city living and a rejection of suburbia (Slater, 2011). As a result, Smith defined gentrification as a "back to the city movement by capital rather than people" (Smith N. , 2007b). The process of gentrification is highly associated with two conditions namely displacement of the old neighbourhood population (social upgrading) (Ley, 1996) and capital reinvestment (physical upgrading) (Benton, 2014). Benton (2014) observes that artists' need for vast but inexpensive working spaces draws them to industrial warehouses in core city neighbourhoods, resulting in massive urban transformation. Through the conversion of warehouses and multi-story industrial buildings into live-in studios for both habitation and work, they emphasize the aesthetic and economic benefits of urban living. Artists play a role in urban transformation, which is shown through eventual relocation and reinvestment (Benton, 2014; Brownstoner, 2018). The process is hastened by the speculators, who are followed by the developers (Benton, 2014; Atkinson & Wulff, 2009).

There are a number of drivers of industrial gentrification. First, developers and investors seeking for profitable opportunities for urban redevelopment are driving the conversion of former industrial zones into trendy neighbourhoods (Lees, Slater, & Wyly, 2008). Secondly, global economic shifts and changes in industry, such as deindustrialization and the rise of the knowledge economy in the cities, have contributed to the transformation of industrial districts into viable places for new economic activities (Lindner & Sandoval, 2021). Lastly, gentrification can occur when cultural amenities, creative industries, and vibrant urban environments attract new inhabitants and businesses to industrial districts (Benton, 2014; Hirt & Sager, 2018; Lees, Slater, & Wyly, 2008; Zhang, Hu, Skitmore, & Leung, 2014).

Impacts and Current Approaches to Industrial Gentrification

As neighbourhoods gentrify, property values and rents increase, making it difficult for long-time residents and businesses to remain in the area

(Hernandez, Zhu, Chen, & Allen, 2019; Hamnett, 2003). Consequently, the existing low-income residents and businesses are often displaced by industrial gentrification because they can no longer pay escalating rents or face eviction due to redevelopment projects (Greenberg & Lewis, 2015; Hernandez, Zhu, Chen, & Allen, 2019; Zhang, Hu, Skitmore, & Leung, 2014). Additionally, as new inhabitants and businesses with different backgrounds and preferences move in, gentrification can result in the loss of local culture, traditions, and social networks (Ley, Claudio, & McLaren, 2017; Greenberg & Lewis, 2015; Zhang, Hu, Skitmore, & Leung, 2014).

To counter the negative effects of industrial gentrification, various mitigation initiatives have been employed. Redevelopment plans, re-zoning regulations, relocation of industries, modern revitalization or combination of industrial development with catalytic activities, mixed use development, and introduction of modern industrial activities are example of these (Curran, 2007; Savitch & Kantor, 2002; Schlichtman, Hill, & Patch, 2013; Taylor, 2018; Mansfeld, 1992; Beard & Weber, 2017). Moreover, through community engagement and participation, the local citizens and businesses were involved in decision-making processes in urban redevelopment projects to ensure that their needs and concerns were addressed (Taylor, 2018; Atkinson & Bridge, 2005).

THEORY

In order to understand the gentrification process, we employ the import of four theories. First, bid rent theory by Johann Heinrich von Thünen is used to explain how demand and price for land change with distance from the city centre. Due to accessibility and convenience, various land uses (such as industrial, residential, and commercial) compete for prime places, driving away older industrial neighbourhoods and fostering gentrification (Alonso, 1964). Secondly, we use Burgess' concentric zones theory (Burgess, 1925), which explains how cities spread outward in a series of concentric rings from a central core, that are home to various socioeconomic and land use types. When other uses, whether residential or commercial, encroach on the existing industrial spaces, a city's industrial zones may go through a transition, potentially resulting

in gentrification (McKenzie, 1967; Burgess, 1925). Thirdly, invasion and succession theory is used to describe how areas change over time as other land uses "invade" and replace the pre-existing ones, thus industrial regions may change during the gentrification process (McKenzie, 1967). Lastly, the urban agglomeration is used to demonstrate how gentrification can be encouraged by luring in new businesses and inhabitants looking for accessibility to services and job possibilities (McGranahan & Satterthwaite, 2014).

RESEARCH METHODS

The research design for this paper is multiple case study approach, which allows for an in-depth exploration of industrial gentrification in four (4) cities in the Global North including Chicago in the United States, Williamsburg Brooklyn in New York, Glasgow in United Kingdom, and Haifa City in Israel. The case study design allows for a detailed analysis of each city's unique characteristics, development trajectories, and the impact of industrial gentrification on local communities. The cities were chosen based on three reasons namely diversity, significance and available data. First, the selection was in terms of the different geographic regions they represent, together with their varied historical, cultural and economic backgrounds. Second, the four cities have experienced significant industrial gentrification processes and have undergone transformations in their industrial sectors which have resulted in displacement, changes in the urban fabric, and impacts on local communities. Third, there is a substantial body of research and literature on industrial gentrification in these cities, giving a solid platform for multiple case study analysis and ensuring a comprehensive understanding of the phenomena in each city. The emerging models of industrial gentrification were evaluated in order to establish their manifestations in terms of drivers, effects, and mitigation approaches.

RESULTS AND DISCUSSION

Case Studies of Industrial Gentrification

Chicago City, United States.

In Chicago city, United States, industrial gentrification refers to the process of displacing and transforming traditional industrial districts into more affluent and commercially appealing spaces, which resulted in the displacement of low-income

residents and the loss of blue-collar jobs. The city was transformed from an industrial economy to a service-based economy through revitalization of post-industrial neighbourhoods (Benton, 2014). As the "Urban pioneers", speculators, realtors, artists and developers came in waves, there was a contestation of the ownership of the area (VNC, 2001).

Several factors contributed to this phenomenon, including market forces, changing economic dynamics, and policy decisions. One of the key drivers of industrial gentrification in Chicago is the city's economic change from a manufacturing-based to a service-based and knowledge-based economy (Benton, 2014). The abandoned industrial warehouses and collapse of old industrial sectors resulted in the emergence of industries such as finance, technology, and creative services, which require more contemporary and flexible workspaces (Curran, 2004). Furthermore, market forces such as rising property values and increased demand for urban living motivated developers to transform industrial zones into commercial establishments, residential spaces, and mixed-use developments (Smith N. , 1996; Benton, 2014; Schlichtman, Hill, & Patch, 2013).

The consequences of industrial gentrification are complex, with substantial social, economic, and environmental implications (Benton, 2014; Schlichtman, Hill, & Patch, 2013). Industrial gentrification has had mixed results. On the one side, industrial area redevelopment has resulted in new investment, enhanced infrastructure, increased tax income, and diversification to a cultural and entertainment centre. It has also drawn young professionals, artists, and entrepreneurs, which has resulted in the city's core area revitalization including high-density office buildings, residential developments, retail, cultural and entertainment facilities, and programs to improve the city's aesthetics through physical beautification (Chicago Metropolitan Agency for Planning (CMAP), 2018; Benton, 2014). However, one of the negative repercussions of gentrification is the displacement of long-term inhabitants, particularly low-income communities of colour who are unable to afford high housing costs. Gentrification has also resulted in the loss of blue-collar jobs and the deterioration of these districts' cultural fabric (Benton, 2014; Schlichtman, Hill, & Patch, 2013).

Policy interventions, community participation, and advocacy for affordable housing and job preservation have all been used to try to minimize the negative effects of industrial gentrification, through the launch of several programs in Chicago (Benton, 2014). The city has enacted affordable housing rules and programs, such as the Affordable Requirements Ordinance (ARO), which requires developers to incorporate affordable housing units in new residential buildings. Furthermore, through redevelopment plans, zoning incentives and financial support, the city has fostered the preservation and adaptive reuse of historic industrial structures. Benton (2014) posits that community engagement and participatory planning processes have been critical in advocating for policies that protect vulnerable populations' rights and promote equitable development (Schlichtman, Hill, & Patch, 2013).

Williamsburg, Brooklyn in New York

Williamsburg, a neighbourhood in Brooklyn, New York, has experienced significant industrial gentrification over the past few decades. As one of the two most industrial areas of New York, Williamsburg neighbourhood had an extremely diverse manufacturing base (food, apparel and metal fabricators) (Curran, 2007).

Due to market forces and demand, Williamsburg's proximity to Manhattan, as well as its historic buildings and waterfront views, made it an appealing location for developers and inhabitants looking for affordable housing options close to the city core (Curran, 2004). This was exacerbated by age of the industrial buildings, limited space, and availability of cheap suburban land (Curran, 2007). Furthermore, policy decisions such as the Williamsburg's rezoning in 2005, which allowed for more residential and commercial construction, played an important role in luring investors and developers to the region (Curran, 2007; Curbed New York, 2018). Additionally, the city considered manufacturing to be a nuisance, preferring corporate offices and support services instead (Curran, 2004).

Consequently, many long-standing manufacturing and industrial businesses were forced to relocate or close as residential and commercial projects replaced industrial sites (Curran, 2007; Curbed New York, 2018). Moreover, the influx of investment and redevelopment resulted in a

dramatic increase in property values and rents, making the neighbourhood unaffordable for low-income households and small businesses (Curran, 2007; Delalović, 2019). Further still, Williamsburg's once-industrial nature gave way to a trendy and upmarket area, with an infusion of luxury apartments, high-end stores, and trendy restaurants attracting a wealthier population (Curran, 2007; Brownstoner, 2018; Curbed New York, 2018). Curran (2007) referred to the business movement as "from frying pan to oven" due to the multiple displacements from one manufacturing area to another as real estate developers discovered industrial areas, escalating rents (Curran, 2007).

To address the lack of affordable housing, the New York City Department of City Planning introduced an inclusionary zoning program in 2005, requiring developers to include a percentage of affordable housing units in new residential developments (Curran, 2007). Efforts have been made to preserve and protect remaining industrial spaces through zoning designations and initiatives such as the Industrial Business Zone program, which provides support and resources to industrial businesses in designated areas. Lastly, local residents and community organizations have been actively advocating for policies and initiatives to mitigate the negative effects of gentrification, such as promoting affordable housing, supporting small businesses, and preserving the neighbourhood's cultural identity (Curran, 2007; Delalović, 2019).

Glasgow, United Kingdom

Glasgow, a city in the United Kingdom, has experienced industrial gentrification in recent years, owing mostly to urban regeneration initiatives, shifting economic dynamics, changing societal attitudes, and land use changes (Brown & Purcell, 2005; McIntyre, 2006). This phenomenon has been observed in several locations of the city, including the East End (McKee & Sadowski, 2018) and River Clyde (Mooney, 2007). The city changed from decline to regeneration in former industrial areas (McIntyre, 2006).

From an economic change point of view, the decline of traditional heavy industries such as shipbuilding and manufacturing is a key source of industrial gentrification in Glasgow (Brown & Purcell, 2005). According to Berry and Giovannini (2020), these once-dominant industries witnessed considerable decline and employment losses

in the latter half of the twentieth century. As a result, massive industrial spaces were unoccupied and economically unviable, presenting a redevelopment opportunity (McKee & McKeown, 2014). Developers were driven to acquire and redevelop industrial properties as the areas become more appealing due to increased infrastructure, amenities, and proximity to city centres (Berry & Giovannini, 2020; McIntyre, 2006). Changing societal preferences and a desire for urban life also contributed to Glasgow's industrial gentrification. Urban regeneration initiatives were also important in driving industrial gentrification in Glasgow (McKee & Sadowski, 2018; McIntyre, 2006). In Glasgow, the impacts of industrial gentrification have been uneven. On the one hand, it has resulted in the regeneration of formerly neglected districts, higher property values, and employment development in industries such as hospitality, retail, and creative (McKee & McKeown, 2014). The rise of lively neighbourhoods and the establishment of cultural venues have further enriched the city's cultural scene. However, the process has sparked worries about rising property prices, which could lead to socioeconomic segregation, a loss of cultural identity due to the displacement of existing residents and businesses, and the loss of affordable housing (Berry & Giovannini, 2020; Smith & Ley, 2008).

Various initiatives have been implemented in Glasgow response to the harmful consequences of industrial gentrification. McKee and McKeown (2014) contend that the city has prioritized inclusive regeneration strategies that try to combine the demands of existing populations with redevelopment aspirations (McIntyre, 2006). Projects such as the Clyde Waterfront redevelopment have prioritized community engagement, affordable housing provisions, public-private partnerships, investment incentives, and the preservation of historic buildings (Mooney, 2007). Efforts have also been made to promote mixed-use development, conserve industrial heritage, and provide affordable workspace for local entrepreneurs and artists (Berry & Giovannini, 2020; Mooney, 2007; McIntyre, 2006).

Haifa City, Israel

In the past decade, Haifa has experienced the intersection of industrial transformation and urban policy. Consequently, factories and

industrial plants also diminished in numbers (Ben-Yehuda & Shoval, 2013; Ben-Moshe & Ronen, 2016). Haifa's downward industrial activity trend was due to a combination of a number of aspects: phased out of industrial technology, old industrial installations; exit of factories due to lack of space for expansion; the government policy to revitalize the periphery by supporting urban regeneration and revitalization (Bar-El & Modai-Snir, 2018; Nezer & Hershkovitz, 2013; Ben-Yehuda & Shoval, 2013; Ben-Moshe & Ronen, 2016); inadequate maintenance and improvement of infrastructure by the local authority; and movement of the centre of gravity of industrial activity towards the south (Mansfeld, 1992). In discussing the effects of industrial gentrification, Azmon and Schewerin (2019), postulate that traditional industrial activities and manufacturing enterprises were pushed out of Haifa or forced to relocate as industrial zones were converted into startup hubs, residential or commercial spaces, Research and Development centres (Ben-Yehuda & Shoval, 2013; Ben-Moshe & Ronen, 2016). Consequently, local job opportunities and the character of the neighbourhood was affected. On the onset, a negative "industrial landscape" was the outcome of the above factors, known for polluting industries, river and coastal pollution caused by ill maintained industrial buildings, port and industrial activities, growth in wholesale and retail activities, deteriorated road and sewage systems (Mansfeld, 1992).

Therefore, a major revitalisation process for Haifa was sought to counter the decline (Bar-El & Modai-Snir, 2018). Three possible ways were floated to foster re-attainment of a strong economic base: economic growth grounded on introduction of modern industrial activities; revitalization centred primarily on tourism development; and a combination of tourism and industrial development. Two major redevelopment projects were mentioned which would revitalise the declining city – the Western Industrial Zone and the Germany Colony Waterfront District (Mansfeld, 1992).

DISCUSSION

Emerging Models of Industrial Gentrification

Explanations of the concept of gentrification from the theories and analysis of the four case studies (Chicago, Williamsburg, Glasgow, Haifa)

and supported by literature reveal that industrial gentrification happens in several ways. For instance, it emerges that gentrification manifests in urban areas via the four deduced and constructed models namely: Decline/Dwindling Opportunities Model; Relocation/Space Restriction Model; the Complimentary Needs Model; and the Policy Intervention Model.

Decline/Dwindling Opportunities model emerges from all the four case studies of Williamsburg, Chicago, Glasgow and Haifa cities. However, it is more pronounced in Williamsburg city. From the lens of the bid rent theory, the model results from the old existing land uses being overwhelmed and displaced by the new invading ones which speculatively promise higher investment returns. The availability of industrial loft space due to industrial decline in Williamsburg, for example, made it an easy target for gentrification by the invading land uses, as the space was a necessary component of the loft-living habitus. Conflict over land use, market/customer base changes, price fluctuations, changes in land and rental values cause the manifestation of the Decline/Dwindling Opportunities model of industrial gentrification. The consequences of the Decline/Dwindling Opportunities model include close down of industries, growth in wholesale and retail activities, increased land prices, speculation of profits from the new gentry, and decline in employment base.

Relocation/Space Restriction model is more evident in Glasgow, with some traces in Haifa City. The Relocation/Space Restriction model is caused by the urge to expand the existing land uses; thus, movement elsewhere is inevitable due to constriction of space or need for space for expansion. In Glasgow, for example, this is evident due to the closure of many manufacturing and heavy industries to the extent of the city dying. The Relocation/Space Restriction model is driven by closure of manufacturing industries and availability of space for expansion elsewhere. The outcomes of the Relocation/Space Restriction model entail decline in manufacturing sector, emergence of new developments in the former industrial zones due to invasion and succession, void & empty housing stock due to exit of the population, destabilization of local neighbourhood, decline in demand for both private and public housing, negative impact on local tax collection,

decline in employment base. Redevelopment/regeneration strategies were prescribed to salvage the effects of industrial gentrification.

Complimentary Needs Model manifests majorly in Haifa City. The Complimentary Needs model is brought about by the incoming supplementary land uses, driven by urban agglomeration and concentric zones theory, which strengthen the already existing dominant land uses. Haifa city exhibits this model given its upgrading from industrial land use to industrial landscape through combination of tourism and industrial development. Factors that promote the Complimentary Needs model include phasing out of old industrial technology, lack of space for expansion for the industries, government policy, and poor infrastructure. The impacts of the Complimentary Needs model comprise of decline in the industrial landscape, growth in wholesale and retail activities, deteriorated road and sewerage systems, sprouting of new developments, traffic congestion, noise and air pollution, and land use conflicts. Modern revitalization or combination of industrial development with catalytic activities, mixed use development; and introduction of modern industrial activities were used by the city authorities to counter the negative effects of industrial gentrification.

Policy Intervention Model is revealed mostly in Chicago City. It also manifests to some extent in Glasgow, Haifa, and Williamsburg case studies. Policy Intervention Model is demonstrated through involvement of the state and relevant authorities fostering policies to solve gentrification. It focuses on the (local) state's role as an instigator, catalyst, or sponsor of the city's socio-spatial restructuring. The city authorities in Chicago City, for example, applied zoning regulations in controlling redevelopment and haphazard growth. On the other hand, the catalysts of this model were the policy makers like Mayor Bloomberg in Williamsburg, who vehemently supported rezoning. The Policy intervention model is brought about by redevelopment plans, regeneration strategies, land use policy changes, and change in market policies. The Policy Intervention model results in development of high-density offices, conversion of industrial zones into residential uses such as apartments and condominiums, engagement in retail businesses, invasion of venues for cultural

and entertainment, and promotion of projects that improve the aesthetics of the cities. To minimize on the negative effects of industrial gentrification, redevelopment plans, re-zoning regulations, and participatory planning initiatives were applied. The findings of the emerging models of Industrial Gentrification are summarized in **Figure 1**.

CONCLUSION

This study adds to our understanding of the dynamics and complexities associated with urban transformation processes by studying the origins, repercussions, and policy implications of industrial gentrification in various urban contexts. The findings emphasize the importance of comprehensive and inclusive urban strategies in minimizing the impacts of industrial gentrification and promoting sustainable urban development. Four (4) models have been deduced and constructed from the manifestation of industrial gentrification in the global north cities namely Decline/Dwindling Opportunities Model; Relocation/Space Restriction Model; the Complimentary Needs Model; and the Policy Intervention Model. A city can exhibit more

than one model, with similar drivers, effects and interventions, like the Decline/Dwindling Opportunities model manifesting in all the four cities. However, some characteristics are distinctively identified with certain cities, like the Complimentary Needs model in Haifa City. However, it's important to recognize that the specific challenges and solutions in rapidly urbanizing cities may differ due to varying socio-economic conditions, governance structures, and cultural factors. Local context and community input should guide the development and implementation of strategies to address industrial gentrification.

RECOMMENDATIONS

City planners and policymakers to adopt inclusive zoning regulations that compel new developments to accommodate various income levels and encourage mixed-use development to include commercial, residential and complimentary services. The aim is to preserve the industrial character of the areas while meeting the changing demands of the cities.

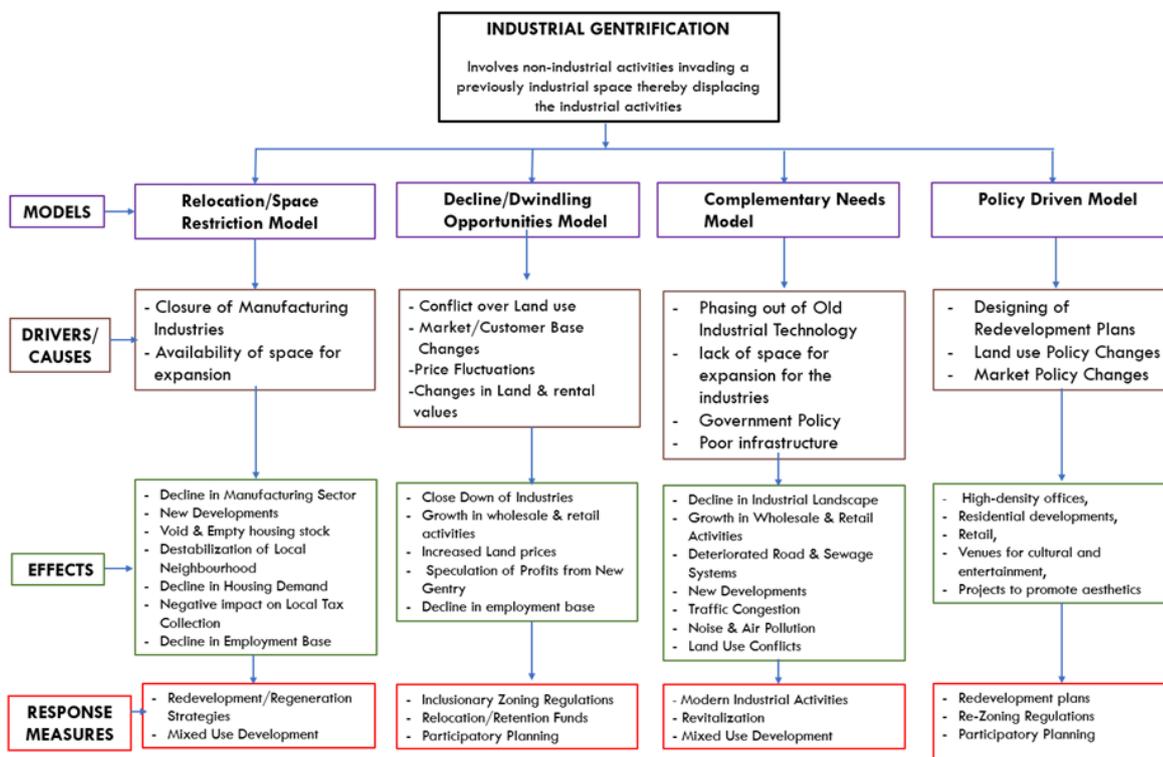


FIGURE 1
 Summary of the case studies findings
 Source: Authors' Construct 2023

To safeguard disadvantaged residents and businesses from displacement, the study recommends to create and enforce displacement policies, and implement strategic land use plans. Enforcement of zoning laws to concentrate industrial zones in appropriate areas, just-cause eviction laws, and tenant relocation assistance. Include local residents from the beginning of the planning process to foster community participation in decision-making processes and ensure their voices are heard to shape urban development in a way that meets their needs. Planning that is driven by the community can result in rapidly urbanizing cities working towards more equitable and sustainable urban development.

The interventions of the reviewed case studies on industrial gentrification cannot be rubber-stamped to rapidly urbanizing cities. Instead, the approaches can be borrowed and customized with regards to how Industrial Gentrification manifests in specific cities.

Lastly, we recommend review of more literature on industrial gentrification to inform the theory for planning on industrial gentrification, and call for more empirical investigation on the subject of industrial gentrification to set the agenda for rapidly urbanizing cities.

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