

A Bibliometric Analysis of the Literature on Affordable Housing and Segregation in Johannesburg

Eugiania Ravele, George Onatu, Trynos Gumbo

(PhD Candidate Eugiania Ravele, University of Johannesburg, kettyravele@gmail.com)

(Dr George Onatu, University of Johannesburg, gonatu@uj.ac.za)

(Professor Trynos Gumbo, University of Johannesburg, tgumbo@uj.ac.za)

1 ABSTRACT

Affordable housing remains a crucial factor in addressing spatial inequality and fostering inclusive urban development in Johannesburg, a city that continues to grapple with issues rooted in its apartheid legacy, including persistent socio-economic divides, inadequate infrastructure, and entrenched spatial segregation. This paper provides a comprehensive literature analysis on the challenges and approaches to affordable housing, highlighting critical insights from existing research and the implications for social integration and spatial equity.

Utilising a mixed-methods approach, the study focuses on a thorough literature review and a bibliometric analysis to contextualise the historical and contemporary challenges of housing equity. It examines policy shortcomings and socio-economic barriers that limit access to adequate housing, particularly for marginalised communities in informal settlements and low-income areas. Programs like the Reconstruction and Development Programme (RDP) and Breaking New Ground (BNG) have sought to tackle these issues but often fall short of overcoming economic disparities and the spatial disconnect between affordable housing developments and economic opportunities. The bibliometric analysis further highlights trends and gaps in current research, underscoring the urgent need for innovative, community-driven housing solutions to effectively combat segregation and promote social cohesion in urban environments.

Keywords: Affordable Housing, Urban Segregation, Spatial Inequality, Inclusive Urban Development, Community-driven Solutions

2 INTRODUCTION

Johannesburg, South Africa's economic hub, continues to grapple with entrenched spatial inequality and urban segregation. These challenges are deeply rooted in the city's apartheid history, which established racially divided neighborhoods with stark disparities in access to resources, infrastructure, and economic opportunities (Turok, 2016). Despite post-apartheid efforts to integrate urban spaces, socio-economic divides persist, with low-income communities often relegated to the urban periphery (Charlton & Kihato, 2006). The lack of affordable housing in well-located areas exacerbates these issues, forcing many low-income residents to seek accommodation in informal settlements or overcrowded dwellings with inadequate infrastructure. This continued marginalisation limits their access to essential services, employment opportunities, and quality education, perpetuating cycles of poverty and exclusion.

Addressing these issues requires a targeted approach that provides affordable housing and ensures that these developments are integrated within the broader urban fabric, allowing for sustainable and inclusive city growth. This study serves as an analysis of the existing literature regarding affordable housing in Johannesburg, contextualising historical and contemporary challenges while exploring the systemic barriers and socio-economic factors that shape access to equitable housing. Affordable housing is a crucial mechanism for redressing historical injustices and fostering inclusive urban development. By providing low- and middle-income households with stable and well-located housing, the city can break cycles of poverty and segregation, enabling better access to employment, education, and social services (Harrison & Todes, 2015). However, achieving this requires policy innovation and sustainable urban planning efforts.

3 LITERATURE REVIEW

3.1 Historical Context: Apartheid-Era Spatial Planning and Its Legacy

Apartheid (1948–1994) fundamentally shaped Johannesburg's urban landscape through deliberate spatial segregation along racial lines. Black South Africans were systematically confined to underdeveloped townships, often far removed from economic centers and opportunities (Mabin & Smit, 1997). The cornerstone of this segregation was the Group Areas Act (1950), which legally formalised racial zoning and led to the forced removal of millions of people. This act created a deeply entrenched spatial inequality that

continues to impact Johannesburg today (Bremner, 2000). Beyond simply restricting land access, the apartheid regime implemented policies that systematically marginalised Black communities, denying them access to adequate housing, basic infrastructure like sanitation and electricity, and essential services such as healthcare and education (Parnell & Pieterse, 2010). The legacy of this exclusion is starkly visible in many former townships, which still struggle with poor connectivity to Johannesburg's economic nodes, limited access to quality education and healthcare, and persistent poverty. These historical injustices continue to shape contemporary urban planning challenges, with affordable housing recognised as a crucial tool for bridging these spatial and socio-economic divides.

The apartheid government's planning agenda was explicitly designed to prioritise the economic interests of the white minority. This resulted in the systematic neglect of the housing needs of Black South Africans, leading to severe infrastructural deficits and poor service delivery in townships like Soweto, Alexandra, and Tembisa (Christopher, 2001). The fragmentation of urban space was further compounded by policies that severely restricted homeownership and property rights for non-white citizens, further exacerbating existing socio-economic disparities. Even after the dismantling of apartheid-era legislation, the spatial and economic consequences of these policies have proven remarkably resilient. Post-apartheid urban restructuring initiatives have sought to redress these imbalances, but progress has been hampered by deeply entrenched structural inequalities, limited financial resources, and the sheer scale of the historical damage (Harrison & Todes, 2015).

3.2 Current Housing Policies and Programs: RDP, BNG, and Their Limitations

Following the transition to democracy in 1994, the South African government launched the Reconstruction and Development Programme (RDP) as a comprehensive strategy to address the massive housing backlog and provide low-cost housing for historically disadvantaged citizens (Tomlinson, 1999). While the RDP achieved significant success in delivering millions of housing units, it has also faced criticism for inadvertently reinforcing apartheid-era spatial patterns. Many RDP developments were located on the periphery of cities, far from employment opportunities and social amenities, replicating the spatial isolation of the past (Huchzermeyer, 2003). Furthermore, the standardised, low-density design of RDP housing often proved inadequate for accommodating the rapid growth of the urban population, contributing to overcrowding and the emergence of informal settlements adjacent to these developments.

In response to these shortcomings, the government introduced the Breaking New Ground (BNG) policy in 2004. BNG aimed to promote the development of integrated, sustainable human settlements by prioritising mixed-income housing developments and urban densification (Department of Human Settlements, 2004). The policy sought to move away from the mass production of standardised RDP houses and towards the creation of more integrated and sustainable communities. However, the implementation of BNG has encountered numerous challenges. Inadequate funding, persistent socio-economic inequalities, and complex bureaucratic processes have limited its overall impact (Charlton, 2009). Many BNG projects have struggled to attract middle-income residents, resulting in the continued spatial disconnection and socio-economic isolation of low-income communities. The availability of suitable urban land and the high cost of land in well-located areas have also posed significant obstacles, hindering the program's ability to develop affordable housing in prime urban locations and perpetuating urban segregation rather than reversing it. While BNG emphasises housing quality over quantity, financial and logistical barriers have hampered its large-scale implementation (Tissington, 2013).

3.3 Socio-Economic Barriers to Affordable Housing Access

Access to affordable housing in Johannesburg is constrained by a complex interplay of socio-economic factors:

- **Income Disparities:** A significant portion of the population, particularly low-income households, does not qualify for housing finance from banks or government subsidies, leaving them trapped in informal settlements or overcrowded and often exploitative rental housing (Napier, 2007). The wide gap between government-subsidised housing and market-rate housing creates a "missing middle" where many working-class families are excluded from accessing adequate accommodation.
- **Land and Infrastructure Costs:** The high cost of land in well-located urban areas, coupled with existing infrastructure deficits, makes it extremely challenging to develop affordable housing in

central locations (Biermann & Van Ryneveld, 2007). This economic reality often pushes developers to construct affordable housing in peripheral areas with limited access to economic opportunities, further reinforcing spatial segregation and limiting social mobility.

- **Administrative and Bureaucratic Hurdles:** Lengthy and often opaque approval processes, coupled with instances of corruption and inefficiencies within housing allocation systems, significantly delay the delivery of affordable housing (Lemanski, 2011). Many low-income applicants face years of waiting lists and bureaucratic hurdles, leading to frustration and contributing to the continued growth of informal settlements.
- **Lack of Effective Public-Private Collaboration:** Successful affordable housing initiatives often depend on strong partnerships between government entities and private developers. However, in Johannesburg, limited collaboration, misaligned incentives, and a lack of trust between the public and private sectors have slowed the pace of development and hindered innovation in affordable housing solutions (Harrison, 2006).

3.4 The Role of Affordable Housing in Social and Economic Integration

Affordable housing plays a crucial role in reversing the spatial legacy of apartheid and fostering social and economic integration. Well-located affordable housing developments can enhance economic mobility by providing low-income residents with better access to employment opportunities, education, and other essential services. By locating affordable housing near economic hubs and transport networks, residents can reduce their commuting costs and time, freeing up resources and enabling greater participation in the city's economy. Furthermore, innovative housing solutions such as inclusionary zoning, cooperative housing models, and well-structured public-private partnerships can facilitate the integration of diverse income groups and create more socially cohesive neighborhoods (Parnell & Pieterse, 2010). Strategies such as densification, strategic urban land reform, and progressive housing policies can further support this integration, moving Johannesburg towards a more equitable and inclusive urban environment. The provision of affordable housing is not simply about providing shelter; it is about building a more just and integrated society.

4 CASE STUDIES FROM GLOBAL AND LOCAL CONTEXT

Examining successful affordable housing initiatives globally and locally provides valuable insights into how Johannesburg can improve its housing policies and programs.

4.1 Global Case Studies

4.1.1 Inclusionary Zoning Policies (United States, Canada, and the UK)

Cities such as New York, London, and Toronto have implemented inclusionary zoning policies that require private developers to allocate a percentage of new housing units for low- and moderate-income residents (Been et al., 2018; Moore & Bunce, 2009). This approach fosters social integration and ensures that affordable housing is distributed throughout the city rather than being concentrated in low-income areas (Mukhija et al., 2010).

4.1.2 Transit-Oriented Development (Singapore and Curitiba, Brazil)

In Singapore, public housing is integrated with mass transit systems, ensuring that residents have easy access to employment and social services (Yuen, 2007). Similarly, Curitiba's Bus Rapid Transit (BRT) system has helped create affordable, well-connected housing developments, demonstrating the importance of linking housing with transportation infrastructure (Cervero, 1998; Rabinovitch, 1996).

4.1.3 Cooperative Housing Models (Switzerland and Uruguay)

Switzerland's cooperative housing system provides an alternative to government-subsidised housing by encouraging community-driven development projects (Lang & Stober, 2021). Similarly, Uruguay's self-managed housing cooperatives empower residents to participate in the design, financing, and management of their homes, leading to more sustainable and inclusive communities (Arruabarrena & Lanzaro, 2016).

4.2 Local Case Studies

4.2.1 Cosmo City, Johannesburg

One of South Africa's few successful integrated housing developments, Cosmo City combines subsidised, bonded, and rental housing within the same neighborhood (Bénil-Gbaffou, 2018). This mixed-income model has helped foster social cohesion and economic opportunities, though challenges such as infrastructure maintenance and service delivery persist (Charlton, 2018).

4.2.2 Savannah City, Gauteng

This large-scale mixed-income housing development aims to address spatial inequality by providing affordable housing options close to employment hubs and transportation networks (Turok & Borel-Saladin, 2018). The project emphasises urban densification and sustainable planning but faces financial and administrative constraints (Cirolia et al., 2021).

4.2.3 The Johannesburg Social Housing Company (JOSHCO)

JOSHCO has been instrumental in providing affordable rental housing in well-located urban areas (Tomlinson, 2017). By repurposing underutilised buildings and promoting social housing initiatives, JOSHCO demonstrates the potential of adaptive reuse strategies in addressing the city's housing crisis (Mosselson, 2019).

5 METHODOLOGY

5.1 Mixed-Methods Approach

This research utilised a mixed-methods approach, integrating a comprehensive review of existing literature with a bibliometric analysis. This combined methodology allows for a robust exploration of post-disaster housing solutions, merging qualitative insights gleaned from scholarly works with quantitative data-driven analysis (Johnson & Onwuegbuzie, 2004).

5.1.1 Literature Review

The literature review serves to contextualise the historical and contemporary challenges of housing equity in Johannesburg, South Africa. It explores systemic barriers, policy limitations, and socio-economic constraints that impact equitable access to adequate housing, particularly for marginalised communities in informal settlements and low-income areas (Turok, 2016). By analysing key policy documents, academic articles, and government reports, this review critically examines the successes and shortcomings of major housing programs such as the Reconstruction and Development Programme (RDP) and Breaking New Ground (BNG) (Department of Human Settlements, 2004). It is important to emphasise that the findings presented in this section are based on existing literature rather than new fieldwork or direct policy recommendations related to housing development.

5.1.2 Bibliometric Analysis

A bibliometric analysis, a rigorous quantitative approach for analysing large datasets, was employed to explore the knowledge structure and visually map the field of "social equity in housing" within the specific context of Johannesburg. This analysis focuses on existing scholarly publications to elucidate trends and gaps in research concerning affordable housing and social equity. The data collection process involved searching and extracting relevant publications from Scopus, a widely recognised bibliographic database. The search terms included "social equity in housing," "Johannesburg," "affordable housing Johannesburg," "housing policy," and "housing inequality Johannesburg." Publications spanning the years 2017 to 2025 were considered for inclusion in the analysis. The bibliometric analysis was conducted using a specialised tool called VOSviewer to map co-authorship networks, citation relationships, and thematic clusters, thereby illustrating the intellectual and social structures of research on affordable housing and social equity in Johannesburg. As with the literature review, it is crucial to note that the findings derived from this analysis reflect existing literature, focusing on the evolution of research rather than proposing new fieldwork or direct policy changes.

5.2 Research Questions

Guided by the overarching goal of understanding systemic barriers and potential solutions to affordable housing in Johannesburg, the study addresses the following key research questions:

- (1) What are the dominant conceptual frameworks used to understand social equity in housing in this context?
- (2) What constitutes the intellectual structure of this field, as evidenced by key publications and influential authors?
- (3) How is the social structure of research on this topic configured, including collaborations and networks?
- (4) How does the body of knowledge specifically addressing Johannesburg contribute to broader understandings of social equity in housing?

By integrating qualitative and quantitative approaches, this study aims to offer a holistic perspective on the role of affordable housing in fostering social and economic integration in Johannesburg. The mixed-methods approach ensures a nuanced understanding of both theoretical frameworks and empirical trends, enabling the formulation of evidence-based policy recommendations for more inclusive and equitable urban development.

6 RESULTS, ANALYSIS, AND DISCUSSION

6.1 Key Insights from the Literature Review

The literature review highlights several critical insights into the state of affordable housing in Johannesburg, drawing from existing scholarly work. A key theme is the persistent spatial segregation, a legacy of apartheid-era planning policies that continue to marginalise low-income communities. Despite post-apartheid housing policies such as the Reconstruction and Development Programme (RDP) and Breaking New Ground (BNG), affordable housing developments remain concentrated on the urban periphery, limiting access to economic hubs and essential services. While these policies have increased housing stock, they have not fully integrated low-income earners into mixed-income developments, reinforcing socio-economic divides. Additionally, the literature identifies structural inefficiencies such as bureaucratic delays, limited funding, and land scarcity in prime locations as major obstacles to achieving housing equity.

Another key insight is the critical role of community-driven approaches in fostering sustainable and inclusive urban development. Research suggests that active community involvement in housing initiatives leads to more sustainable outcomes better aligned with residents' needs. Collaborative urban planning, incorporating public-private partnerships and community engagement, is essential to overcoming the challenges posed by current housing models. Furthermore, the literature underscores the need for policy reforms that promote urban densification, transit-oriented development, and the integration of social services within affordable housing projects. These strategies can enhance economic mobility and social cohesion, addressing the limitations of existing housing frameworks. It is important to note that these findings stem from a comprehensive evaluation of existing research rather than new fieldwork.

6.2 Analysis of Annual Publications

The first data set focuses on the number of publications in the research field annually, illustrating how research trends have evolved significantly between 2007 and 2025. Figure 1 reveals distinct phases in the development of scholarly interest in affordable housing. The Foundational Phase (2007–2011) shows minimal activity, likely reflecting the early stages of research on affordable housing, with a focus on traditional approaches and limited exploration of complex housing challenges or sustainable housing solutions. This transitions into the Emerging Interest Phase (2012–2016), marked by a slight but steady increase, possibly driven by Johannesburg's growing urbanisation and early mixed-income housing initiatives like Cosmo City, which began shaping debates on housing integration and sustainability. The Growth Phase (2017–2019) highlights a shift toward applied studies addressing urban challenges, including housing, infrastructure, and environmental management. A Significant Surge (2020–2024) follows, with research output increasing dramatically, particularly during the COVID-19 pandemic, which exposed urban vulnerabilities and heightened interest in smart infrastructure, social inclusion, and sustainability. The peak in 2024 underscores an intensified focus on urban renewal and housing integration. This analysis, derived from existing studies, reflects prevailing scholarly trends rather than novel research outcomes, illustrating

how socio-economic shifts and a growing emphasis on sustainability have influenced the research landscape over time.

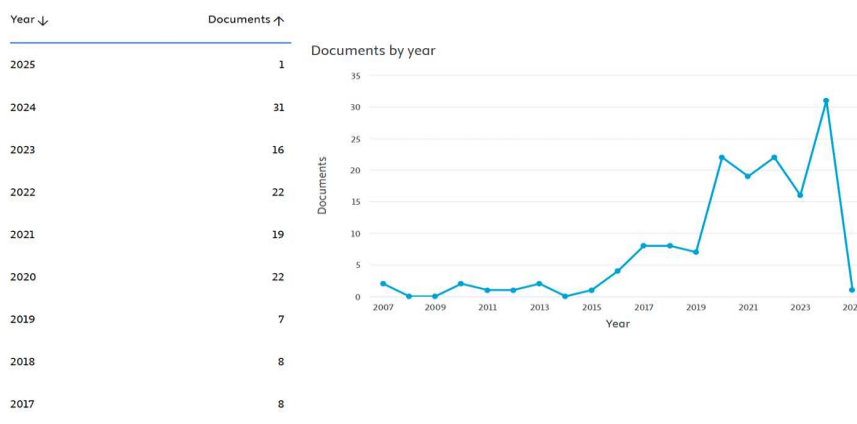


Figure 1: Graph depicting the publication trend of the topic area between 2007 and 2025.

6.3 Knowledge Evolution in the Field

The intellectual knowledge structure of the urban planning and housing integration field is reflected through an analysis of research output trends, revealing the evolution of key concepts and thematic focus areas over time. By examining published documents, we can identify foundational periods of limited exploration, followed by thematic diversification and significant shifts driven by urban challenges and societal needs. Early research focused on traditional urban planning approaches, while later phases emphasised mixed-income housing integration, sustainability, smart infrastructure, and urban renewal. Key themes such as affordability, spatial inequality, and policy effectiveness have gained prominence, shaped by factors like rapid urbanisation and the COVID-19 pandemic. These shifts underscore how external influences drive scholarly focus and critical debates, shaping the field’s future direction.

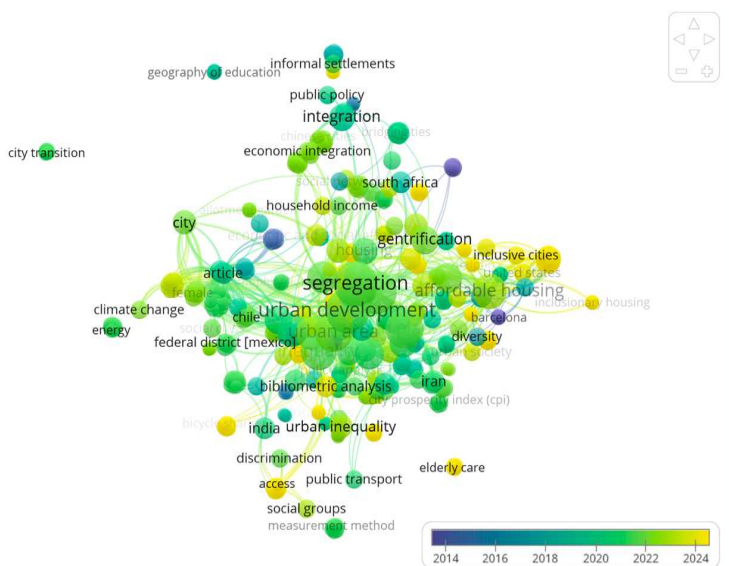


Figure 2: Visualised network map of research themes, overlay between 2014 and 2024 (10-year period) to understand the

Conceptual Structure

The dataset, which was second to be analysed for the study, focused on keyword co-occurrences. Referenced from the upward trend from the dataset, which was previously analysed and comprises research publications that were released between 2007 to 2025. It is evident that there is demand in this particular research field, and that explains the increase and upward trend over the years. There is also clear evidence that there is demand where the keyword variables are concerned. In the process of sorting the data, 540 keywords were exported from the Scopus database. For a minimum number of occurrences of a keyword being 5, of the 540

keywords, 19 met the threshold. For a minimum number of occurrences of a keyword being 4, of the 540 keywords, 26 met the threshold. For a minimum number of occurrences of a keyword being 3, of the 540 keywords, 44 met the threshold. For a minimum number of occurrences of a keyword being 2, of the 540 keywords, 115 met the threshold. All the above were insufficient as the main keywords used in this study did not all appear on the list. For a minimum number of occurrences of a keyword being 1, of the 540 keywords, all 540 keywords met the threshold. This turned out to be the best dataset to work with, as all of the required keywords appeared on the list consisting of 540 keywords.

Trajectory of research themes

540 keywords were gathered through the all keywords unit of analysis for the co-occurrence analysis type as having appeared in 66 readings which were extracted from SCOPUS. The keywords selected in this data set are they key words that are from or are closely linked to the main keywords used in this study.

KEYWORDS	OCCURRENCES	TOTAL LINK STRENGTH
Afdordable Housing	10	94
Community	1	18
Urban Segregation	1	39
Spatial Inequality	3	36
Urban Development	18	211
Inclusion	1	13

Table 1: The top 5 keywords in the research network

Intellectual Structure

To delve into the intellectual structure of affordable housing research in Johannesburg, a co-citation analysis was employed. This method, as described by Small (1973), examines the frequency with which two documents are cited together, revealing intellectual connections and mapping the knowledge structure of the field. By analysing author and document coupling, the co-citation analysis aimed to identify influential works that have shaped the discourse, discern emerging research clusters representing key thematic trends, and understand the evolution of ideas within this interdisciplinary area of study. This approach allows for a deeper understanding of how foundational research informs current investigations and highlights potential areas for future scholarly inquiry.

Document Co-Citation Analysis

A document co-citation analysis was conducted to map the intellectual landscape of affordable housing research in Johannesburg and identify influential works that have shaped the discourse. Utilising the Scopus database, 6,162 cited references were examined. A 50% threshold was applied, focusing on the 3,081 most frequently cited references to balance comprehensiveness and analytical manageability. This decision was made to include a substantial portion of highly cited works while maintaining a manageable dataset for analysis. Alternative thresholds 2, 3, and 4 were considered but were restrictive as they excluded potentially influential works and were too limiting, making analysis unwieldy. The resulting co-citation network was visualised using VOSviewer, revealing key thematic clusters that represent distinct areas of inquiry within the field.

These clusters encompassed topics such as:

- **Spatial Segregation and Apartheid Legacy:** Examining the historical roots of spatial inequality and the enduring impact of apartheid-era planning policies on access to affordable housing (Mabin & Smit, 1997; Turok, 2016).
- **Policy Analysis and Critique:** Analysing the effectiveness and limitations of post-apartheid housing policies and programs, such as the RDP and BNG, and their impact on spatial integration (Huchzermeyer, 2003; Tomlinson, 1999).
- **Socio-Economic Barriers:** Investigating the complex interplay of factors, including income disparities, land costs, and bureaucratic hurdles, that constrain access to affordable housing (Charlton & Kihato, 2006; Napier, 2007).
- **Community-Driven Solutions:** Exploring the role of community participation and collaborative planning in developing sustainable and inclusive housing initiatives (Parnell & Pieterse, 2010).

Several influential works emerged from the analysis, indicating foundational contributions that have significantly shaped the field. For instance, Turok's (2016) work on urban development in Africa suggests its

pivotal role in understanding the broader context of urban challenges and the role of affordable housing within it. Similarly, Napier (2007) underscores its enduring impact on income disparities and inequality. Harrison (2015) highlights its significance in shaping discussions around community participation and sustainable housing solutions that will indeed reduce segregation.

These frequently co-cited publications represent seminal texts and landmark studies that have significantly influenced subsequent research and practice in affordable housing in Johannesburg. By identifying these core works, thematic clusters, and the intellectual connections between them, the document co-citation analysis contributes to a deeper understanding of the evolution and current state of affordable housing research in Johannesburg, ultimately informing future research directions and policy interventions aimed at improving housing equity and integration.

Author Co-Citation Analysis

For this dataset, for a minimum number of citations of cited references being 4 and 5, out of the 6162 cited references, only 3 meet the threshold for both. This was not considered as the threshold was very limiting and would give results that are limited and not dependable. For a minimum number of citations of a cited reference being 3, out of 6162 cited references, 14 met the threshold, which was also not sufficient as that forms a mere 0.23% of the total number of cited references. For a minimum number of citations of cited references at a value of 2, 6162 cited references, 126 met the threshold. This was also not considered as this data excluded a number of documents with a high citation rate. Therefore, a minimum number of citations being 1, out of 6162 cited references, 6162 met the threshold and were considered. The chosen number of cited references was made to be 50%, which is 3081 cited references. A data set of 3081 references is large but better to work with compared to the total, which is 6162. Increasing it from 3081 to 6162 would make the analysis process very time-consuming and tedious. Out of the 3081 cited references, the top 10 of the highest citations were chosen as this is an indicator that these authors are really good or quite influential in the research area that this paper is focusing on.



Figure 3: Visualised document co-citation network map of affordable housing and segregation

Co-authorship Analysis

Co-authorship analysis is crucial for exploring the collaborative dynamics within a research field. It reveals networks and partnerships among scholars, institutions, and countries, providing valuable insights into how knowledge is co-produced and disseminated (Newman, 2001). By examining co-authorship patterns, researchers can identify key contributors, influential collaborations, and emerging research communities (Glänzel & Schubert, 2004). In this dataset, for a minimum number of documents of an author being 1 and a minimum number of citations of an author being 1, of the 172 authors, all 172 met the threshold. This was the perfect threshold as it was not limiting.

The table below shows co-authorship amongst authors. The selection of authors in this database was based on the number of citations being the determining factor of authors that were chosen.

Author	Documents	Citations	Total Link Strength
mcgranahan, gordon	1	95	2
schensul, daniel	1	95	2
singh, gayatri	1	95	2
audirac, ivonne	1	79	1
bonakdar, ahmad	1	79	1

Table 2: Co-authors with the highest citations

Analysis of Country Collaboration

Within the body of knowledge, there has to be an understanding of the impact that global collaboration has on the research area. It is also of importance to know and understand the influence of different authors on a global scale as this carries weight in terms of contribution. In this segment of the study, the top five clusters consisting of collaborations will be discussed. The highest rate of collaboration comes from 2 clusters being clusters 1 and 2. Cluster 1 has a total of 19 joint publications between Belgium, China, Erasmus University Rotterdam, Hong Kong, and the Netherlands. Clusters 1 and 2 have a tie as cluster 2 also consists of 19 joint publications between Chile, Colombia, France, Mexico, and the United States. In second place is Cluster 5, with 15 joint publications between Nigeria, South Africa, and the United Kingdom. In third place is Cluster 3, with a total of 6 joint publications between Germany and Switzerland, and in last place is Cluster 7, with a total of 4 joint publications between Estonia and Poland.

Global Network Knowledge

The analysis conducted throughout this study reveals a significant amount of global research activity in the field of affordable housing. This is evidenced by the participation of countries representing diverse continents, some of which may not have experienced severe housing crises directly. However, their engagement suggests a proactive approach to preparedness and resilience, recognising the unpredictable nature of housing challenges and the importance of a robust knowledge base. This aligns with the broader understanding of housing as a fundamental human right and a crucial component of sustainable development, as articulated by the United Nations in its Sustainable Development Goals (UN-Habitat, 2016).

This global research engagement reflects a commitment to proactive planning, with nations investing in understanding and addressing housing disparities even in the absence of immediate crises. The interconnectedness of academic networks facilitates cross-border knowledge sharing, enabling countries to learn from the experiences of others, particularly those facing persistent housing challenges (Castells, 2010). This exchange of knowledge is crucial for developing context-specific solutions and adapting best practices to local conditions. Furthermore, the growing recognition of the crucial role of adequate housing in social and economic development has driven global collaboration, as nations understand that housing issues have far-reaching societal impacts (Massey & Denton, 1993).

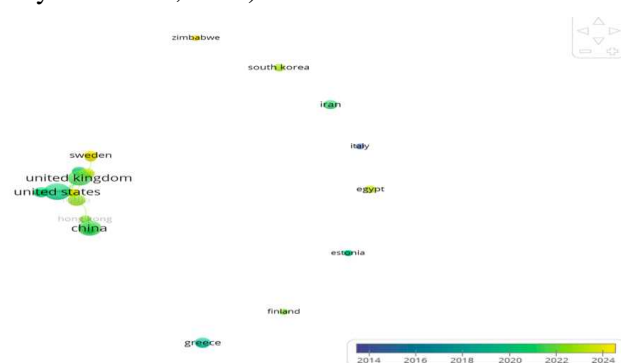


Figure 4: Visualisation of Global collaboration (country collaboration network)

This visualisation depicts international research collaborations on segregation and affordable housing, revealing a network dominated by the United States and the United Kingdom, as evidenced by their large node sizes and numerous connections. China also emerges as a significant player, indicating its growing research capacity and engagement in this field. The presence of other nations, including Sweden, Italy, Iran, South Korea, Egypt, Estonia, Finland, Greece, Hong Kong, and Zimbabwe, suggests a broadening global interest in this topic, extending beyond traditional research centers. The color gradient, spanning from 2014 to 2024, hints at the temporal evolution of these collaborations, with further analysis needed to pinpoint specific periods of increased activity or the emergence of new partnerships. This network structure facilitates

potential knowledge transfer between regions, allowing countries with varying experiences in addressing segregation and affordable housing to learn from one another. Connecting this visualisation to the previously analysed publication trends and examining the specific content of these collaborations would provide a more comprehensive understanding of the global research landscape and its relevance to the challenges faced by Johannesburg.

7 CONCLUSION

This study has explored the complex intersection of affordable housing, spatial inequality, and urban segregation in Johannesburg, utilising a mixed-methods approach encompassing a comprehensive literature review and a bibliometric analysis. The literature review contextualised the historical and contemporary challenges, tracing the roots of segregation to apartheid-era planning and examining the limitations of post-apartheid housing policies like the RDP and BNG. It highlighted the persistent socio-economic barriers hindering access to affordable housing and underscored the crucial role of community-driven approaches in fostering social and economic integration. The bibliometric analysis, including publication trend analysis, keyword co-occurrence mapping, and co-citation analysis, provided a quantitative lens through which to examine the evolution of research in this field. The analysis revealed a growing body of scholarship, with key themes emerging around spatial segregation, policy critique, socio-economic barriers, and community-driven solutions. Influential works and collaborative networks were identified, showcasing the intellectual and social structure of the research landscape. Furthermore, the analysis of country collaboration highlighted the global nature of this challenge and the importance of international knowledge exchange. Ultimately, this study reinforces the urgent need for innovative, community-driven affordable housing solutions in Johannesburg to combat segregation, promote social cohesion, and create a more equitable and inclusive urban environment. The findings presented here offer valuable insights for policymakers, urban planners, and community stakeholders working toward a future where affordable housing serves as a cornerstone for dismantling segregation and fostering sustainable urban development.

8 REFERENCES

- Arruabarrena, F., & Lanzaro, J. (2016). Housing cooperatives in Uruguay: The experience of self-management. *Habitat International*, 55, 27-35.
- Been, V., Ellen, I.G., & O'Regan, K. (2018). Supply skepticism: Housing supply and affordability. *Housing Policy Debate*, 28(1), 25-40.
- Bénit-Gbaffou, C. (2018). Beyond the policy-implementation gap: How the City of Johannesburg is building Cosmo City. *Journal of Housing and the Built Environment*, 33(4), 567-583.
- Biermann, S., & Van Ryneveld, M. (2007). Improving access to urban land: How can urban land markets be regulated? *Urban Forum*, 18(2), 89-107.
- Bremner, L. (2000). Reinventing the Johannesburg inner city. *Cities*, 17(3), 185-193.
- Cervero, R. (1998). *The Transit Metropolis: A Global Inquiry*. Island Press.
- Charlton, S. (2018). Housing delivery in South Africa: The challenges of transition. *Urban Forum*, 29(3), 265-284.
- Charlton, S. (2009). Housing for the nation, the city and the household: Competing rationalities as a constraint to reform? *Development Southern Africa*, 26(2), 301-315.
- Charlton, S., & Kihato, C. (2006). Reconsidering informal settlements: Governance, policy and livelihoods in post-apartheid cities. *Habitat International*, 30(3), 673-689.
- Cirolia, L.R., Görgens, T., van Donk, M., Smit, W., & Drimie, S. (2021). *Urban governance in post-apartheid South Africa: Spaces of contested spatial transformation*. Routledge.
- Department of Human Settlements. (2004). *Breaking New Ground: A Comprehensive Plan for the Development of Sustainable Human Settlements*. Pretoria: Government of South Africa.
- Harrison, P. (2006). Integrated development plans and Third Way politics. *Africanus*, 36(1), 78-95.
- Harrison, P., & Todes, A. (2015). Spatial transformations in a "loosening state": South Africa in a comparative perspective. *Geoforum*, 61, 148-162.
- Huchzermeyer, M. (2003). Housing for the poor? Negotiated housing policy in South Africa. *Habitat International*, 27(3), 303-331.
- Huchzermeyer, M. (2011). *Cities With 'Slums': From Informal Settlement Eradication to a Right to the City in Africa*. University of Cape Town Press.
- Huchzermeyer, M., & Misselwitz, P. (2016). Coping with informality and illegality in human settlements in developing cities. *Urban Forum*, 27(1), 1-5.
- Lang, R., & Stober, B. (2021). Cooperative housing in Switzerland: A model for resilient urban development? *Housing Studies*, 36(5), 745-764.
- Lemanski, C. (2011). Moving up the ladder or stuck on the bottom rung? Homeownership as a solution to poverty in urban South Africa. *International Journal of Urban and Regional Research*, 35(1), 57-77.
- Mabin, A., & Smit, D. (1997). Reconstructing South Africa's cities? The making of urban planning 1900-2000. *Planning Perspectives*, 12(2), 193-223.
- Moore, T., & Bunce, S. (2009). Inclusionary housing policies in practice: Lessons from international experiences. *Urban Studies*, 46(11), 2333-2351.

- Mosselson, A. (2019). *Rethinking urbanism: Lessons from post-apartheid Johannesburg*. Manchester University Press.
- Mukhija, V., Regus, L., Slovin, S., & Das, A. (2010). Can inclusionary zoning be an effective and equitable housing policy? Evidence from Los Angeles and Southern California. *Journal of Urban Affairs*, 32(2), 229-252.
- Napier, M. (2007). Making urban land markets work for the poor: South Africa's approach. *Urban Studies*, 44(4), 699-723.
- Parnell, S., & Pieterse, E. (2010). The 'right to the city': Institutional imperatives of a developmental state. *International Journal of Urban and Regional Research*, 34(1), 146-162.
- Rabinovitch, J. (1996). Innovative land use and public transport policy: The case of Curitiba, Brazil. *Land Use Policy*, 13(1), 51-67.
- Republic of South Africa. (1994). *White Paper on Reconstruction and Development*. Pretoria: Government of South Africa.
- Rust, K. (2006). *Analysis of South Africa's housing sector performance*. FinMark Trust Report.
- Tissington, K. (2013). *Minding the gap: An analysis of the supply of and demand for low-income rental accommodation in inner-city Johannesburg*. Johannesburg: Socio-Economic Rights Institute of South Africa.
- Tomlinson, M.R. (2017). South Africa's housing conundrum: The Johannesburg Social Housing Company and the challenge of rental housing development. *International Journal of Housing Policy*, 17(3), 473-491.
- Tomlinson, M.R. (2007). The development of a low-income housing finance sector in South Africa: Have we finally found a way forward? *Habitat International*, 31(1), 77-86.
- Turok, I. (2016). Getting urbanisation to work in Africa: The role of the urban land-infrastructure-finance nexus. *Urban Studies*, 53(9), 1953-1973.
- Turok, I. (2016). South Africa's new urban agenda: Transformation or compensation? *Local Economy*, 31(1-2), 9-27.
- Turok, I., & Borel-Saladin, J. (2018). The theory and reality of urban slums: Pathways-out-of-poverty or cul-de-sacs? *Urban Studies*, 55(4), 767-789.
- Van Eck, N. J., & Waltman, L. (2010). Software survey: VOSviewer, a computer program for bibliometric mapping. *Scientometrics*, 84(2), 523-538.
- Yuen, B. (2007). Squatters no more: Singapore social housing. *Global Urban Development*, 3(1), 1-19.