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Analysing the multidimensional nature of poverty: a focus on housing insecurity in South Africa

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Abstract:

Objective: Housing satisfies crucial needs, as shown in Maslow's Hierarchy of Needs. Be that as it may, the Sustainable Development Goals have one critical aspect missing in its 17 goals: achieving housing security for all. Goal 11 mentions urban settlement but fails to understand the concept of housing security. Over a billion people reside in slums and other informal settlements across the globe, and the number is expected to increase. However, there is a lack of a comprehensive, multidimensional, and validated instrument for measuring the extent of housing insecurity despite housing significantly impacting household's health, economic, and psychological well-being.

Methods: This study sought to apply and adopt a newly developed multidimensional household housing insecurity index (HHII), consisting of eight dimensions that respond to the lack of universally accepted measures of housing insecurity. This study used primary data with a sample size of 600 South African households collected in four types of areas in two provinces (Gauteng and KwaZulu Natal).

Results: The findings indicated that merely 25% of households were deemed housing secure, in stark contrast to 75% facing varying levels of housing insecurity, from mild to severe. This concerning result highlights that, even after more than thirty years of democracy, housing remains a significant problem in South Africa.

Conclusions: The study reveals that housing insecurity significantly impacts Black populations, with female heads of households in rural

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and informal settings facing the most severe challenges. Moreover, it becomes evident that an increase in education levels mitigates the risk and severity of housing insecurity, likely due to improved employment prospects and income potential. This underscores the importance of addressing educational disparities to combat housing insecurity.

1- Introduction

Housing insecurity and poverty are among the most significant socio-economic concerns affecting both developed and developing countries (UN-Habitat, 2019). The Sustainable Development Goals conspicuously have one crucial aspect missing in its 17 goals: achieving housing security for all. Sustainable Development Goals (SDG) recognise the importance of proper housing and settlement under Goal 11 (UNDP, 2020). However, Goal 11 mentions urban settlement but fails to understand the concept of housing security or lack thereof. Despite that, housing insecurity is a pervasive challenge for both developed and developing countries, where a disproportionately high number of urban residents live under unstable and unsecured housing conditions. Over a billion people reside in slums and other informal settlements across the globe, and the number is expected to increase in the following decades (United Nations, 2021). Housing satisfies the psychological needs at the bottom of Maslow's pyramid and facilitates meeting all the higher-order needs (Ulman & Cwiek, 2020). Furthermore, the International Human Rights law recognises everyone's right to an adequate standard of living, including housing security. Housing was acknowledged as part of the right to an acceptable living standard in 1948's Universal Declaration of Human Rights (UNDHR) and the 1966 International Covenant on Economic, Social, and Culture (ICESCR) (UN-Habitat, 2016). Despite housing significantly impacting the health, economic, and psychological well-being of the household, there is a lack of a universally accepted unified measure of housing insecurity that captures the multidimensional aspects of secure and stable quality housing (Herbert et al., 2015; Cox et al., 2017; Cunningham et al., 2017).

Housing insecurity has become one of the most significant socio-economic concerns for developing and developed countries (United Nations, 2014; UN-Habitat, 2016; UNDP, 2020; United Nations, 2021). Housing insecurity is not only a sign that the government cannot guarantee safe, affordable and adequate housing but also a violation of some of the other human rights mentioned above (United Nations, 2022). The importance of housing insecurity is also necessitated by the growing global population and the affordability crisis, especially as more people move from rural areas to urban areas and cities in search of better opportunities. Despite housing security affecting many aspects of household well-being and its close association with poverty, it is an unfamiliar phenomenon that is not clearly understood and measured accurately without attenuation biases

(Cunningham et al., 2017; Cox et al., 2017; Dunga & Mncayi, 2017; Broton et al., 2018; Dunga & Grobler, 2018; Shuping, 2021 and Dunga, 2021). Even though a substantial body of literature has been done on housing insecurity, there is still no consensus on the measure of housing insecurity (see Eastwood & Birnbaum, 2007; Curtis & Geller, 2010; Berzin et al., 2011; Bossarte et al., 2013; Brisson & Covert, 2014; Diette & Ribar, 2015; leaving many questions unanswered. Furthermore, the existing literature indicates that studies have utilized various measures, with the majority being unidimensional and overlooking the multidimensional aspect of housing insecurity. This has resulted in excluding crucial dimensions of housing insecurity (Carrion et al. 2014; Cutts et al. 2011; Dunga & Mncayi, 2017).

Dunga (2021) uses the metaphor of multiple heads to describe poverty, highlighting the interconnectedness between poverty and housing insecurity. This underscores the critical need for a comprehensive understanding of both issues. If the dimensions of poverty and housing insecurity are not fully grasped, efforts to address one will be undermined by setbacks in the other. However, existing literature rarely incorporates all eight dimensions of housing insecurity, leaving a significant gap. Failure to account for these dimensions risks producing biased results, leading to ineffective policies. Therefore, there is a clear gap in the literature for a comprehensive and consistent measure that captures the multi-dimensional nature of housing insecurity. This research seeks to close that knowledge gap by developing a multidimensional measure of housing insecurity, the Household Housing Insecurity Index (HHII), and applying it in four different communities (Rural, Township, Urban, and Informal settlement), enabling us to assess the severity of housing insecurity in each community setting. South Africa also stands as a good case study given that more than 60 per cent of the population, when using the upper-middle-income poverty line, live in poverty, and inequality remains among the highest in the world (World Bank, 2024). The rest of the paper is organised as follows: Section 2 reviews the literature on housing insecurity measures and dimensions. Section 3 covers data sources, research methods, and index construction. Section 4 presents the results and discussion, and the study conclusion is presented in Section 5.

2. Literature review

2.1 Conceptualising housing insecurity

Housing insecurity is a multidimensional phenomenon in nature, as argued by Hulse and Saugerties (2008), Bailey et al. (2016), Dunga and Mncayi (2017), Cox et al. (2019), and Dunga (2021), the multidimensional nature of housing highlights that housing provides more than just a physical shelter. Shaw (2004) and Padgett (2007) maintain that the role of housing goes beyond the material infrastructure that provides security. However, housing is interrelated to physical,

social, and psychological well-being. The need for good quality housing is not just to provide shelter but also to highlight the standard of living within society. Fair housing must allow the household to plan for the future, be protected from physical and health hazards, and be accessible. The World Health Organisation (1961:17) defines secure housing as the residential environment, neighbourhood, micro district, or physical structure that humanity uses for shelter and the environments of that structure, including all necessary services, facilities, equipment, and devices, needed for the physical health and social well-being of the family and the individual. Sompolska-Rzechula and Olenczuk-Paszel (2017) argue that housing is at the centre of satisfying other basic needs such as food preparation, storage, relaxation, security, and development. Thus, from the literature, the following dimensions capture the multidimensionality of housing insecurity, a gap we intend to fill in this paper.

Housing cost burdens

Household income is crucial in determining housing insecurity, with lower-income families often facing a higher housing cost burden (Dunga, 2021). Households spending more than 30% of their income on housing are considered overburdened, though this measure is not perfect, as higher-income households can exceed this threshold without financial strain (Andoh et al., 2018; Dunga, 2021). Housing costs are a primary driver of material deprivation and poverty (Tunstall et al., 2013), and for many, it is their most significant expense (Desmond & Bell, 2015). If housing costs are not considered, the risk of poverty is underestimated (Tunstall et al., 2013). After housing costs are accounted for, the number of impoverished households rises significantly (Mullan et al., 2009). Higher housing costs can worsen poverty, while affordable housing can alleviate material deprivation (Burlinson et al., 2018; Tunstall et al., 2013).

Overcrowding

Crowding is a key element of inadequate housing, with negative impacts on health, mainly through the spread of communicable diseases, and it can hinder children's development (Blake et al., 2007; Cutts et al., 2011; Dunga & Mncayi, 2017). Crowding generally refers to feelings of being cramped, increased unwanted interactions, and a lack of privacy (Jazwinski, 1998). Definitions of crowding vary, including measures like persons per room, bedroom occupancy (two adults per bedroom), and unit square footage per person (165 square feet per person) (Blake et al., 2007; Gray, 2001). However, these definitions have limitations, as they may not account for factors like age or room size, and crowding standards evolve with changing economic conditions and social expectations, often reflecting cultural biases (Blake et al., 2007).

Ownership of the structure

The issues of land, housing, and property rights have recently been given heightened attention on the international agenda (Leckie, 2005). In countries

where property ownership rights are clearly defined, the issues of the ownership of the structure and the land it stands on are usually taken for granted. However, in countries like South Africa, where many people reside in informal settlements, this may have significant implications for housing insecurity at the household level (Ndaba, 2024). Overcrowding and migration to the cities for better opportunities have resulted in more people illegally occupying privately owned land. A lack of a clear definition of property ownership rights will result in many people being forcefully evicted due to illegally occupying the land or failure to pay rent or bond. Forced evictions can be traumatic to the already disadvantaged household and can be left living in life-threatening conditions or even homeless.

Stability of the households

Forced eviction and housing instability are global issues affecting millions, leading to displacement, homelessness, entrenched poverty, and social exclusion (du Plessis, 2005). Housing stability is often measured by the number of moves or evictions a household experiences within a given period (Dickson-Gomez et al., 2017). Research shows that those forced to double up with family or friends due to eviction often face adverse conditions, such as living with drug users or conflicts over expenses, furthering housing instability (Dickson-Gomez et al., 2017). The United Nations-Habitat (2014) recognizes forced eviction as a violation of human rights, particularly the right to adequate housing. Additionally, inadequate housing, material deprivation, and job insecurity increase the risk of eviction and involuntary unemployment (Burt, 2001; Shuping, 2021). However, not all residential changes are negative, as some may reflect improved circumstances, like moving closer to work or upgrading to better housing.

Material used in the structure

Housing quality is critical for health, safety, sustainability, and economic development (Keall et al., 2010). Inferior quality housing also contributes to social development; thus, poor quality housing may indicate poor social development in the community (Social Work Policy Institutes, 2006). An individual's dignity and social inclusion are also associated with the quality of the house they inhabit; unstable housing is assumed to affect the overall well-being and prosperity of the inhabitants negatively. The studies by Hood (2005) and Keall et al. (2010) highlight that poor-quality housing can negatively impact the household's health. Poor housing quality does not only have a negative health impact, but it is also central to socio-economic issues, such as drug abuse, overcrowding, and chronic levels of unemployment (Social Work Policy Institutes, 2006). The study by Dunga and Grobler (2017) and Dunga and Mncayi (2017) considered the material used to construct the structure. It concluded that

cardboard and corrugated iron sheets used to build the wall indicate poor quality or informal housing compared to bricks and concrete.

Quality of the neighbourhood

It has been argued that the quality of the neighbourhood could play a role in physical and mental health and general well-being (Mouratidis, 2020). Housing and neighbourhood quality influence people and their path through life (Distasio et al., 2021). Inequality between neighbourhoods and its potential impact on opportunities and well-being has been an essential subject of policy, academic research, and public debates (Diez Roux and Mair, 2010; Manley et al., 2011; Cucca, 2020). Most of the research has focused on how the quality of the neighbourhoods negatively affects the households; most researchers have used levels of poverty, income, education, and employment as the indicators for the neighbourhood quality (Messer et al., 2006). Studies have highlighted that poor neighbourhoods with high residential mobility and material deprivation were linked to depression (Matheson et al., 2006). While elevated levels of noise, lack of access to community facilities, feeling unsafe, and violent crime are associated with lower mental health (Guite et al., 2006; Meyer et al., 2014).

Facilities (amenities) and quality

Housing quality can be defined in both objective and subjective dimensions as it is a broad term encompassing many aspects. Adequate housing consists of the following facilities: water supply, plumbing system, heating system, flushable toilet, electricity, and kitchen with facilities like stove or fridge. Access to clean running water and electricity facilities is essential when discussing housing insecurity. For instance, households with no electricity will use alternative energy sources for lighting, cooking, and warming the house, exposing them to all sorts of risks (Dunga, 2021; Keall et al., 2010). Poor-quality housing can have structural flaws, insufficient insulation that allows for mould growth and dampness, no heating or ventilation, asbestos exposure, volatile organic compounds, unsafe drinking water shortage, inefficient waste disposal, inadequate space for preparing and storing food, noise, and household pests like ants, cockroaches, mice, rats, and radon (Keall et al., 2010).

Family demographics and the dependency ratio

Over the past few decades, the world has experienced a dramatic shift in demographic landscape and family composition (Cherlin, 2010; King et al., 2021). The change in demographic landscape and family structure is accompanied by long life expectancy, a rise in cohabitation, non-marital childbearing, single-parent-headed families, and multigenerational households. The household dependency ratio is between household members over 18 who are not employed or attending school and the number of providers in the household (Lu, 2018). The studies by Sarkinstan and Gerstel (2004), Mimura (2008), and McLanahan and Percheski (2008) have argued that black households are

experiencing disproportionately higher housing cost burden, economic hardship, female-headed homes, non-marital childbearing, which partly contributes to the higher prevalence of multigenerational households. Lu (2018) further argues that families with only one provider and several dependents have no safety net to fall back on should the main and only provider experience unemployment, incarceration, or health

2.2 The relationship between poverty and housing insecurity

The World Bank (2020) has reported reversals in some of the gains made in achieving the SDGs. Despite poverty and housing insecurity being recognised as the biggest challenge to achieving global development (Dunga, 2023), there is an apparent lack of understanding and measuring the dimensions of poverty, housing insecurity, material deprivation, etc. (Boateng & Adams, 2023). A significant challenge in establishing a universal definition and measurement of housing insecurity lies in the varying perceptions of what constitutes basic needs. These perceptions differ from country to country, influenced by each nation's unique social and cultural values. This again highlights the multidimensionality of the term.

The understanding of poverty has improved in the last few decades with the seminal work of Kolm (1969), Atkinson (1970), and Sen (1976). The relationship between housing, material deprivation, social exclusion, and poverty has been a contentious global challenge, and there are many variations of concepts regarding the relationship (Tunstall et al., 2013; Mullan et al., 2009). The causal pathways between poverty, material deprivation, social exclusion, and housing insecurity are complex and intertwined, as there is evidence of reverse causality in each of the four variables (Garnham et al. 2021:2; Tunstall et al. 2013:8). Housing can act as both an expense and income generating asset. Housing as an expense can exacerbate poverty or material deprivation, and if it is income-generating, it can alleviate poverty or material deprivation in households. However, there is limited literature on how poverty, social exclusion, or material deprivation might affect housing and how housing circumstances might be affected by poverty, social exclusion, or material deprivation (Tunstall et al. 2013:8).

High housing costs can push households deeper into poverty, forcing them to choose between housing and other basic needs (Tunstall et al., 2013; Desmond & Bell, 2015). If housing costs are not considered, the risk of poverty is underestimated (Tunstall et al., 2013), as low-income households often lack disposable income for essential expenses like education, health, and utilities (Wagle, 2008; Shuping, 2021). After factoring in housing costs, the number of households in poverty rises (Mullan et al., 2009) and living on minimal income can harm overall well-being (Kotecha et al., 2015). The provision of low-cost or subsidized housing can alleviate poverty by allowing households to allocate more income to other needs (Tunstall et al., 2013; Burlinson et al., 2018). Poor housing

conditions also negatively impact health, employment stability, and educational attainment, further exacerbating poverty (Desmond & Bell, 2015; Ali et al., 2018). Thus, housing affordability and income are critical factors determining a household's living standards (Atkinson et al., 2002). We can, therefore, conclude that the relationship between poverty and housing insecurity is intertwined and bi-directional. At the same time, many overlapping dimensions and factors cause poverty and housing insecurity. This confirms that housing insecurity cannot be separated from poverty, nor can poverty be solved if all its root causes are not addressed. The subsequent section discusses the data used in the study.

2.3 A South African and regional perspective on housing insecurity

Sub-Saharan Africa faces unique challenges with rising poverty levels, unemployment, conflicts, a growing population, a declining economy, and housing insecurity. Many African countries experience economic, social, and political issues that directly impact citizens' welfare (Obioha, 2021, p. 1). Poverty reduction in Africa lags behind other developing regions, with East and South Asia making significant progress in reducing those living below the international poverty line of $1.90 a day (Beegle et al., 2016, p. 24). The situation is no different in South Africa, with a housing backlog exceeding two million (Msindo, 2023). Following the abolishment of apartheid laws, such as restriction of movement and forced eviction in 1994, more people moved from rural to urban areas for better opportunities. In 2019, approximately 66 per cent of the total population was projected to relocate from rural to urban areas with an annual rate of 2.1 per cent (Nyoni & Kollamparambil, 2022, p. 1). Urbanisation has impacted settlement patterns and living standards, which have resulted in an increased number of informal settlements (Ndaba, 2024).

In South Africa's metropolitan areas, about 16 per cent of households in informal settlements live in makeshift structures with limited access to essential services like water, sanitation, and electricity (Simbanegavi, 2021, p. 221). Despite decades of government subsidies for housing delivery, South Africa still has serious challenges to adequate and affordable housing for low-income households (Simbanegavi, 2021, p. 221). Cities such as Johannesburg, Durban, and Cape Town struggle to control informal settlement growth, which strains municipal services and infrastructure (Turok, 2014, p. 690). Despite high unemployment, urbanization correlates positively with employment trends (Shuping, 2021, p. 41). Urbanisation has increased the demand for housing in urban areas, increasing housing prices and rental while forcing the majority that cannot afford rent to reside in overcrowded backyard shacks, hostels and informal settlements. The next section discusses the data used in the study.

3. Data

This study used primary data collected through a survey conducted in 2022 and 2023, while only the household heads participated. The household determined

who the head of the household was. The sample size of this study consists of 600 participants collected in four community settings: urban, rural, township, and informal settlements. Each sub-sample consists of 150 participants. Studies similar to this study had the same sample size and some even less (Shinn et al., 1998; Turnbull et al., 2014; Silva et al., 2015; Dunga & Mncayi, 2017). The four different community settings were strategically selected to ensure that selection and sampling biases were minimized. The main reason to have four different community settings was to ensure that most of the housing insecurity determinants or dimensions that are community-specific are also covered in the analysis; hence this also helped in the analysis to identify determinants that affect all the communities and some that are localized to a particular community setting. Regarding the rural sample, the data was collected in three different villages under uKhahlamba municipality (Bergville), 50 randomly selected households in each of the three villages were surveyed to ensure the sample represents the Bergville population. The data for urban areas, townships, and informal settlements was collected in Gauteng providence within the West Rand (Roodepoort) and South Rand (Soweto area). Some exclusions are applied within the targeted areas or population. Student accommodation, hostel dwellers and homeless people were excluded from the samples as the study seeks to unpack and develop a housing insecurity index at a household level. According to Statistics South Africa (2001), South Africa has four broad settlement types: formal urban areas, informal urban areas, commercial farms and rural areas (including tribal areas). The targeted sample in this study covers all the settlement types in South Africa except for commercial farms. Hence, the target sample is representative of the population.

Section A captured the participants' demographic information, including provinces and ethnicity. Sections B and C captured the household income and expenses, respectively. Section D assessed the number of household members compared to the number of bedrooms. Section E determined whether the participant owned, rented, or occupied the property rent-free. Section F investigated the material used in building the property and whether the house has any defects, such as a leaking roof and wall. Section G assessed the stability of the household. Section H captured information about the quality of the neighbourhood. Section I assessed the type of facilities that the households had access to. Finally, the last section of the questionnaire captured the household dependency ratio by determining how many members are working compared to those who are not working.

According to Yusoff et al. (2021:7), once the questionnaire has been designed, an important step is to validate the questionnaire to ensure the quality of the questions, responses, and results. The questionnaire was designed from scratch, and the literature on household poverty and housing insecurity (e.g., Dunga &

Makhalima, 2016; Grober & Dunga, 2016; Dunga & Mncayi, 2017). A pilot study was done as part of the validity process. The pilot sample consisted of 20 participants with the aim of testing if it's easy for participants to understand and answer their questions on their own and if any questions make them uncomfortable when responding. Over 80 per cent of the pilot sample asked for an explanation of how many generations live in the household, household composition, and the difference between the household head and breadwinner. To address these issues, definitions were provided for most of the confusing words we highlighted. Lastly, all the participants in the pilot sample were uncomfortable declaring or sharing their exact income; hence, we opted for salary or income banding, which the participants recommended.

The questionnaire/survey was then transferred onto Google Forms, allowing for an easy and cost-effective way of collecting data while minimizing the intense administration and data capturing that comes with a paper-based survey. Developing well-designed questionnaires is important in determining survey-based studies' quality and scientific merit. The questions were designed so that the responses can be quantifiable and scalable. The format and layout of the questionnaire start by outlining what the study is about and how the data will be analysed and reported on this study. The informed consent also highlighted the benefits of the study. Each section was clearly labeled, along with instructions on how to complete each part. The questionnaire did not require the participants to provide personal information such as name, surname, identification number, and any address; this was to ensure that the participant's identity is protected, and it is almost impossible to link the response to a specific participant as indicated in the Protection of Personal Information Act of 2013. The next section discusses the methodological processes followed in the study.

4. Research Methodology

Several studies have concluded that housing insecurity is multifaceted and multidimensional in nature (Cox et al., 2017; Cunningham et al., 2017; Dunga, 2021). Housing insecurity has not received much attention compared to food insecurity and poverty, where enough attention has been afforded to develop a multidimensional measurement and conceptualization (Ma, Gee & Kushel, 2008; Goldrick-Rab et al., 2015). To understand the extent of housing insecurity, the data for this study was collected at a household level through a survey collected in four geographic locations: urban, rural, informal settlement, and township in South Africa. Furthermore, this research adheres to the ethical standards of research. The Faculty of Economics and Management Sciences Research Ethics Committee (EMSREC) of North-West University approved the data collection tool with the following ethical clearance number: *NWU-00620-22-A4.*

4.1 Housing Insecurity Index Construction

As elucidated previously, housing insecurity is complex and involves multidimensional occurrence. The household insecurity index combines eight dimensions of housing insecurity to create a more comprehensive, all-encompassing measure of household housing insecurity. The mathematical presentation takes the form of an index as follows:

$$HHII = f\ (HI, Cr, OW, Mt, Stb, Ngb, Fac, FDem) \quad (1)$$

From equation 1 above, the *HHII* represents Household Housing Insecurity Index, *HI* is the household income score, *Cr* is the household crowding score, *Ow* is the ownership score, *Mt* is the material used score, *Stb* is the stability of the household score, *Ngb* is the neighbourhood security score, *Fac* is the quality of facilities score and *FDem* is the family demographics score (Dunga, 2021:14). Different weightings were allocated to each dimension of housing insecurity where *Wi* represents the weighting. Different weightings were allocated based on their importance and data quality of the dimension.

The score of the household was calculated as:

$$HHIIi = \sum(\Omega iWi)/ \sum Wi \quad (2)$$

$$HHIIi = \sum \text{Weighted score}_i / \text{Sum of weights} \quad (3)$$

The final household score is determined on a continuum, with the greatest score denoting severe housing insecurity and the lowest representing households with secure housing (Dunga, 2024). The HHII continuum classifies housing insecurity into four categories: housing secure, mild housing insecurity, moderate housing insecurity, and severe housing insecurity. The first degree of housing insecurity, *housing secure*, indicates that the risk of households experiencing housing insecurity is very low. This category denotes that the households in this category have minimal or no impact on any of the dimensions of housing insecurity. In the second category, *mild housing insecurity*, most of the households in this category are stressing more about the trade-off between paying their rent or bond and accessing other basic needs. The third category, *moderate housing insecurity*, indicates that households experience less extreme housing insecurity. In this category, the households might experience some of the housing insecurity dimensions such as affordability, overcrowding, poor quality housing, medium to high risk of eviction, lack of ownership, poor neighbourhood, and lack of facilities. The last category, *severe housing insecurity*, elucidates that households experience most of the dimensions of housing insecurity mentioned above. Most of the households in this category are on the verge of being homeless or severely impacted by other dimensions such as overcrowding, unstable households, and poor-quality housing not suitable for human habitation. Table 1 summarises these housing insecurity levels.

Table 1: Explanations of housing insecurity level/degree

HHII Score	Description
1 - 2	Housing secure
3 - 4	Mild housing insecurity
5 - 6	Moderate housing insecurity
7 - 10	Severe housing insecurity

Source: Author's own compilation

5. Model estimation and results

Table 2 presents the frequency distribution of the different degrees of household housing insecurity calculated based on the four categories discussed in the preceding section. The results show that only 25 per cent of the households are housing secure, 35 per cent are mildly housing insecure, 37 per cent are moderately, and 3 per cent are severely housing insecure. These results show that over 75 per cent of the households are at least experiencing one or more dimensions of housing insecurity. These results are in line with the findings by Dunga and Mncayi (2017) and Mncayi and Dunga (2019), which concluded that the majority of households are experiencing housing insecurity as a result of overcrowding, poor quality of the material used in the house, poor quality neighbourhood and lack of facilities. The 3 per cent classified as severely housing insecure lack access to the basic facilities in their households. In contrast, all the households in this category have electricity. Still, they use alternatives such as wood/coal fire and paraffin for cooking as they often run out of electricity, leading to most of the households using electricity for lighting the house only. Furthermore, these households do not have all the kitchen appliances, such as stoves, refrigerators, and cupboards which is challenging as the kitchens are not well equipped for storage, preservation, and food preparation.

Table 2: Measure of household housing insecurity

Household Housing Insecurity Index (HHII)	Households	% Households
Housing secure	147	25%
Mild housing insecurity	211	35%
Moderate housing insecurity	223	37%
Severe housing insecurity	19	3%
Total	600	100%

Source: Survey Data (2022)

Furthermore, and as depicted in Table 2, the majority of the 3 per cent of the households classified as severely housing insecure have their house walls constructed using either corrugated iron or mudbricks, with most of the households experiencing leaks on the roof. Dunga (2023) also found similar results. In addition, these households neither own nor pay rent on the property, which puts the households at risk of being evicted. These households are also

characterised by a high dependency ratio, with one working member supporting at least five other members with an average salary of R 4 800[1] per month.
As shown in Table 3, approximately 85 per cent of the households in urban areas are classified as housing secure, with only 15 per cent categorized as mildly housing insecure, and no household is classified as moderately and severely housing insecure in urban areas.

Table 3: Household housing insecurity by geographic location

Geographic location	Indicators HHII	Households	% Households
Informal settlement	Housing secure	2	1%
	Mild housing insecurity	24	16%
	Moderate housing insecurity	112	75%
	Severe housing insecurity	12	8%
		150	**100%**
Rural	Housing secure	0	0%
	Mild housing insecurity	53	35%
	Moderate housing insecurity	90	60%
	Severe housing insecurity	7	5%
		150	**100%**
Township	Housing secure	18	12%
	Mild housing insecurity	111	74%
	Moderate housing insecurity	21	14%
	Severe housing insecurity	0	0%
		150	**100%**
Urban	Housing secure	127	85%
	Mild housing insecurity	23	15%
	Moderate housing insecurity	0	0%
	Severe housing insecurity	0	0%
		150	**100%**

Source: Survey Data (2022)

Table 3 further shows that in the townships, most households are classified as mildly housing insecure at 74 per cent, with 12 and 14 per cent classified as housing secure and moderately housing insecure, respectively. The picture is different for the informal settlements and rural areas, where only 1 per cent (2 households) are classified as housing secure in the informal settlements. In contrast, no household is classified as housing secure in the rural sample. Around 75 per cent of the households within the informal settlement are experiencing moderate housing insecurity, and 8 per cent are experiencing the extreme category of housing insecurity. In the rural area sample, 35 per cent are mildly housing insecure, with 60 per cent and 5 per cent of the households categorized

[1] This is equivalent to approximately US$ 260, using the annual ZAR/USD exchange rate for 2023 which was at US$1=R18.4519 (NedBank South Africa, 2024).

as moderately and severely housing insecure, respectively. The rural area is the only geographic location among the four that do not have households classified as housing secure, this could be due to limited access to essential services as a result of poor service delivery by the government, the high prevalence of houses that are built using mud bricks, lack of ownerships as the land is under the chief custodianship and high dependency ratio. Moradi et al. (2015), Jonah and May (2020) and Genz and Helbrecht (2022) also found that poor neighbourhoods are often housing insecure due to the concentration of poverty and unemployment.

Around 27 per cent of male-headed households are housing secure compared to 22 per cent of female-headed households (*see* Table 4). Approximately 36 per cent of households led by males experience mild housing insecurity, whereas the figure is slightly lower at 34 per cent for households headed by females.

Table 4: Household housing insecurity by gender

Gender	Indicators HHII	Household	% Household
Female	Housing secure	55	22%
	Mild housing insecurity	86	34%
	Moderate housing insecurity	104	41%
	Severe housing insecurity	11	4%
		256	**100%**
Male	Housing secure	92	27%
	Mild housing insecurity	125	36%
	Moderate housing insecurity	117	34%
	Severe housing insecurity	10	3%
		344	**100%**

Source: Survey Data (2022)

On the other hand, as can be seen in Table 4, 45 per cent (moderately housing insecure = 41 per cent and severely housing insecure = 4 per cent) of households headed by females are experiencing moderately to severe housing insecurity, with only 34 per cent experiencing moderately housing insecure and 3 per cent severely housing insecure for the male counterparts. These results are in line with the literature and the global trends, which highlight that women-headed households are more susceptible to poverty and housing insecurity. The OECD (2011) and Nwosu and Ndinda (2018) concluded that females, especially single female-headed households, are more vulnerable to poverty and housing insecurity than male-headed households.

Household size is an important determinant of overcrowding within the household; previous studies such as those of McNicholas et al. (2000) and Lapoo and London (2016) contended that overcrowding strongly correlates with long-term psychological problems for children and respiratory disease transmission. Table 5 highlights that smaller households are housing secure compared to larger households, where housing secure households account for 33 per cent for 1 – 3

members households, 19 per cent for 4 – 6 members households, 6 per cent for 7 – 10 members households, and greater than 10 members households. Moreover, the findings from this study (*see* Table 5) reveal a correlation between the increasing number of household members and the escalating degree of housing insecurity. Specifically, households classified as severely housing insecure account for 1 per cent in 1 – 3 member households, 3 per cent 4 – 6 member households, 9 per cent in 7 - 9 member households, and 24 per cent in households with more than 10 members. The findings of this study mirror those of Cutts et al. (2011) and Bentley et al. (2019).

Table 5: Household housing insecurity by household size

Household Size	Indicators HHII	Household	% Household
1 - 3	Housing secure	95	33%
	Mild housing insecurity	92	32%
	Moderate housing insecurity	102	35%
	Severe housing insecurity	3	1%
		292	**100%**
4 - 6	Housing secure	49	19%
	Mild housing insecurity	106	41%
	Moderate housing insecurity	94	36%
	Severe housing insecurity	9	3%
		258	**100%**
7 - 10	Housing secure	2	6%
	Mild housing insecurity	11	33%
	Moderate housing insecurity	17	52%
	Severe housing insecurity	3	9%
		33	**100%**
>10	Housing secure	1	6%
	Mild housing insecurity	2	12%
	Moderate housing insecurity	10	59%
	Severe housing insecurity	4	24%
		17	**100%**

Source: Survey Data (2022)

According to Table 6, no household heads hold a Doctoral degree. Households headed by individuals with Master's and Honours degrees show no higher degrees of housing insecurity (moderate and severe). Likewise, households headed by individuals with a Degree or Diploma do not experience severe housing insecurity. In contrast, households classified as severely housing insecure comprise 1 per cent of those with a technical education level, 4 per cent of those who have completed matric, 4 per cent of those with secondary education, and 8 per cent of those with primary education.

The results in Table 6 further suggest a positive correlation between the level of education and the degree of housing security, with higher education levels associated with higher housing security. These findings from the literature

suggest that higher education is not consistently linked to improved housing security, with some studies (e.g., Silva et al., 2017; Broton & Goldrick-Rab, 2018) suggesting that higher education can lead to housing insecurity and financial strain, particularly among low-income students and recent graduates.

Table 6: Household housing insecurity by education level

Education Level	Indicators HHII	Household	% Household
Masters	Housing secure	7	88%
	Mild housing insecurity	1	13%
	Moderate housing insecurity	0	0%
	Severe housing insecurity	0	0%
		8	**100%**
Honours	Housing secure	12	86%
	Mild housing insecurity	2	14%
	Moderate housing insecurity	0	0%
	Severe housing insecurity	0	0%
		14	**100%**
Degree	Housing secure	39	76%
	Mild housing insecurity	9	18%
	Moderate housing insecurity	3	6%
	Severe housing insecurity	0	0%
		51	**100%**
Diploma	Housing secure	37	73%
	Mild housing insecurity	12	24%
	Moderate housing insecurity	2	4%
	Severe housing insecurity	0	0%
		51	**100%**
Technical qualification (N1, 2, 3, 4, 5, 6)	Housing secure	34	28%
	Mild housing insecurity	59	48%
	Moderate housing insecurity	29	24%
	Severe housing insecurity	1	1%
		123	**100%**
Matric completed	Housing secure	11	7%
	Mild housing insecurity	63	42%
	Moderate housing insecurity	70	47%
	Severe housing insecurity	6	4%
		150	**100%**
Secondary Level	Housing secure	4	3%
	Mild housing insecurity	43	36%
	Moderate housing insecurity	66	56%
	Severe housing insecurity	5	4%
		118	**100%**
Primary Level	Housing secure	3	4%
	Mild housing insecurity	23	27%
	Moderate housing insecurity	52	61%
	Severe housing insecurity	7	8%
		85	**100%**

Source: Survey Data (2022)

6. Conclusion and recommendations

This study has demonstrated that housing insecurity is a complex phenomenon strongly associated with a lack of material goods, social marginalisation, and poverty. Consequently, housing insecurity is correlated with various socio-economic and socio-demographic factors. This study made strides in developing and validating an HHII that consists of eight dimensions of housing insecurity as proposed by Dunga (2021); this is one of the few studies that have constructed a measure of housing insecurity with eight dimensions to account for the complex and multifaceted nature of housing insecurity. By applying the constructed index, this study has assessed various levels of housing insecurity and gauged the extent of housing instability within households. This study's results showed a considerable housing insecurity inequality among the different racial groups, areas of residence, education levels, and gender. These results are no surprise, as South Africa is among the most unequal societies in the world (StastSA, 2019; Valodia, 2023).

This study also shows that female household heads are heavily burdened with a high unemployment rate compared to their male counterparts, leading to approximately 45 per cent of female-headed households experiencing moderate to severe housing insecurity compared to 37 per cent of male household heads. Furthermore, rural and informal settlement dwellers experience high degrees of housing insecurity. This study also shows that larger household sizes are common in rural and informal settlements, characterised by multigeneration and complex family structures, and they are more likely to experience higher degrees of housing insecurity. Lastly, the household head's education level has a positive relationship with housing security; the higher the household head's education level, the higher the chances of being housing secure. The study highlights the need to re-evaluate the social housing programs and government subsidies housing schemes while fast-tracking the land redistribution and formalization of the informal settlements.

This study recommends a refocus on land reform policies, a very contentious topic in democratic South Africa, which will allow for the release of land especially close to economic hubs, allowing households to spend less than 30 per cent of household income. The government also needs to revisit the social housing grants, which should align with inflation to provide much-needed housing for low-income households. Moreover, the government needs to improve the administration of government-subsidized housing schemes while also fast-tracking the formalisation of informal settlements, which are growing at an unprecedented rate, highlighting the need for housing. Lastly, this highlights a need for national, local, and private sector governments to undertake a cohesive urban change and assimilate an all-inclusive land policy regarding affordable housing development.

Lastly, this study had several limitations. First, it did not collect data from households in inner-city areas such as Johannesburg, Durban, and Cape Town. Including these regions could have enhanced the generalizability of the findings to the broader South African context. Future research should consider incorporating diverse residential areas, including inner cities, other provinces, and even other countries. This would contribute to a more comprehensive understanding of housing insecurity across different regions and help move towards a globally accepted measure and definition of the concept. Additionally, the study was unable to obtain precise household income data. Future research should further explore the complex relationships between poverty, material deprivation, social exclusion, and housing insecurity, focusing on the direction of causality between these factors.

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Competing interest statement

No funds, grants or other support was received. The authors have no competing interests to declare relevant to this article's content. The authors declare no conflict of interest.

Data availability

The study used publicly available data (2022 General Household Survey) from Statistics South Africa, following all ethical considerations: http://nesstar.statssa.gov.za:8282/webv

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