

DETERMINANTS OF URBAN INFORMAL SETTLEMENTS IN REGIONS D AND G OF JOHANNESBURG GAUTENG PROVINCE

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ABSTRACT

This study explores the factors driving informal settlement growth in Region D and G of Johannesburg Gauteng Province. Informal settlements, which are a pressing and persistent issue in South Africa, are called shantytowns and squatter camps. The rapid increase in the number of households residing in these areas underscores the urgent need to understand the factors driving their growth. Adequate housing, a fundamental human need, is a cornerstone of individual and societal security. It fosters health, education and learning, environmental stability, social integration, community cohesion, privacy, and dignity. The Sustainable Development Goal No. 11 underscores the criticality of sustainable human settlement development. Key aspects to be examined include age, gender, marital status, level of education, employment status, and household size. The logistic regression is employed to analyse the household characteristics that predict the probability of informal settlements. The study adopts a quantitative approach, utilising a questionnaire to gather data from townships in Johannesburg. The study's findings highlight the impact of duration, education, gender, age, employment status, and marital status on the growth of informal settlements in Johannesburg. The study suggests that a well-defined town planning and management framework, with the active involvement of urban planners and policymakers, could significantly improve the lives of individuals in these areas by enabling proper infrastructure development. Based on empirical evidence, these recommendations underscore the crucial role of urban planners and policymakers in shaping policy and practice to address the issue of informal settlements, offering a promising path forward and significantly impacting the lives of those in these areas.

Keywords: Education, Growth, Informal settlement, Squatter camp, Slums, Town planning, Slums



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1. INTRODUCTION

Housing is a critical component of life, providing a place to stay, rest, safety, and warmth. Furthermore, housing is the foundation of individual welfare, socie-

tal stability, and economic prosperity (Henilane, 2016). Wahba & Bridwell (1976) indicate that housing is an element of essential human needs, as indicated in Maslow's hierarchy of needs. Maslow considers physiological needs such as shelter primary needs, which require fulfillment before the secondary needs can be satisfied. This indicates that some needs precede others (McLeod, 2018). In 1996, the Habitat agenda adopted at the United Nations Conference on Human Settlements (Habitat ii) acknowledged the right to adequate housing and sustainable human settlement development in an urbanising world (UN-Habitat, 1996). The right to adequate housing is Habitat for Humanity's and UN-HABITAT's primary priority. Furthermore, it is a significant component of the core principles of the 17 Sustainable Development Goals. Housing forms an integral part of seven Sustainable Development Goals (SDGs), a direct contributor to six SDGs, and an indirect contributor to two SDGs goals (Habitat for Humanity, 2021).

South Africa's Constitution, Section 26, states that access to housing is a Human Right and imposes a duty on the state to take reasonable legislative measures to ensure it (Socio-Economic Rights Institute of South Africa, 2018). Despite the government's noticeable progress in providing formal housing, South Africa is witnessing a gradual increase in informal settlement areas. The informal settlement phenomenon, which captivated scholars in the 20th century, continues to receive attention even in the 21st century because of its growth in the cities and communities. Comins (2023) suggests that informal settlements are becoming a permanent dwelling characteristic, particularly for households grappling with harsh economic conditions. The research in this field continues unabated because informal settlements continue to provide shelter to many households in the country. The Department of Human Settlement (DHS) (2021) shows that there are more than 4,000 informal settlements townships nationwide.

Many of them are in eThekweni (more than 500), Cape Town (more than 400), and Johannesburg (more than 200) metropolitan areas. Informal settlements provide homes to more than two million households in South Africa. In Johannesburg, informal settlements provide shelter to more than 180,000 households with a population exceeding 500,000 (City of Johannesburg, 2018). This article seeks to answer the question: What drives households to informal settlement? This article investigates the factors determining informal settlement in Johannesburg Region D and G Johannesburg Gauteng province. This article is divided into four sections to answer the question and achieve this aim. The first section gives a brief historical background literature review on informal settlements. This is followed by section two, which discusses methodology and data collection. Section three presents the results and discussion, and section four concludes the paper.

2. LITERATURE REVIEW

Individuals in the low-income category have low and unrecorded incomes,

lack credit history, and do not possess collaterals (Taruvunga & Mooya, 2016). These factors indicate that they cannot meet the requirements for applying for mortgage funding for housing. Consequently, there is a necessity for government assistance in housing the low-income group (Mosha, 2013; Özdemir, 2011). The neo-Marxists advocate for increased subsidies to redistribute wealth (Taruvunga & Mooya, 2016). According to neo-Marxist theory, one of the government's roles is to provide housing for its citizens (Chisumbe, 2024). However, government failures in providing housing, especially for low-income groups, are evident in the proliferation of unregulated and unauthorized settlements in the major cities of many developing countries. The rise of informal settlement results from rapid urbanisation, which involves the growth of towns and cities at the expense of rural areas. This phenomenon occurs as people migrate to urban centers for jobs and a better life (National Library of Medicine, 2014; Dovey et al., 2020). The percentage of the total number of populations in informal settlements is increasing in most developing countries (UN-Habitat, 2016). In 2006, the United Nations Millennium Development Goals Report indicated that Sub-Saharan Africa and Asian countries were rapidly urbanising, with a large percentage of this development exposed to inadequate housing and poor infrastructure (United Nations (UN), 2016). According to the UN (2004) report, informal settlements are fast becoming a significant challenge of the third millennium. In agreement with this view, (Khazaei et al., 2012) state that due to modern life and large-scale urbanisation, informal settlements are considered a critical problem in metropolitan. One out of every six individuals worldwide live in informal settlements, and by 2030, about 2 billion of the world's urban population will reside in such dwellings (UN, 2004).

Furthermore, the UN SDG (2018) notes that an estimated number of more than 56% of the urban population in Africa lives in informal settlements. These statistics are supported by Smith Todaro and Smith (2020), who state that over half of the population in sub-Saharan African towns reside in informal settlements. Like many African cities, Johannesburg, in Gauteng province, is grappling with an increasing number of households living in informal settlements (Huchzermeyer & Maina, 2014). Mears (1991) indicates that the formation of informal settlements in Johannesburg is historical. It dates to the discovery of gold in the late 19th century. Consequently, there was a surge in demand for labour, which resulted in internal and external migration, which was effectively influenced by political decisions that controlled and directed the shape and form of urbanisation (Greyling & Mears, 2014) observes that political decisions that time determined and managed the question of where people should live. For example, political authorities imposed forced relocations of black and Indian inhabitants from Brickfields residential areas to Kliptown. This was instrumental in forming informal settlements, which later became part of Soweto (Mears et al., 1994).

Mears (1991) suggests that due to inadequate town planning and housing

shortages, many inhabitants were forced to occupy vacant land illegally in areas such as Pimville, Dube, Alexander, and Orlando. This led to the meteoric development of squatter suburbs in Johannesburg. The lack of effective and efficient development of a long—and short-term planning framework for land use exacerbated the challenges faced by inhabitants dwelling in informal settlements (Mears, 1997). The growth of informal settlements shows an inextricably intertwined relationship between political decisions, urbanisation management, and the living conditions of inhabitants in Johannesburg. The informal settlement landscape in the city has been shaped by politics (Mear & Levin, 1994).

2.1 Informal settlement defined2

Ghasempour (2015) defines informal settlements as unplanned, unregulated, self-grown settlements in and around cities. Bego (2003) refers to informal settlements as residential zones where residential structures are erected on vacant lands without legal approval from the government authorities. The informal settlements are called squatter camps, slums, shantytowns, and ghettos (Smit et al., 2017). The Ministry of Foreign Affairs in Kenya (2018) indicates that the poor population segment in communities mainly constitutes informal residential areas. Inhabitants in the informal settlements do not own land and, therefore, squat on vacant or private land. The United Nations' definition of informal settlement is multidimensional and does not only focus on providing shelter. It includes but is not limited to widespread poverty for essential services, unsafe living conditions, poorly built structures, social deprivation, and unhealthy and threatening environmental conditions (Un-Habitat, 2005). The Housing Development Agency (2013) defines informal settlement as unregulated and unplanned residential areas in illegal land with poor service delivery.

2.2 Characteristics of the Informal Settlements

The United Nations formulated characteristics for identifying informal settlements, including but not limited to impoverished urban structures, limited job opportunities, inadequate income, lack of access to education, health care facilities and social amenities, sanitation, water, waste management, and infrastructure, low quality of physical and mental health, and high levels of substance abuse (Un-Habitat, 2005). Informal settlements are also typified by the lack of productive governance (Western Cape Government, 2005). Furthermore, the Department of Human Settlement (DHS) (2009) states that land spaces are unequally distributed due to their unsystematic development. This leads to narrow internal streets, making it difficult for service delivery vehicles like firefighters and ambulances to access households that are in need. Most informal settlements are built on land unsuitable for residential development and exposed to natural environmental hazards. Consequently, these settlements' informal status tends to discourage public sector investments and residents from improving their living conditions.

As a result, residents in informal settlements face the threat of poverty threat and poor living standards, leading to increased social stress and interpersonal crimes, including but not limited to child abuse and domestic abuse. However, DHS argues that not all informal settlements are poorly located. Furthermore, over time, the description of the land where informal settlements are erected tends to evolve gradually from informal to formal, unplanned to planned, and illegal to legal structures through the government's legal and planning framework (Smit et al., 2017).

3. METHODOLOGY AND DATA COLLECTION

The survey was conducted in 2021 in regions D and G, which are black townships in Johannesburg city in Gauteng province. These townships were chosen because they represent the forced movement and settlements of black people in the late 19th century, which contributed to the development of Johannesburg. Additionally, these townships demonstrate the diverse dwelling structures in the communities. A household questionnaire was developed and piloted to refine the questions and to ensure standardisation. Once the questions were finalised, the researcher and the fieldworker administered the questionnaire to each household's head, spouse, and family members.

The households in the identified population sample were selected using a random selection method. The potential participants were interviewed after permission was granted by the relevant authorities. The verbal consent was obtained from the respondents due to the study being conducted during COVID-19 level three government regulation. The respondent's participation in the study was voluntary. For ethical reasons, the names of the locations within the townships where the data was collected are not disclosed. Respondents were not required to provide their names on the questionnaire. For the study, a sample population of 600 adults aged 18 years and above was drawn from the townships, representing male and female households from informal settlements. The respondents were interviewed by the researcher and one field worker between April and June 2021. The survey data was captured and analysed using the Statistical Package for the Social Sciences (SPSS) software.

3.1.1 Model specification

The data analysis uses logistic regression to estimate the probability of living in an informal settlement. This method examines the connection relationship between the dependent variable (informal settlement) and the independent variables (duration of stay, English proficiency (speaking), marital status, gender, position of the respondent, the highest level of education, employment, and age). The logistic regression formula is provided below:

$$P(Y = 1|X) = \frac{1}{1+e(\beta_0 + \beta_1X_1+\beta_2X_2+...+\beta_nX_n)} \quad (1)$$

- Where : $P(Y=1 | X)$ is the probability of the dependent variable (Y) being 1, given the values of the independent variables(X).
- e is the base of the natural logarithm
- $X_1, X_2,...,X_n$ the number of independent variables.

The odds of dwelling in informal settlement are given by :

$$\frac{p}{1-p} = (\beta_0 + \beta_1X_1 + \beta_2X_2 + \dots + \beta_nX_n) \quad (2)$$

4. PRESENTATION AND INTERPRETATION OF THE RESULTS

Regression analysis was used to answer the research objective set out in this study. This section contains two subsections: the first presents descriptive statistics, and the latter presents regression results.

4.1 Descriptive statistics of the household in the sample

The study's total population sample was 600, with 320 males (53.3%) and 280 females (46.7%), as shown in Table 1.

Table 1: Gender distribution in the study area

		Frequen- cy	Percent	Valid per- cent	cummala- tive percent
Value	Male	320	53.3	53.3	53.3
	Female	280	46.7	46.7	100.00
	Total	600	100.0	100.0	

Source: Survey Data (2021)

4.2 The univariate analysis

Table 2 presents the univariate analysis of the sample's formal and informal hous-

ing population to answer the paper’s objective. Table 2 indicates that about 58% of the respondents who have lived in an area for less than five years dwell in informal settlements, while (52%) of households with more than 15 years of residency live in formal structures. The United Nations Economic Commission for Europe (UNECE) (2009) found an association between unemployment and the establishment of informal settlements in urban cities. This implies that as people move to the cities in search of employment and economic opportunities to improve their living standards, they are often met with the harsh economic reality of high unemployment levels in the cities. As a result, some of them seek shelter in informal settlements.

Table 2 also reveals that a higher percentage of female-headed households, about (56.5%), reside in informal settlements compared to male-headed households, at 43.5%. This aligns with the study conducted by Fish (2003), which indicates that most people in informal settlements are women. Furthermore, Table 2 shows that about 56.0% of the female and male households with incomplete secondary education reside in informal settlements compared with 36.6% in formal structures. McIntosh (2004) indicates that individuals who do not complete secondary often struggle to find stable employment and are likely to end up in low-paying, insecure jobs that do not allow them to afford proper housing. A low-salary job intensifies the likelihood of finding shelter in the informal settlement(Barker, 2015). Additionally, Table 2 indicates that about 59.7% of households in informal settlements are engaged in informal employment, while 44.5% in formal structures are similarly employed. Many households in the informal settlements operate legal but unregistered small enterprises that require little capital, such as street vending, can collecting, and baking. In Table 2, it is shown that there are high levels of unemployment, with about 55.5% of the people living in formal structures and 40.3% in informal structures being unemployed. Unemployment has both macroeconomic and microeconomic impacts. From a macroeconomic perspective, it indicates that not all available labour resources are utilised, hindering overall production. On a micro level, it means that individuals are without employment or income and may be reliant on others for survival. Additionally, Table 2 illustrates the age distribution of individuals in formal and informal housing structures. The slight differences suggest that informal structures exist alongside formal housing and, over time, some informal settlements transition into formal housing through government regulations and planning (Smit et al., 2017).

Table 2: Univariate analysis of formal and informal housing

	structures				P-value
	Formal structures		Informal structures		
	N	%	N	%	

Duration of stay	less 5 years	66	18.8	135	58.2	<0.001*
	5 -10 years	42	11.9	37	15.9	
	10 - 15 years	59	16.8	13	5.6	
	Over 15 years	185	52.6	47	20.3	
English Proficiency (speak)	Poor	83	23.6	65	28.0	0.181
	Fair	169	48.0	116	50.0	
	good	100	28.4	51	22.0	
Marital status	Single	262	76.4	150	71.8	0.227
	Married	81	23.6	59	28.2	
Gender	Male	212	60.4	100	43.5	<0.001*
	Female	139	39.6	130	56.5	
Position of the respondent	Head/Tenant	162	46.0	170	73.3	<0.001*
	spouse	35	9.9	24	10.3	
	family member	155	44.0	38	16.4	
Highest level of Education	Primary education	53	15.1	29	12.5	<0.001*
	Secondary incomplete	129	36.6	130	56.0	
	Secondary education completed	125	35.5	61	26.3	
	Tertiary education	45	12.8	12	5.2	
Employment	unemployed	111	55.5	62	40.3	0.004*
	informal employed	89	44.5	92	59.7	

Age	18-24	42	11.9	31	13.4	
	25-29	49	13.9	34	14.7	
	30-34	54	15.3	35	15.1	
	35-39	47	13.4	45	19.4	
	40-44	34	9.7	30	12.9	
	45-49	36	10.2	26	11.2	
	50-54	33	9.4	14	6.0	
	55-59	17	4.8	7	3.0	
	60-64	10	2.8	6	2.6	
	65+	30	8.5	4	1.7	

Source: Survey Data (2021)

4.3 Regression Results

A logistic regression analysis was performed to determine the factors influencing the likelihood of an informal settlement.

Logistic regression results

Model	Deviance	AIC	BIC	df	ΔX²	p	McFadden R²	Nagelkerke R²	Tjur R²	Cox & Snell R²
4	483.560	515.560	583.026	485	3.216	0.200	-0.007	-0.011	0.337	-0.007
Coefficients										
Model	Parameter	Estimate	Robust Standard Error	Standardized	Odds Ratio	z	Wald Statistic	df	p	95% Confidence interval (odds ratio scale) Lower bound Upper bound
4	(Intercept)	0.620	0.719	-0.445	1.859	0.862	0.769	1	0.389	0.454 7.612
	Age of the respondent	-0.029	0.013	-0.309	0.971	-2.260	4.667	1	0.024	0.947 0.996
	Duration of stay (Between 5 and 10 years)	-0.966	0.328	-0.966	0.381	-2.945	8.090	1	0.003	0.200 0.724

Logistic regression results

Model	AIC Deviance	BIC	df	ΔX^2	p	McFadden R ²	Nagelkerke R ²	Tjur R ²	Cox & Snell R ²		
Duration of stay (Over 15 years)	-	1.700	0.292	-1.700	0.183	-	36.022	1	< .001	0.103	0.323
MS (Married)	0.498	0.298	0.498	1.646	1.672	2.510	1	0.094	0.918	2.953	
Education (Secondary incomplete)	0.716	0.360	0.716	2.047	1.993	3.468	1	0.046	1.012	4.142	
Education (Secondary education completed)	0.294	0.403	0.294	1.342	0.731	0.512	1	0.465	0.609	2.957	
Education (Tertiary Education)	-	0.227	0.516	-0.227	0.797	-	0.176	1	0.661	0.290	2.193
Position (Spouse)	-	1.996	0.484	-1.996	0.136	-	16.893	1	< .001	0.053	0.351
Position (Family Member)	-	1.869	0.280	-1.869	0.154	-	41.077	1	< .001	0.089	0.267
Gender (Female)	1.057	0.252	1.057	2.879	4.193	17.487	1	< .001	1.756	4.720	
Employmentstatus1 (Unemployed)	0.453	0.377	0.453	1.573	1.201	1.547	1	0.230	0.751	3.297	
Employmentstatus1 (Self-employed)	1.626	0.460	1.626	5.084	3.535	11.653	1	< .001	2.064	12.526	
Employmentstatus1 (Informal employed)	1.077	0.370	1.077	2.936	2.910	9.161	1	0.004	1.422	6.065	
Employmentstatus1 (Student)	0.035	0.624	0.035	1.036	0.057	0.003	1	0.955	0.305	3.520	

Note. Dwelling1 level 'Informal Structures' coded as class 1.
+ Standardized estimates represent estimates where the continuous predictors are standardized (X-standardization).

The findings indicate that the following factors: duration of stay, education, gender, and employment status are significant predictors of informal settlement outcomes. The likelihood of someone with higher education residing in informal settlements is reduced with an odds ratio =-0.227 compared to those with incomplete and complete secondary education. Similarly, the likelihood of

someone who has lived in one area for more than 15 years moving into informal settlements is reduced with an odds ratio = -1.951. Moreover, the probability of unemployed people staying in informal settlements increases by an odds ratio =0.453. Additionally, the likelihood of married couples staying in informal settlements is increased by an odds ratio =0.498 compared to single people.

5. CONCLUSION AND RECOMMENDATIONS

The study's results show that informal settlements are becoming a permanent feature in South Africa. People who have lived in an area for less than five years choose to seek shelter in these settlements. The study also pointed out an increase in the proportion of females in the informal settlements. Again, it was observed that many people with incomplete secondary education seek shelter in informal settlements. With the low levels of education of many people in informal settlements, the informal economy has become a viable source of income for living. Despite the government establishing an RDP program three decades ago to allocate houses to low-income groups, the informal settlements continue to grow. This may indicate a need to revisit the current strategy to provide housing for the low-income. This may help see the shortcomings and design a workable solution. The government may also consider the rollout plan to allocate stands in legally zoned land with infrastructure to people without housing.

People could build for themselves. Those working but can not get mortgage funding can apply for a subsidy in the form of building materials, labour, etc., from the government. This can be monitored quarterly by building inspectors. In this way, the unsystematic growth of informal settlements can be reduced. The government can keep all the data regarding the house plan, people who have applied for building material subsidies, labour, etc. The apps can be developed to monitor this in real-time and to take biometrics of the households who have applied for and received the material subsidy and those on the waiting list. The waiting period can be within each financial year and should be monitored. Also, the existing informal settlement can be re-planned by removing several informal settlement dwellers to newly identified legal land to alleviate overcrowding. Lastly, the re-building of informal settlements in areas where they were removed should be prevented and punishable by law.

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