

https://dspace.org/

South African informal settlements in the age of the COVID-19 pandemic: an investigation of Stjwetla informal settlement resilience challenges against the COVID-19 pandemic

Sonono, Michelle Tatenda

2022

https://hdl.handle.net/10539/34253

Downloaded from a DSpace repository. https://dspace.org/

South African Informal Settlements in the age of the COVID-19 Pandemic; An Investigation of Stjwetla Informal Settlement Resilience Challenges against the COVID-19 Pandemic

Michelle Tatenda Sonono
1927060

Master of Urban Studies (Housing and Human Settlements)
April 2021

SOUTH AFRICAN INFORMAL SETTLEMENTS IN THE AGE OF THE COVID-19 PANDEMIC; AN INVESTIGATION OF STJWETLA INFORMAL SETTLEMENT RESILIENCE CHALLENGES AGAINST THE COVID-19 PANDEMIC

Michelle Tatenda Sonono
1927060

A research report submitted to the Faculty of Engineering and the Built Environment, University of the Witwatersrand, in partial fulfillment of the requirements for the degree of Master in Urban Studies (Housing and Human Settlements) in the School of Architecture and Planning.

Johannesburg, 2021

DECLARATION

I, **Michelle Tatenda Sonono** hereby declare that this research report is my unaided work. It is being submitted in partial fulfillment for the degree of Master of Urban Studies (Housing and Human Settlements) in the University of the Witwatersrand, Johannesburg. It has not been submitted before for any degree or examination in any other university.

Signed on this, the 28 day of October 2021.

Michelle Tatenda Sonono

SCHOOL of ARCHITECTURE & PLANNING

ABSTRACT

The world is currently experiencing an unprecedented global public health crisis - the COVID-19 pandemic. The threat of the pandemic is heightened by the existence of informal settlements in the global South. Using Stjwetla in Johannesburg as a case study, this research seeks to investigate the challenges that impact resilience building against the pandemic in informal settlements. The research employed a qualitative research design. The study revealed that while it is not clear how the disease affected the community, Stjwetla residents were affected by the socio-economic impacts of the pandemic and the lockdown regulations. The capacity of Stjwetla residents to comply with the COVID-19 regulations is highly differentiated and exposes substantial inequalities and injustices that predate the pandemic. Balancing the COVID-19 pandemic responses with the broader developmental and healthcare priorities is essential to ensure and strengthen the long-term resilience of Stjwetla informal settlement.

DEDICATION

This research is dedicated to those who have been affected by the COVID-19 pandemic. My heart goes to all those families across the globe who have lost their loved ones to the COVID-19 pandemic.

ACKNOWLEDGEMENTS

I thank you, Lord Jesus Christ, for your mercy and favour that guided and kept me and my family safe during the COVID-19 pandemic. I thank you for the spirit of excellence that enabled me to write this research report. It was not easy, but your grace helped me through. KULUNGILE BABA

To my family and friends thank you for the support, I would not have done this without your help.

To Dr Raffael Beier, my supervisor, thank you for your guidance and encouragement during this research. This report is a product of your attention to detail and all the positive feedback, guidance, and encouragement you gave me throughout the research process. I value and appreciate your contribution to my academic journey. Thank you so much Dr Beier and may God bless you.

Appreciation and thanks go to all the staff in the School of Architecture and Planning. We were all afraid of the pandemic, but you stood tall and guided us through one of the most trying times of our lives. Your bravery and support will always be cherished. Prof Marie Huchzermeyer, I fall short of words to describe what an inspiration you are to the many of us. Your support is unmatched and your dedication unparalleled. You are heaven-sent Prof Marie and thank you for your contribution and impact on my academic journey.

To my colleagues, the MUS (HHS) 2020 cohort, we met under difficult circumstances where the COVID-19 pandemic ravaged the world and disrupted our conventional learning process probably robbing us of memories that could have been. I will carry and cherish the fact that we weathered the pandemic and made it through the difficult times together. I wish you well in the next phases of your lives. Thank you, my people.

Special mention goes to the Wits TUB Scholarship for sponsoring my studies.

Blank page in honour of all those who lost their lives to the COVID-19 Pandemic…

May your souls rest in eternal peace…

CONTENTS

DECLARATION ii

ABSTRACT iii

DEDICATION iv

ACKNOWLEDGEMENTS v

LIST OF FIGURES ix

LIST OF ACRONYMS x

Chapter 1: Introduction 1

1.1 Introduction 2

1.2 Background 3

1.2.1 What we know – The Virus and Recommendations 4

1.2.2 Stjwetla Informal Settlement 5

1.3 Problem Statement 6

1.4 Rationale 7

1.5 Research Aim and Objectives 7

1.6 Research Questions 8

1.7 Research Design and Methodology 8

1.8 Overview of Chapters 10

Chapter 2: Literature Review 11

2.0 Introduction 12

2.1 Informal Settlements 12

2.2 Informal Settlement Vulnerabilities & the COVID-19 Pandemic 13

2.3 COVID-19 Responses and Informal Settlements 16

2.4 COVID-19 Responses and their Feasibility in Informal Settlements 17

2.5 Densities and the COVID-19 Pandemic 20

2.6 Resilience and the COVID-19 Pandemic 23

2.7 Conceptual Framework 24

2.8 Reflections: The Voice 25

2.9 Conclusion 26

Chapter 3: Research Methodology 27

3.1 Introduction: Qualitative research under lockdown regulations 28

3.2 Research Methodology 28

3.3 Research Process 30

3.3.1 Determining the research topic and proposal writing 30

3.3.2 Research Participants and data collection 31

3.3.3 Data Analysis 32

3.4 Qualitative research in a pandemic: My research experiences 32
3.5 Conclusion 34
Chapter 4: Context Chapter 35
4.1 Introduction to Stjwetla Informal Settlement 36
4.2 Stjwetla Informal Settlement Locality 36
4.3 COVID-19 and the Study Area 38
4.4 Conclusion 41
Chapter 5: Research Findings Discussion 42
5.0 Introduction 43
5.1 Collective Understanding from Meaning Making 43
5.2 Stjwetla Informal Settlement Vulnerability to COVID-19 transmission 44
5.2.1 Socio-economic Contexts 44
5.2.2 Infrastructure and Basic Services 46
5.3 Dealing with the Pandemic in Stjwetla 49
5.3.1 De-densification Strategy and Temporary Relocation Areas (TRAs) 50
5.3.2 Basic Infrastructure and Services Responses 56
5.3.3 Lockdown Enforcement in Stjwetla 57
5.3.4 Mass Testing and Screening 58
5.3.5 COVID-19 Relief – Food Parcels & Grants 59
5.4 Coping mechanism to the COVID-19 Regulations in Stjwetla 61
5.4.1 Coping with the Health Dimension of Covid-19 62
5.4.2 Coping with the Socio-Economic Dimension of Covid-19 62
5.5 Conclusion 67
Chapter 6: Recommendations & Conclusions 69
6.1 What needs to happen? 70
6.2 Discussion & Policy Implications 71
6.3 Recommendation 74
6.4 Conclusion 75
REFERENCES 76
APPENDIX 85

LIST OF FIGURES

Figure 1.1 Showing the locational Map of Alexandra Township where Stjwetla Informal Settlement

Figure 1.2 Diagram presentation of the research questions

Figure 2.1 Feasibility of COVID-19 Recommendations against Informal Settlement Conditions

Figure 2.2 The research conceptual framework (Author, 2020)

Figure 3.1: Research process under South African COVID-19 Pandemic Lockdown Alert Level restrictions

Figure 4.1: Stjwetla Informal Settlement location

Figure 4.2: Stjwetla informal settlement building structures and polluted Jukskei Riverbanks

Figure 4. 3 An artistic visual illustration of what a lockdown looks like in a typical township shack

Figure 5.1 the CSIR mapping of Stjwetla vulnerability to the pandemic

Figure 5.2: Stjwetla community basic services and infrastructure and uncollected waste at the entrance of the community

Figure 5.3 Risk-Adjusted Coronavirus Alert Levels introduced in South Africa as a response to the COVID-19 pandemic

Figure 5.4 Temporary Relocation Area in Marlboro to relocate Stjwetla Community residents in response to the COVID-19 pandemic

Figure 5.5 Proposed Stjwetla Relocation arial view in Marlboro

Figure 5.6 One of the four COVID-19 response water tanks in Stjwetla Community

LIST OF ACRONYMS

COJ	City of Johannesburg
COGTA	Co-operative Governance and Traditional Affairs
COVID-19	Coronavirus disease of 2019
CSIR	Council for Scientific and Industrial Research
DMA	Disaster Management Act
IDP	Integrated Development Plan
LUMS	Land Use Management System
NDHS	National Department of Human Settlements
NUA	New Urban Agenda
NGO	Non-Governmental Organisation
PPPs	Public-Private Partnerships
SANDF	South African National Defence Forces
SARS-CoV-2	Severe Acute Respiratory Syndrome Coronavirus 2
SDF	Spatial Development Framework
TRA	Temporary Relocation Area
TRU	Temporary Relocation Unit
SERI	Socio-Economic Rights Institute of South Africa
SPLUMA	Spatial Planning and Land Use Management Act
UN-Habitat	United Nations Human Settlement Programme
UDF	Urban Development Framework
USDG	Urban Settlements Development Grant
WHO	World Health Organisation

Chapter 1
Introduction

"The COVID-19 Pandemic will hit the world's most vulnerable people hardest including the 1 billion living in informal settlements and slums worldwide" UN-Habitat Executive Director and Under-Secretary-General, Maimunah Mohd Sharif



1.1 Introduction

The world is currently experiencing an unprecedented global public health crisis witnessed through the rapid spreading of the novel coronavirus (COVID-19) pandemic which has affected millions while tens of thousands of people have succumbed to it. The Coronavirus Disease 2019 (COVID-19) pandemic being experienced in South Africa and across the world is a result of the "Severe Acute Respiratory Syndrome Coronavirus 2" (SARS-CoV-2) which was first discovered in Wuhan (China) in December 2019 (Cascella et al., 2020) and declared a pandemic by the World Health Organization (WHO) on March 11, 2020 (WHO, 2020). Within a few months, the COVID-19 pandemic has shown that it is by far the most complex global public health crisis that humanity has faced. It has shown that sudden and structural societal change is necessary and possible to mitigate, adapt, and build resilience to the changing world and emerging threats. How world governments react to this humanitarian crisis is critical in protecting their people while stopping the spread of the pandemic and setting the environment for resilience and recovery. The pandemic demands the reordering and reconfiguration of how humans interact with each other on a spatial scale. Most significantly, in cities where 95% of all confirmed cases are located (UN-Habitat, 2020), the virus has exposed the complex linkages of inequality, density, vulnerability and has opened a new debate on resilience and adaptation. For the global South, challenges during the COVID-19 pandemic are exacerbated and complicated by the existence of informal communities, which typically lack formalised water and sanitation infrastructure and are densely populated. It has increased some of the challenges facing our cities.

Informal settlements in South Africa face a high risk of COVID-19 virus transmissions due to the already existing vulnerabilities in these communities. As noted by Khan (2018: 1), "most risk in African cities is not catastrophic. It's not even episodic, but it is every day" and the COVID-19 increases these daily risks. There are heightened fears of mass COVID-19 transmissions in informal settlements hence building resilience against the COVID-19 pandemic should be a priority. According to Satterthwaite et.al (2020), resilience-building strengthens informal settlement capacity to deal with existing and emerging threats. The COVID-19 response in informal settlements has an implication for the nation of South Africa because of the proportion of the South African population and densities accommodated in these areas. This research seeks to understand the dynamics of the COVID-19 pandemic on informal settlements and to examine the government

(national and local) response to the pandemic in South Africa. The need for disaster management planning and resilience measures for informal settlements cannot be understated or overemphasised.

1.2 Background

COVID-19 pandemic has had serious implications for people globally with more impacts having been recorded in cities (UN-Habitat, 2020). The nature of the pandemic is dependent on how humans interact with themselves and their environment. According to Gupte and Mitlin (2020), the built environment intensifies these interactions making epidemic mitigation and control a critical concern in city-making. Within cities of the south, there have been differentiated impacts based on spatial and socio-economic inequalities. This greatly entrenches vulnerabilities and perpetuates risk for informal settlement inhabitants and the urban poor. According to McFarlane (2020) the long-held notion that identifies two distinct cities within a geographical city based on spatial inequalities has again come under the spotlight during the COVID-19 pandemic crisis in South Africa. This questions the metaphysics of cities that separate informal settlements from the rest of the city (Ibid).

There are significant challenges that exacerbate the spread and control of COVID-19 in informal settlements. According to Kotas (2016), it is an accepted reality that vulnerability and risk to shocks in cities have a higher concentration in informal settlements. Brijlal and Gordon (2005), further alludes to the fact that, people living in South African informal settlements experience a double tragedy of poverty and exposure to poor health conditions which increase the incidence of health-related complications in these areas. The COVID-19 pandemic adds a more complex layer to informal settlement challenges. The pandemic demands that both government and vulnerable communities work together for the progressive realization of resilience mechanisms in the spirit of leaving no one behind. As the UN-Habitat guidelines suggest, state-informal settlement relations should be hinged on the progressive realisation of creating inclusive, resilient, and safe sustainable human settlements that foster preparedness, response, and recovery in dealing with disasters like the COVID-19 pandemic (UN-Habitat). Building informal settlement resilience in the face of the COVID-19 pandemic is difficult to achieve in a short space of time especially when the government doesn't have informal settlement disaster preparedness plans. Informal settlements residents may be the people critically affected by both the COVID-19 virus itself as well as the consequences of measures to reduce infections.

African governments have relatively swiftly responded to the COVID-19 pandemic with many having developed COVID-19 national response plans. However, certain underlying debates have emerged on how to effectively respond in vulnerable informal settlements. After placing the nation under strict lockdown, the government of South Africa through its National Department of Human Settlements (NDHS) proposed reblocking to achieve social distancing through a de-densification strategy in building resilience for informal settlements' (National Department of Human Settlements, 2020). According to Slum Dwellers International (SDI) (2012, unpaginated), "reblocking primarily involves a process of spatial reconfiguration of shacks in informal settlements to maximize open space." For Stjwetla informal settlements, the department is proposing the construction of 1600 Temporary Relocation Units (TRUs) and a Community Facilitation process has already commenced (Department of Human Settlements, 2020). Other response measures from the state include pro-active testing, increased provision of water through the supply of water tanks and increased regular cleaning of toilet facilities (Ibid). However, de-densification has been met by an outcry from relevant civic organizations who question the rationale for using the controversial de-densification strategy as a central response plan at scale (Daily Maverick, 2020, Isandla Institute, 2020). Undoubtedly, the state-community relationship is at a tipping point as some vulnerable community's struggle to adhere to lockdown measures as living conditions impede their compliance. Along with the top-down approaches lies the importance of bottom-up initiatives. According to Wilkinson (2020), previous disaster situations in informal settlements have shown that locally adapted initiatives and responses that consider local contextual complexities and diversity of these areas have proven to be effective. This explains why it is critical for bottom-up community-led initiatives to be integrated into the overall COVID-19 pandemic response strategy for informal settlements.

1.2.1 What we know – The Virus and Recommendations

As detailed elsewhere (McIntosh, 2020), the COVID-19 virus transmission is spread through direct contact with an infected person's droplets either through sneeze or cough (Corburn et al., 2020). It is believed that a person is most infectious when symptomatic although there is data that proves that transmission can occur when one is asymptomatic (Rothe et al., 2020). According to van Doremalen et al. (2020), the coronavirus is detectable for some time on aerosols, surfaces, and stool. In the absence of a vaccine, the focus to reduce virus transmission is to promote physical/social distancing between people, an improved hygiene regimen of vigorous hand washing using soap and clean water or hand sanitisers, avoiding touching one's face after coming in contact with potentially contaminated surfaces without washing one's hand first, self-isolation for those presenting

symptoms, and a 14-day self-quarantine after exposure to the virus. Also, the default function is to encourage people to stay at home and while non-essential workers should work from home. According to Corburn et al. (2020), these guidelines and recommendations are difficult to adhere to in the global north and as the pandemic spreads to the global south, the difficulties and complexities will become even greater especially with the existence of informal settlements which are susceptible to shocks. Informal settlements are believed to be susceptible to the COVID-19 pandemic infections due to pre-existing comorbidities, lack of adequate infrastructure and services, socio-economic vulnerabilities, and high densities/ overcrowding (UN-Habitat, 2020). Therefore, any COVID-19 responses that do not recognize informal settlement residents and their realities have the potential to further jeopardize their survival during the COVID-19 pandemic.

1.2.2 Stjwetla Informal Settlement

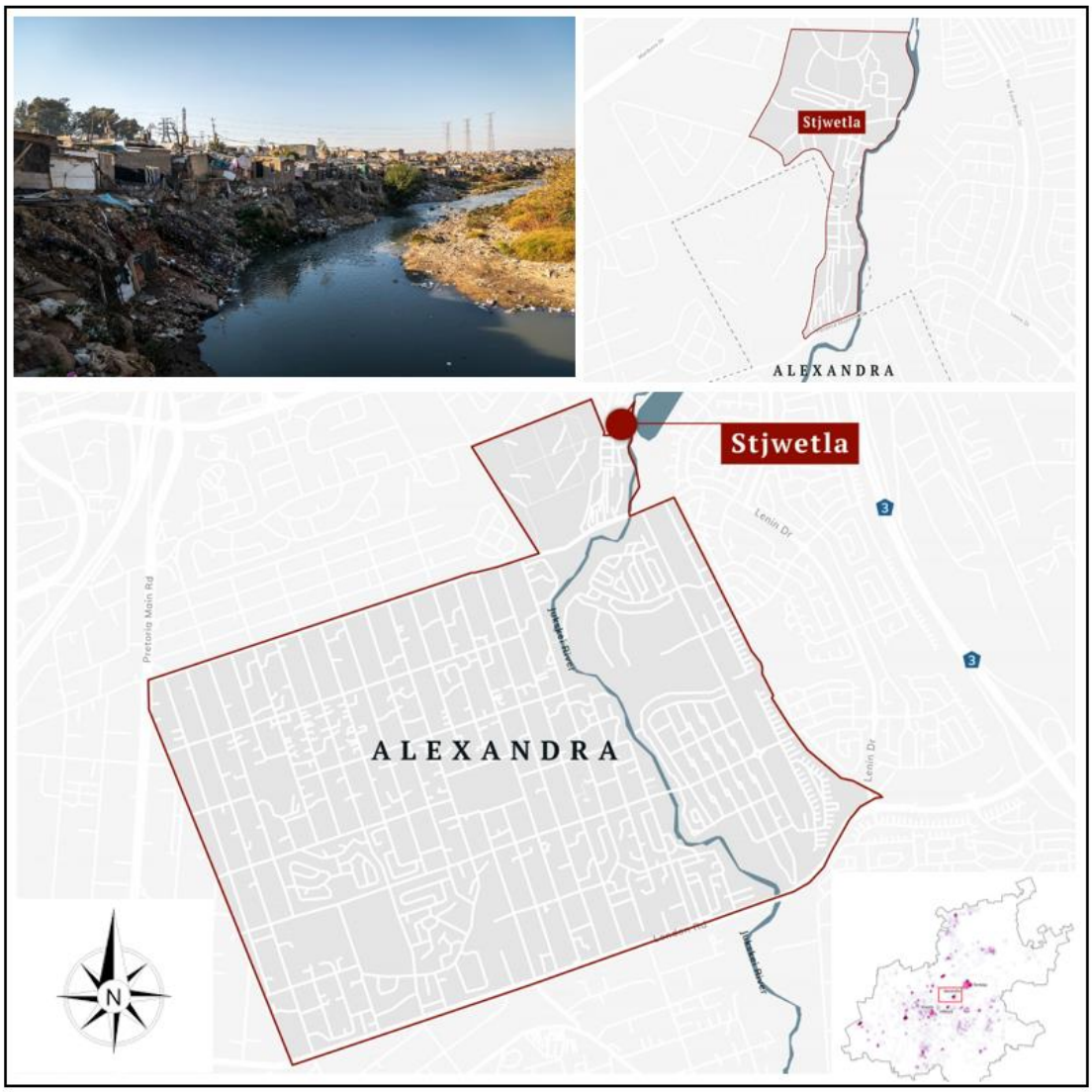

Figure 1.1 Showing the locational Map of Alexandra Township where Stjwetla Informal Settlement (Source: Morgan, 2019)

Located in Johannesburg in Alexandra Township along the Jukskei River (see figure 1.1), Stjwetla Informal Settlement lies at the heart of South African government COVID-19 disaster concern. Stjwetla informal settlement exemplifies a community manifesting deep-rooted spatial and structural vulnerability that characterise South African human settlements. Informal settlement residents by their vulnerable socio-economic status, have little to no access to adequate healthcare and support that may help in mitigating against the effects of the COVID-19 pandemic. There is an unsubstantiated belief among government officials and politicians across different national governments (for example in the USA, Brazil and South Africa) that intricately links vulnerability and densities to the risk and spread of the COVID-19 pandemic (Clark, 2020; Corburn et al., 2020; Olsen, 2020; Rosenthal, 2020). However, it is not the topological density that matters but the way people interact with each other and how they must live with limited living space, health care facilities, infrastructure and water and sanitation services (McFarlane, 2020). Stjwetla informal settlement is least prepared for COVID-19 since it is difficult for people to access water and sanitation infrastructure. Further, space constraints and over-crowding make self-quarantine and physical distancing impractical leaving inhabitants highly exposed and vulnerable. Many people also fear the police controlling compliance with lockdown regulation – especially after a man was killed in Alexandra (Sunday Independent, 2020). Any COVID-19 response needs to recognize these realities.

1.3 Problem Statement

The Sustainable Development Goal (SDG) 11 speaks to making "cities and human settlements inclusive, safe, resilient, and sustainable" (Sustainable Development Goals, 2015). The study on contemporary urban forms and sustainability within cities of the south is not complete without confronting the debate on informal settlements' vulnerability, disasters, and resilience. The potential impact of the pandemic is predicted to be in places where health systems are mismanaged, inadequate, unreliable, and under-resourced. The current global COVID-19 crisis has amplified the debate of informal settlement vulnerability and resilience. The COVID-19 pandemic is a major global public health problem that is significantly altering aspects of human existence and how we relate in space globally. Early in the pandemic, fears were that the situation in informal settlements could potentially paint a picture of a permanent disaster situation (Huchzermeyer, 2020). Largely, the problem of informal settlement vulnerability to disasters is not necessarily linked to density per se. It is intricately linked to the enormous proportional imbalance between basic quality service provisions (housing, infrastructure, and services) and the high population density in the area. According to McFarlane (2020), this imbalance is not naturally constructed but is a product

of active socio-economic and political choices, racial and spatial inequalities that amplify poverty rate and poor health. There is an unsubstantiated belief among government officials and politicians across different national governments (for example in the USA, Brazil and South Africa) that intricately links vulnerability and densities to the risk and spread of the COVID-19 pandemic (Clark, 2020; Corburn et al., 2020; Olsen, 2020; Rosenthal, 2020). At the same time, lockdown and social distancing measures in informal settlements are difficult and impossible to implement. There has been a legacy problem of seeing informal settlements as temporal and hence there has been little to no prioritization of investing in them.

1.4 Rationale

The research findings are critical in enhancing further research and understanding of the COVID-19 pandemic impacts and vulnerabilities of informal settlements in South Africa. The study hopes to respond to this by highlight the complexities in disaster preparedness for informal settlements. This could help the City of Johannesburg in its strategic planning process. Ultimately, the research seeks to contribute to the broader body of knowledge on urban vulnerability, adaptation, and resilience in the face of rapid urbanization and disasters.

1.5 Research Aim and Objectives

To critically explore the resilience of informal settlements in South Africa against the COVID-19 pandemic.

Research Objectives

- To examine Stjwetla informal Settlement vulnerability and resilience to the risk of COVID-19 pandemic.
- To critically assess the COVID-19 measures rationale and implementation in Stjwetla informal settlement.
- To examine the debates on the COVID-19 responses in South African informal settlements.
- To explore urban governance systems on disaster planning and management in a manner that facilitates a more pro-poor and inclusive approach and outcomes.

1.6 Research Questions

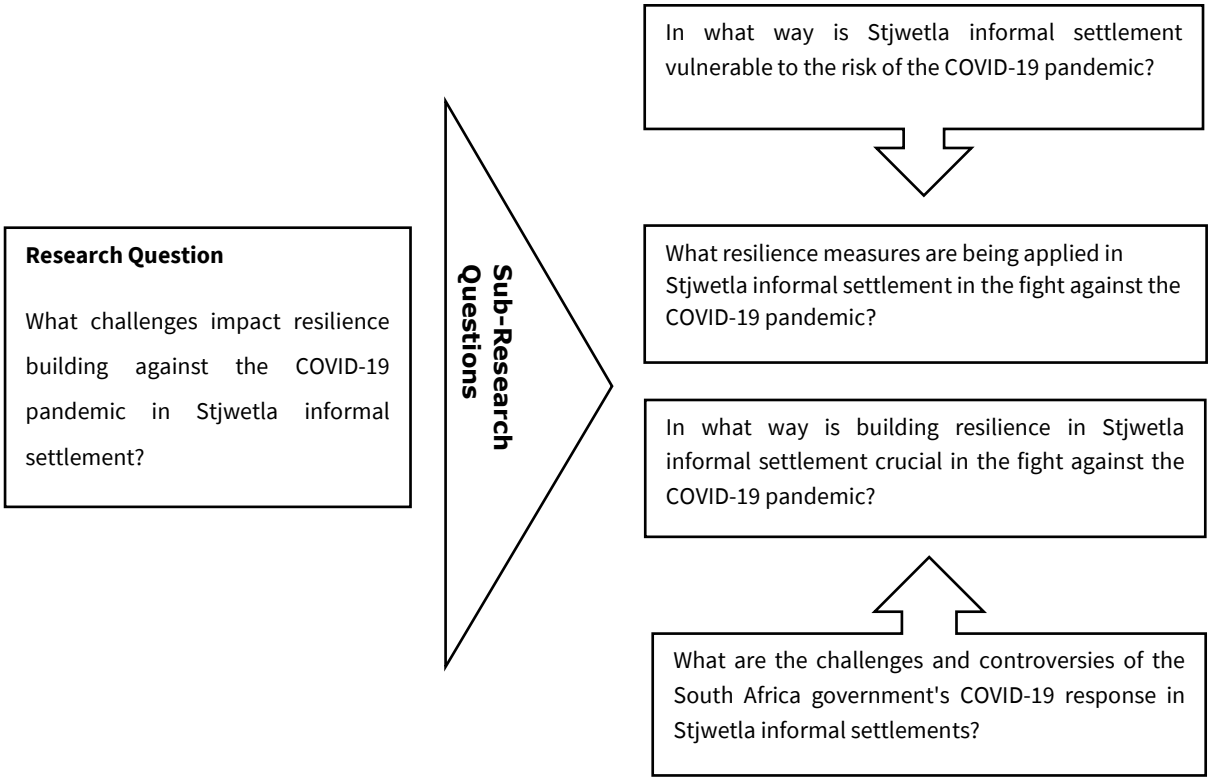

Figure 1.2 Diagram presentation of the research questions (Sonono, 2020).

1.7 Research Design and Methodology

The research employed a qualitative research design in understanding the vulnerabilities of Stjwetla informal settlement and the resilience measures to the COVID-19 pandemic. The research was carried out in strict adherence to the COVID-19 pandemic lockdown and social distancing measures. The research study made use of both primary and secondary data sources. The research participants were selected based on their knowledge and proximity to the phenomenon under study.

The study target population consists of a mix of key informants from Stjwetla Community Leaders, government officials, academia, journalists, and civil society experts. Government officials included members from the City of Johannesburg Metropolitan Municipality, Department of Housing and Human Settlements and Region E Department of Housing and Human Settlements. Academic experts included members of staff at the University of Witwatersrand, Faculty of Engineering and Built Environment- School of Architecture and Planning who are voices of academic authority and well-published on the subject matter. Civil society interest groups included participants from the Socio-Economic Rights Institute of South Africa (SERI) and Planact South Africa. The research

participants were selected sorely because of their knowledge, proximity, and expertise to the study matter.

The sample size for this research study consists of twelve (n=12) participants. Participant distribution includes four (4) participants from Stjwetla Community Leaders, government officials - one (1) participant from the City of Johannesburg Metropolitan Human Settlement Department and two (2) participants from Region E Human Settlement Department), two (2) participants from the academia (the University of Witwatersrand - School of Architecture and Planning), one (1) journalist, and form the civil society experts (one (1) participant form the Social Economic Rights Institute of South Africa (SERI) and one (1) participant form Planact). The saturation technique was used to determine the study sample size. Saturation is achieved when the addition of more participants does not alter the value of already gathered data (Glaser and Strauss, 1967).

The research employed a combination of purposive sampling and snowball sampling techniques in determining the research participants. According to Rubin & Babbie (2010), sampling is a method of choosing a sub-section group of the population to symbolize an entire population to obtain data of the phenomenon under study. For this study, the I used the purposeful sampling technique to select the research participants in a population group comprising of government officials, journalists, community leaders, civil society groups, and academic experts.

The research made use of both primary and secondary sources. To obtain primary data the research employed a mix of techniques comprising semi-structured interviews with open-ended questions which were conducted through online media platform (Microsoft Teams) and face to face (done under Alert Level 1 in strict adherence to social distancing protocols at the Stjwetla informal settlement community centre). Sources of secondary data included other media releases and articles, government documents and reports, print and video media - even social media platforms that cover the research topic. The research analysed both the primary and secondary sources of data employing the content analysis method by identifying themes and concepts in the data collected.

The research was conducted in strict adherence to the University of Witwatersrand's ethical considerations. The study observed all safety measures that prevented both the student and research participants from exposure and risk of contracting or spreading the COVID-19 virus during the research interviews. The research was submitted for an ethics review and obtained an ethics clearance and certificate. After obtaining the ethics certificate, I proceeded to apply for permission to conduct interviews and approached possible research participants. All interviews were subjected

to an application and approval process with respective participant organizations especially in the case of the University of Witwatersrand and the City of Johannesburg Metropolitan. The research respects participants' anonymity. The research findings and any views expressed in this research are solely for academic purposes. However, the report will be available on the world wide web through the Wits library and may therefore be read in the way that my broader aims are stated. Field research was conducted within a limited period (September 2020 – December 2020). The research was conducted in an environment where South Africa like the rest of the world is battling to contain the spread of the COVID-19 pandemic. This severely limited my ability to conduct conventional qualitative research and ability to travel for the purposes of conducting face to face interviews and community entry.

1.8 Overview of Chapters

Chapter 2 identifies and discusses the literature and concepts of the study. The literature examines informal settlement vulnerabilities to the COVID-19 pandemic, the applicability of response recommendations and what was done in tackling the pandemic. The literature also presents the debate on the linkages between density and the COVID-19 pandemic. The conceptual framework and organising concepts of vulnerability, informal settlements, and adaptive governance are defined.

Chapter 3 presents an extensive explanation of the qualitative methodology used for this study. It highlights the difficulties of undertaking a qualitative research design during the COVID-19 pandemic and the limitations encountered during the research process.

Chapter 4 presents the Stjwetla informal settlement study context. The chapter discusses Stjwetla informal settlement vulnerabilities and responses to the COVID-19 pandemic. Chapter 5 presents the research findings using the case study of Stjwetla informal settlement during the COVID-19 pandemic. Findings discussed include the socio-economic and basic services and infrastructure conditions confronting Stjwetla residents that made them vulnerable to the pandemic, the COVID-19 pandemic responses and their impacts on the community and the responses and debates arising from the COVID-19 measures in Stjwetla and other informal settlements in South Africa.

Chapter 6 presents the research conclusions and recommendations on what needs to be done to effectively tackle the COVID-19 pandemic and future pandemics in South African informal settlements.

Chapter 2

Literature Review:

The COVID-19 Pandemic and Informal Settlements

2.0 Introduction

There are considerable challenges affecting informal settlements in limiting the impact of the COVID-19 pandemic. Apart from widening existing socio-economic and spatial inequalities in cities, it has become clear that vulnerability to COVID-19 depends on several conditions. This chapter attempts to frame and unpack the scholarly context of the COVID-19 pandemic and informal settlements in South Africa. The chapter interrogates literature on the COVID-19 pandemic, the global recommendations, and their applicability to informal settlements in South Africa. This review aims to establish the existing knowledge on COVID-19 and informal settlements to identify gaps in literature. The key organizing concepts of this research – densities, vulnerability, resilience, and disaster governance – will also be discussed.

2.1 Informal Settlements

Rapid and unplanned urbanization is accompanied by complex social, economic, and environmental challenges for urban systems to cope with different population needs while adjusting to uncertain global changes (Morgan, 2019). Regardless of significant efforts, informal settlements have become a permanent reality in cities of the global South and have continuously grown because the formal city cannot absorb all the city residents. The growth of informal settlements in developing countries is strongly linked to a critical shortage of affordable housing to accommodate many poor and low-income families (UN Committee on Socio and Economic Rights, 2017). Informal settlements exhibit deep spatial and socio-economic inequalities that reflect their exclusion from urban land (Nyashanu et al. 2020).

Their inhabitants resort to creating their own self-help initiatives to realize their right to the city through informal means of establishing themselves creating a complex relationship between the state and the residents. According to Morgan (2019: 15), informal settlements are viewed as, “unplanned settlements on land which has not been surveyed or proclaimed as residential, consisting mainly of informal dwellings (shacks).” Informal communities exhibit one or several characteristics of the following: poor access or lack of basic services, inadequate infrastructure, inadequate dwellings, unsuitable environments, poor health and education facilities, uncontrolled population densities and lack or poor state (municipality) administration (Huchzermeyer and Karam, 2006). At the same time, while informal settlements lack the characteristics of what is considered formal, they also offer their residents a certain range of gains, aspirations, and benefits (Groenewald et al., 2013). Informal settlements are highly adaptive, responsive, and organized (Ibid). However, these areas are believed to be a high-risk breeding ground for mass COVID-19

transmissions (Stent, 2020). Informal settlement residents by their vulnerable socio-economic status, have little to no access to adequate healthcare and support that may help in mitigating against the effects of the COVID-19 pandemic. In informal settlements, problems of insecurity of tenure, poor shelter, overcrowding, lack of services and hazardous location all intersect to create particularly large and complex burdens of disease (Bernardo, 2020). Such is the case of Stjwetla Informal Settlement and other informal settlements in South Africa that are at the heart of government COVID-19 disaster concern.

2.2 Informal Settlement Vulnerabilities & the COVID-19 Pandemic

The global South challenges during the COVID-19 pandemic are further compounded with the existence of informal settlements which lack the basic formalized infrastructure and access to services necessary in the fight against the virus. According to Zerbo et al., (2020), informal settlements conditions increase the risk of disease transmission because of high densities or overcrowding, lack of access to adequate and secure housing, limited access to water and sanitation and waste management. Also, informal settlements have a vulnerable socio-economic status with limited access to healthcare facilities and structures that may help in mitigating the effects of the pandemic (Stent, 2020). These informal settlement conditions predate the pandemic and state unwillingness and deficiencies in responding to informal settlement challenges cumulatively combine increasing informal settlement residents' vulnerabilities to the pandemic (Ibid), thereby undermining their resilience. Consequently, informal settlement residents in the global south are structurally disadvantaged and the least prepared for a health crisis like the COVID-19 pandemic (Gil, 2021). While COVID-19 is a virus affecting the world, its impacts are uneven. The indirect and long-term effects of the pandemic in informal settlements are probably more pronounced and protracted requiring multi-sectoral and more complex responses.

The global South informal settlements are a consequence of an urbanization process that is rapid and yet poorly planned and managed. These communities in these settlements have insufficient infrastructure and services resulting from consistent state neglect and their residents remain disproportionately excluded, marginalized, and stigmatized. According to Lancet (2020), those considered vulnerable to the pandemic are disproportionally exposed to the risks and impacts of both the pandemic and measures of prevention, mitigation, and control and this can dynamically change. The spatial inequalities, legality contestations, physical disparities and socio-economic conditions that are typically present in the global south informal settlements are believed to disproportionally affect informal residents during the ongoing global public health crisis - the

COVID-19 pandemic. This makes informal settlements vulnerable and susceptible to risk from both the pandemic and response measures. These aspects make the operationalization of the pandemic's dictates like social distancing and washing of hands difficult, if not impossible. According to Gil and Undurraga (2020), the pandemic will not impact different social groups the same way and these authors suggests that the pandemic amplifies existing disadvantages along, ethnic, racial, socioeconomic and gender lines. Informal settlements constitute a large proportion of the urban fabric in the global South countries. Currently, approximately 1 billion people reside in urban informal settlements (Satterthwaite et al., 2020). Informal settlements are heterogeneous (Gilbert, 2008) and their emergence and persistence are responding to diverse political, social, and economic dynamics (Zhang, 2018). Informal settlements have contested legality, and they share some common characteristics where they host typically vulnerable population groups without the security of tenure, precarious housing conditions and lack of adequate access to basic services and infrastructure (UN-Habitat, 2016).

The unfolding COVID-19 pandemic and its geography within city regions have brought attention to the socio-economic cracks of current urbanization patterns (City Alliance, 2020). It is therefore essential to identify and develop our understanding of the COVID-19 pandemic and the complex interaction and the danger it poses to informal settlement inhabitants and variables that produce and shape poor urban communities' vulnerability to the pandemic. The primary principle of the New Urban Agenda of 'leaving no one behind' (Habitat III, 2016) has become critical and a matter of life and death in the age of the current global COVID-19 pandemic. Of note, those informal settlements which lack some form of formalisation seen in the significant lack of basic services and infrastructure sufficient to service the population densities of the community are faced with heightened risk to infectious diseases like the COVID-19 pandemic. While no place is immune to the COVID-19 pandemic, informal settlements present all the conditions for rapid spread: widespread poverty, poor access to water and sanitation, high population densities, and insufficient health infrastructure (Belle et.al, 2020). The past few months have shown us how the pandemic can quickly spread and overwhelm health systems and it would be worrying if severe outbreaks were to be experienced in such contexts.

There are direct links to the COVID-19 pandemic and informal settlement conditions which render them susceptible and at a heightened risk to the pandemic. Despite the numerous interventions to upgrade informal settlements many remain highly exposed to the incidence of infectious diseases like the COVID-19. According to Farha (2020), the fundamental challenges of overcrowding in informal settlements are still unresolved. Overcrowding often result in socio-economic and

infrastructure problems including an increase in informal housing development (shacks), poor health choices leading to an increase of diseases, unemployment, and crime to mention but a few. This also cripples the existing infrastructure capacity to sufficiently service the community's needs. Hara et al. (2020), assert that an unplanned increase in informal housing consequently leads to increased demand for sanitation, water, and other services, thereby overstretching the capacity of the existing infrastructure in the informal settlements.

Furthermore, informal settlements have poor health systems which make them vulnerable and susceptible to health shocks. The COVID-19 further entrenches their vulnerability given the severity of the disease. According to Wilkinson (2020), informal settlements have limited healthcare facilities and systems meaning many health issues are unresolved with a significant number of residents living with underlying chronic and untreated health conditions. The high incidence of HIV and TB in the South African population living in informal settlements means those affected are immunocompromised and the underlying comorbidities put them at a higher risk to the pandemic (Ibid). The major implication of this on informal settlement residents is that it suggests there may be substantial pockets of people who are highly vulnerable living in informal settlements without adequate support and access to healthcare.

Additionally, informal settlement residents are also economically and socially vulnerable. According to Turok and Borel-Saladin (2018), many informal settlements residents subsist on informal livelihoods which are precarious with low and irregular income. Many do not have savings and need to work daily to earn an income. Corburn et al. (2020) states that "the most vulnerable groups [are] particularly those living in informal habitats and depending on informal livelihoods in the global south." Informal settlement residents often have strong social capital and networks where they share resources. However, because of the COVID-19 crisis, the possibilities for such social collaboration and interaction are substantially reduced (Ibid).

According to the UN-Habitat (2020), the measures recommended in preventing the transmission of the COVID-19 virus, like community-wide lockdowns, social or physical distancing, hand washing, self-quarantine, and self-isolation are at most unfeasible to implement in these vulnerable communities. Informal settlements conditions are grossly inadequate as residents do not have on-site access to water or sanitation, these areas have high densities and are over-crowded, and inhabitants constantly face forced eviction threats (Farha, 2020). Additionally, misinformation about the COVID-19 pandemic may spread rapidly among informal settlements where there is often mistrust of government policies and messaging due to experience of public sector neglect and forced evictions (UN-Habitat, 2020).

The Ebola epidemic in West Africa and DRC provide an example of how mistrust negatively affect responses to an epidemic where communities mistrusted government responses slowing down the fight against Ebola (Belle et.al, 2020).

2.3 COVID-19 Responses and Informal Settlements

The COVID-19 pandemic in a way deepens the existing inequalities creating challenges in the mitigation and control of the pandemic. According to Corburn et al. (2020), the pandemic brings to the fore challenges in containment, mitigation, and control especially in the global south low-resourced settings where vulnerable groups residing in informal habitats demand attention. The question fundamentally becomes how to mitigate and build resilience against the COVID-19 pandemic in informal settlements. "Informal settlements are disproportionally at risk of becoming COVID-19 contamination vectors" (City Alliance, 2020). Plans to respond to the virus have been contentious and a cause of constant engagement between the government on the one side and communities and civil rights organizations on the other. There is uncertainty surrounding almost all the characteristics of the virus particularly challenges in defining and implementing appropriate and effective responses (Belle et.al, 2020). Different countries across the world have instituted a state of disaster accompanied by lockdown regulations that asked people to stay home with the assumption that staying home will protect people from contracting and spreading the virus. According to Farha (2020), housing has essentially been converted as the frontline defence in fighting against the COVID-9 pandemic and staying at home has become a matter of life and death. However, this is not the case for people living in informal settlements.

The implementation of COVID-19 pandemic response measures in South Africa tests and exposes the responsiveness of the country's physical planning and geography of cities especially within informal settlements (Mbambo and Agbola, 2020). Because the pandemic was originally concentrated in Asia, the US, and European countries, the global public health recommendations were strongly informed by the societal structures of higher-income countries (US, Singapore, Europe etc) and more authoritarian governments with extreme state surveillance (China, South Korea). The same recommendations are problematic in different contexts. As captured by DeGroot and Lemanski (2020: 256),

> "The global approaches are specifically informed by what is feasible in high-income countries. They overlook the huge differences in the global capacity of governments to respond, the physical and financial infrastructure that allows societies to react, and

inequalities in the ability of citizens to act in accordance with government responses and keep themselves safe during the COVID-19 outbreak."

The uneven impacts of COVID-19 and its possibility to intensify existing inequalities cannot be ignored. Amaral et al. (2020), gives an example of Brazil and warn against the uneven impacts of COVID-19 by calling for a change in the neoliberal agenda in preventing widespread negative non-health implications resulting from the pandemic. In the South African case, inequalities in accessing infrastructure and services demonstrate how the COVID-19 pandemic amplifies and aggravates such inequalities. Once the South African government detected the first case of the coronavirus, the government rapidly responded to the threat attempting to restrict it from spreading and "flatten the curve" by implementing the global public health measures as seen elsewhere. Two broad non-pharmaceutical COVID-19 pandemic interventions were implemented aimed to decrease the coronavirus community transmissions by reducing physical contact of people through mitigation and suppression. According to De Groot and Lemanski (2020), mitigation strategies aim to slow transmissions and not necessarily stop it. Suppression aims to reduce community transmissions reducing the average number of secondary transmissions to a minimum thus keeping total case numbers low (Ibid). The strategies have proven successful in limiting the spread of the disease in the global North, but for the global South, they bring different challenges especially in informal settlement environments. According to Stent (2020), informal settlement residents are the most likely population segment that may be hardest hit by both the Covid-19 virus and measures to fight the pandemic.

2.4 COVID-19 Responses and their Feasibility in Informal Settlements

The COVID-19 interventions amplify the need to engage with issues of social relations and inequality in our cities (Gupte and Mitlin, 2020). As stated earlier, informal settlements are poorly equipped lacking access to basic services and infrastructure, an absent or weak health system, high population mobility and poor hygiene facilities. The nature and quality of the urbanization process have the potential to increase COVID-19 transmissions in informal settlements leaving efforts to contain and respond to the pandemic more difficult (Maseland, 2019). It is critical to look at the proposed COVID-19 regulations as recommended by the World Health Organisation and their feasibility within informal settlements peculiarities (Figure 2.1).

The applicability of COVID-19 guidelines in the global south context with the existence of informal settlements creates a pressing point where most recommendations are difficult or impossible to implement. The ability of informal settlement residents to comply with the solidarity messages and

regulations is significantly differentiated and exposes inequalities that predate the public health crisis (Bhide, 2020). While the benefits of the measures like improved hygiene, social distancing, and the strict lockdown in curbing the pandemic cannot be contested, what is concerning is the simplistic nature of the regulations as blanket recommendations of what constitutes a lockdown assuming that everyone can adhere to the solidarity messaging. The guidelines are based on the existence of peculiar assumptions which are however significantly lacking in many informal settlements. According to De Groot and Lemanski (2020), the pandemic within South African informal settlements for example shows the disparities of the COVID-19 responses and the 'privilege of being able to comply.'

Recommendations	Assumptions	Informal Settlement Conditions
Hand Washing	Water Availability	Inadequate or shared water and sanitation facilities
Physical Distancing	Adequate Housing	Overcrowding
Staying at Home		Low and unstable income
COVID-19 Testing and Screening	Availability of health facilities	Absence or inadequate testing and screening
Self-isolation/ quarantine if tested positive	Access to healthcare facilities / Availability of private space	Limited access to health facilities

Figure 2.1 Feasibility of COVID-19 Recommendations against Informal Settlement Conditions (own work, 2020).

The WHO guidelines also advocate for social/physical distancing, staying at home or self-isolation strategies. While the benefits of the measures in curbing the pandemic cannot be contested, and the South African history of COVID-19 infections proved that at the beginning of the pandemic, the spread was successfully limited. As expressed by Lippi et al. (2020, unpaginated), "In fact, such measures may be said to be a 'necessary evil' in tackling the COVID-19 pandemic." However, mapping such responses in informal settlements can prove to be ineffective if conditions to sustain the informal settlement residents are not put in place. The South African Government instituted a widespread hard lockdown across the country, and this had adverse effects on informal settlement residents. One of the major faultiness created by the lockdown was the intensification of socio-economic vulnerability due to informal livelihoods. According to the International Labour Organisation (ILO) (2018), informal employment constitutes a significant proportion of African livelihoods. Morgan (2019), states that more people in the community rely on informal livelihoods

as sources of income and are susceptible to economic shocks. The informal nature of livelihoods for many informal settlement residents makes it unlikely for them to endure a hard lockdown as it will severely affect household income and food security (ILO, 2020). Also, these informal workers do not have any social protection of health insurance and social security (FAO, 2020). There is a need for policies that provide a safety net for this population group if staying at home and lockdown responses are to be effective.

In South Africa, the government through its COVID-19 pandemic socio-economic initiatives provided rescue packages for vulnerable households in the form of COVID-19 grants and food parcels distribution for food security (SA Gov 2020). However, it cannot be assumed that all informal settlement residents benefited from the initiatives. State assisted initiatives – grant system and food parcel distribution – have the potential to be exclusionary to migrants and non-qualifiers who then may be more vulnerable than others (Parker and Kadt, 2020). According to Gil and Undurraga (2021), while government targeted assistance initiatives have reached informal communities, it is not sufficient to counteract the magnitude and severity of the public health crisis impacts. Hence civil society organisations must augment government efforts to make sure no one is left behind.

Another assumption by the WHO guidelines is that residents have access to adequate housing, sufficient private space and access to basic infrastructure and services – sanitation and water facilities. However, this is not the case as services are lacking or very limited and, in most cases, facilities are communally shared which makes it difficult to practice physical distancing. How one realises physical distancing in a shack (with an average of 6 - 8 family members living in a single room); at the use of communal toilets and water, taps remain epitomes of how unfeasible these recommendations are for informal communities. Regular washing of hands with soap and water is one of the WHO recommendations (WHO, 2020). According to Cooper (2020), the guideline assumes that water is adequately available, and that people can spend on soap to wash hands. The applicability of the guideline in an informal settlement environment is weak because residents do not have adequate access to water (De Groot and Lemanski, 2020). Inadequate supply of sanitation and water make informal settlement residents vulnerable to infectious diseases (Marcio Cruz, 2015). While the South Africa government through its National Department of Human Settlements (NDHS), rolled out emergency basic services interventions by providing water tanks to informal settlements (NDHS, 2020), these are not sufficient. Asivikelane assumes that approximately 45% of informal settlement inhabitants were infected by the COVID-19 pandemic first wave between March – December 2020 because communities share toilets and water taps (Asivikelane, September 30,

2020). It should be noted that the percentage is an assumption due to the absence of COVID-19 mass testing campaigns in informal settlements. Asivikelane publishes bi-weekly data that is collected from informal settlements residents based on three questions about their access to clean toilets, water, and waste removal in metros including Johannesburg, Cape Town, Tshwane, Ekhurhuleni; and non-metro municipalities including Emfuleni, Msunduzi, Witenberg, Knysna, and Mossel Bay (ibid). However, this reveals that for informal settlement residents, where there is limited access to infrastructure and overcrowding are the norm, it is highly impractical to transform their daily lives in the required ways.

Although the COVID-19 threat is being universally discussed, there is a concern that the risks and impacts of the pandemic will be higher in informal settlements than elsewhere. To mitigate the impacts and build long term changes for informal settlements, there is a need to improve how we perceive, understand and address living and health conditions in informal settlements (De Groot and Lemanski, 2020). It has been argued that for many informal settlement residents, crisis defines their lived realities and change is overdue (Ibid).

2.5 Densities and the COVID-19 Pandemic

The ongoing COVID-19 pandemic brings to the fore the discussion on the relationship between COVID-19 transmission and density. According to Hamidi et al., (2020), the impact of density on emerging highly contagious infectious diseases has rarely been studied. The COVID-19 pandemic therefore provides an opportunity to investigate the impact of density on the COVID-19 transmission. While the COVID-19 pandemic might be understood from various perspectives, according to Wong and Li (2020: 1), "one may perceive the pandemic as a spatiotemporal process operated at multiple geographical scales with humans as the vectors spreading the disease." During the pandemic, terms like densities and social distancing have been synonymous with the COVID-19 pandemic outbreak (Hamidi et al., 2020). Although physical distancing is being argued as one of the effective ways of combating the spread of the pandemic before vaccines are found, how much people can be spatially separated within objective environmental factors like population density and people's behavioural constraints become the big question. The COVID-19 is regarded as one of the deadliest global public health crises after the 1918 Spanish influenza crisis. There is a current dialogue that links population densities and COVID-19 transmission (Olsen, 2020; Rosenthal, 2020). National governments like the South African Government are championing the eradication of densities through the de-densification strategy as part of its broader COVID-19 response

programmes for informal settlements (National Department of Human Settlements, 2020). There is a need to understand the dynamics of the COVID-19 infections and densities in different contexts.

According to Zandiatashbar et al. (2019), there is an empirical link between compact developments, densities, and higher economic productivity. However, the same link of density and the spread of infectious diseases like the COVID-19 is not clear in medium- to high-density housing (Olsen, 2020; Rosenthal, 2020) and in informal settlements (McFarlane, 2020). The relationship between exposure to the coronavirus and density is not a straight line as dense areas are more likely to have policies in place that promote public awareness or social distancing that reduce infection rates (Hamidi, 2020). Also, it is likely that within denser environments it is easier that people may stay connected while there are 'sheltering in place' (Ibid). Population density is defined as the "average number of people living within a square km." (Pettinger, 2017). High population density suggests that there is a high population relative to the area size. In theory, densely populated areas lead to the increased close social interaction of residents within an area making them potential hotspots for rapid spreading of pandemics (Glaeser, 2011; Hamidi et al., 2020). However, looking at past diseases like the H1N1 and the 1918 influenza pandemics, the evidence that supports this theory offers mixed findings (Hamidi et al., 2020). According to Kao et al. (2012), the 2009 H1N1 pandemic persisted relatively longer in Taiwan which has a higher population density. Garrett (2010), states that there was a significant and relationship between the 1918 influenza pandemic mortality rate and the population density at the state-level in the United States. On the other hand, Nishiura and Chowell (2008) and Chowell et al. (2008), present an opposite perspective that there is no substantial relationship between the degree of transmissibility, population density, and mortality in 1918 influenza pandemic in Japan and the United Kingdom, respectively. Parmet and Rothstein (2018), even went on to state that during the 1918 pandemic the rates show that the rural/low-density areas were hardest hit by the pandemic than the cities.

A possible explanation for the conflicting dynamics is that the spreading of a pandemic is highly complex. Several variables like socioeconomic disparities (Quinn & Kumar, 2014), demographic characteristics (Valeri et al., 2016) and connectivity like tourism (Alirol et al., 2011) can potentially explain the increase in transmission of contagious diseases. According to Quinn & Kumar (2014), social inequities and sociodemographic characteristics can potentially contribute to the rapid spread of infectious diseases and can also prevent people from accessing healthcare consequently leading to higher mortality rates. Kumar et al. (2020) reiterate that for the H1N1 pandemic, minority groups and low-income groups had higher exposure to the virus and yet limited access to health

care and resources pointing to the disparities within and between communities. Turning to the COVID-19 pandemic, in a study which analysed the USA COVID-19 cases by the 'Johns Hopkins Bloomberg School of Public Health, London School of economics, and IZA—Institute of Labour Economics,' they concluded that there is no linkage between the COVID-19 transmission and population density (Hamidi et al., 2020). In their analysis of how density impacts COVID-19 transmission and mortality rate in over 900 U.S. counties, the study looked at confounding factors like resident's socioeconomic status, quality of health care, metropolitan size, and social distancing adoption (Ibid). Also looking at India, Bhadra et al. (2020), states that there is a moderate linkage between density and COVID-19 transmission rates.

In the South African context density within informal settlements alone is not the problem. The problem is the existence of high population densities without adequate services. According to McFarlane (2020), the problem of informal settlement vulnerability to disasters is not naturally with the high-density population per se. it is not the topological density that matters but the way people interact with each other and how they must live with limited living space, health care facilities, infrastructure and water and sanitation services (ibid). Gupte and Mitlin (2020), emphasize that one of the consequences of the failure to contextualise COVID-19 responses lies in the concern that focuses on density without giving attention to the deficits in infrastructure. Context is everything and "The crude aggregation of population density and impact pays insufficient attention to the circumstances under which risk and vulnerability occur" (Gupte and Mitlin (2020: 9). It is intricately linked to the enormous proportional imbalance between basic quality service provisions (housing, infrastructure, and services) from state neglect and the high population density (overcrowding) in the area. This imbalance is not naturally constructed but is a product of active socio-economic and political choices, racial and spatial inequalities that amplify poverty rates and poor health. Enforcing lockdown and social distancing measures in informal settlements is difficult and impossible. According to Katz et al. (2020), even though social distancing measures may slow down the transmission, quick and efficient government action to institute a comprehensive response plan like lockdowns, mass testing, quarantine and hospitalisation facilities are critical before the pandemic transmission rates get out of hand. Ultimately, no place is immune from the COVID-19 pandemic. Along with widespread and robust intervention strategies like social distancing, people need to be reminded what they should avoid and why to limit the number of COVID-19 transmissions and deaths.

2.6 Resilience and the COVID-19 Pandemic

Resilience building for informal settlements in cities of the south raises a lot of debate as efforts are either non-existent or inadequate to match the magnitude and complexities of the physical environment, socio-economic and spatial vulnerabilities of informal settlement. The COVID-19 pandemic is a rapidly changing and unfolding situation. According to Usamaha (2014), cities have become “crucibles of hazards” exposing inhabitants to multiple risks and vulnerabilities. The COVID-19 pandemic has greatly altered and exposed multiple existential spatial inequalities and vulnerabilities within cities. There is a need to confront the resilience discourse for informal settlements in the context of the COVID-19 pandemic and locate the vulnerability, density, and inequality debate that characterise South African cities. Urban resilience is not just merely the other side of the coin to vulnerability (Chelleri et.al, 2015). Resilience contends with sustainability in contemporary urban research and policy studies as a major organizing principle, but the challenge is that both are fuzzily defined and difficult to measure (Meerow et.al, 2016). There is a general resilience renaissance debate and how to achieve it in combating the COVID-19 pandemic. According to Chelleri et.al (2015), resilience should be achieved in the broader context of sustainable development and not just as a localized temporal proofing concept. However, there is a need to guide against the advocating of new possibilities that significantly alter the wheel, as more extensive research to understand the impacts of the COVID-19 pandemic on the spatial and socio-economic environment of cities is ongoing.

For this research, urban resilience in the context of informal settlements means: “the ability of an urban system and all its constituent socio-technical networks across temporal and spatial scales to maintain or rapidly return to desired functions in the face of a disturbance, to adapt to change and to quickly transform systems that limit current or future adaptive capacity” (Meerow and Stults, 2016: 39). In this definition, urban resilience is dynamic and offers multiple pathways to resilience (for instance persistence, transition, and transformation). It recognizes the importance of temporal scale and advocates general adaptability (Ibid). Conceptually, urban systems are complex and adaptive extending through multiple spatial scales. Resilience is overtly regarded as necessary and, therefore, must be negotiated among those who empirically enact it. However, resilience planning and urban development have been shown to exclude urban informal settlements communities. Informal settlements should be the primary focus for resilience measures as they signify a substantial portion of the urban population confronted with distinctive vulnerabilities shaped by resource-based and geographic disparities (Kotas, 2016). Densities and the growth of informal settlements pose significant challenges and complexities for cities to achieving inclusive resilience

(Nordgen, 2016). The adaptive capacity of communities and individuals affects the resilience capacity of a city (Chelleri, 2015). For informal settlements, where disaster risk exposure is high and government-assisted adaptation measures are little or non-existent, bottom-up resilience measures are critical (Ibid). Specifically of interest to this study is how resilience building in cities enhances adaptation, liveability, and quality of life for urban dwellers against any complex risks of existing and emerging disasters and threats.

2.7 Conceptual Framework

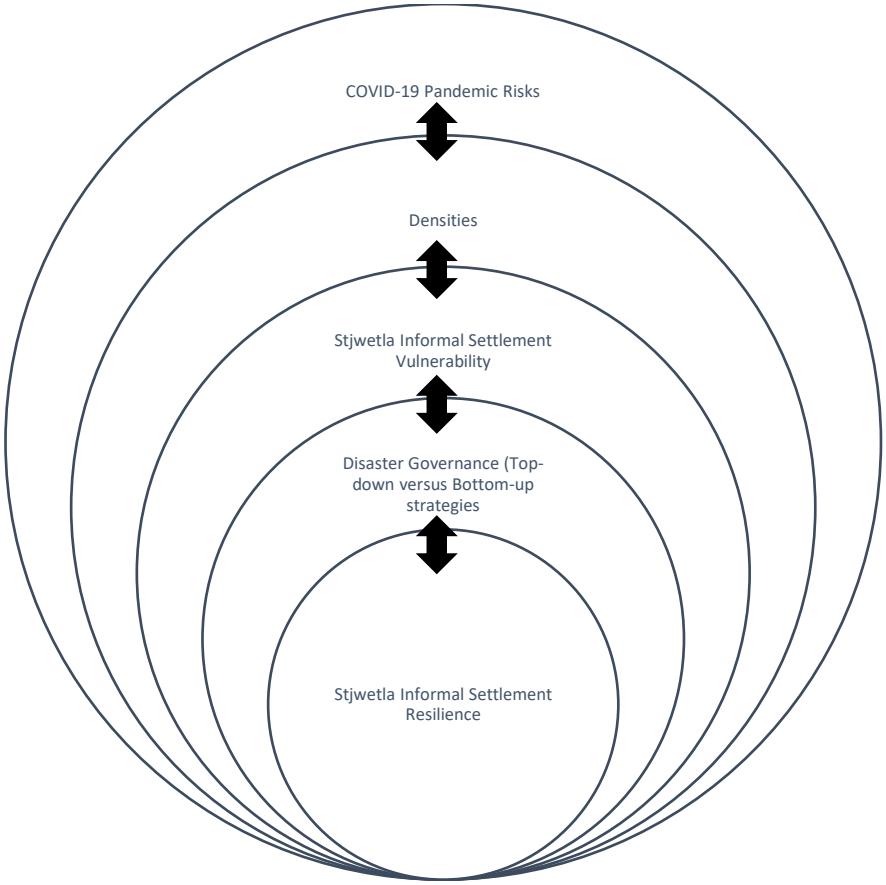

Figure 2.2 The research conceptual framework (Author, 2020)

The study adopts a conceptual framework that identifies the potential impacts of the COVID-19 pandemic on informal settlements (Figure 2.2). Informal settlements are overly susceptible to the socio-economic and health risk posed by the pandemic. Any strategies that seek to respond to the threat of the COVID-19 pandemic in these environments ought to identify the peculiar nature of informal settlements that make them susceptible and vulnerable to the pandemic. Responses need to be context adapted to address these underlying vulnerabilities while building resilience against the pandemic. Adaptive disaster governance is, therefore, a critical tool as it identifies the

participation of informal settlement resident in efforts to build informal settlement resilience against the pandemic.

The organizing concepts for this research study linking the COVID-19 pandemic risk to informal settlements are vulnerability, densities, adaptive disaster governance, and resilience. Although different in emphasis and shared practice, vulnerability and resilience relate to social systems, physical assets, and people that exist within them. This study seeks to investigate the concepts of informal settlement vulnerability and resilience in the age of the COVID-19 pandemic. While there is little academic literature that explores the link of COVID-19 pandemic to informal settlement vulnerability and resilience, there is, however, ample research that explores the dynamic variables of disasters and vulnerable settlements (Godschalk, 2003; Klein et.al, 2004).

2.8 Reflections: The Voice

The COVID-19 pandemic creates a complex layer to public health that has the potential to alter how we spatially relate within cities. The global public health crisis elevates cities and their geography to the summit of discussion. The crisis brings to the fore fundamental questions of population densities within cities and public health concerns - outbreak and spread of diseases. As cities are predicted to continuously grow, this question of whether over-crowding and public health will be the problems in the cities of the future. The pandemic further exposes the striking inequalities that exist in South Africa questioning the social justice and spatial transformation agenda. Although informal settlements are created by people to gain access and right to the city through informal self –help initiatives, certain spatial and structural vulnerabilities make these communities a cause of concern in the age of the COVID-19 pandemic. The right to the city is a right that advocates for no exclusion of urban society from qualities and benefits of urban life (Isensee, 2013). According to Huchzermeyer (2014: 70), "… 'right to the city' as a superior form of rights: right to freedom, to individualization in socialization, to habitat and to inhabit." The 'right to the city can be seen through the concepts of habitat and inhabiting, and the importance of the lived experience and space (ibid). It is a right that allows all inhabitants to inhabit and enjoy inclusive, just, safe, and sustainable cities. Certain fundamentals like adequate housing and water and sanitation facilities have become an essential and a matter of life or death and these are largely absent in these environments. To this end, more concerted efforts should prioritize their regularization and upgrading. Again, the COVID-19 pandemic has highlighted the intricate relationship between the state and these vulnerable communities. Effective disaster management in vulnerable communities should be inclusive and participatory. This enhances disaster governance structures by

incorporating local communities lived experiences as part of the response measures, unlike imposed top-down strategies. The COVID-19 pandemic serves as a call for the state to re-think how it engages with informal settlements inhabitants. It is essential to note that public health, equity, and governance are interlinked and that effective urban governance and most importantly disaster governance cannot be achieved in the absence of collaboration and engagement with real governance actors and residents. The COVID-19 pandemic presents South Africa and the rest of the world with a complex public health challenge that needs unity of purpose from both the state and the citizenry in fighting, mitigating, and controlling it.

2.9 Conclusion

The chapter placed this study within its scholarly context. The chapter clarified the socio-economic and health conditions that potentially make informal settlement vulnerable to the COVID-19 pandemic. Furthermore, the literature on the feasibility of COVID-19 pandemic responses in informal settlements was presented. Drawing on the early literature on the COVID-19 pandemic, the literature points to the need for locally adapted global COVID-19 pandemic responses to best address informal settlement conditions and to support local action. The organizing concepts for this research study linking the COVID-19 pandemic risk to informal settlements - vulnerability, densities, adaptive disaster governance, and resilience – were discussed and framed to the conceptual framework.

Chapter 3

Research Methodology:

Academic Research in the age of the COVID-19 pandemic - From level 5 to level 1 and the second wave

3.1 Introduction: Qualitative research under lockdown regulations

The research design and methodology are key research study components. According to Bryman and Bell (2007), a methodology allows a researcher to produce and analyse data to obtain a logical conclusion that refutes or substantiate assumptions or theories informing the study. However, carrying out academic research in the 2020 academic year presented students with different, unique, and complex challenges because of the ongoing global COVID-19 public health crisis. South Africa like the rest of the world is affected and is trying to contain the COVID-19 pandemic transmissions. This resulted in the country being placed under strict lockdown regulations Alert level 5 (26 March 2020) which transitioned to Alert level 1 (21 September 2020) and the announcement of the second wave on 10 December 2020. Despite this uncertainty, students were required to carry out a research project in strict observation of regulations under the different alert levels. Therefore, this academic research report was carried out under the COVID-19 global pandemic lockdown regulations and alert level transitions (Alert level 5 to Alert level 1) in South Africa. This chapter outline the research design and methodology and my experiences in conducting a qualitative research study in a COVID-19 pandemic context under a lockdown environment.

The pandemic has created a complex situation where qualitative research is faced with sudden challenges and difficulties in community entry and engagement, informed consent processes and limited or no use of face-to-face interviews due to lockdown restrictions. According to Greeff (2020), the adoption of digital-based platforms like Zoom, Microsoft Teams or Skype brings with it additional challenges. These challenges include different ways of embodying, delays in communication due to internet connectivity and reduced non-verbal signalling presenting qualitative researchers with a unique set of challenges as they often rely on observing facial expressions to gather nonverbal cues during the face-to-face interview (Ibid). The richness of a qualitative research design obtained through conducting in-depth face-to-face interviews, participant observations and in-person focus groups are thus severely challenged by the pandemic and restrictive measures instituted to contain the spread of the pandemic. These were but just some of the complications that I had to navigate and overcome in conducting this research study.

3.2 Research Methodology

To address this study research questions, an exploratory qualitative research design was chosen. The research design seeks to explore the study topic under investigation to understand it better rather than to offer conclusive and final solutions to the existing challenges under consideration (Gorynia et al., 2007). A qualitative research design allows for an in-depth and exploratory research

process to understand how the study participants perceive the COVID-19 pandemic, its associated impacts, and in consequence, ways on how to address the challenges. The results of qualitative methods results are more descriptive and are easier to draw interpretations (Anderson, 2010; Rahman, 2020). Furthermore, exploratory qualitative research is useful to understand the outline of current issues from a new standpoint and can inform future intervention (Lockett et al., 2011). Hence, to identify and explain the challenges that impact resilience building against the COVID-19 pandemic in South African informal settlements, this research examines the state's implementation of the COVID-19 pandemic response strategies. This is done against the normative benchmarks set out by the World Health Organisation (WHO) and how the South African government through its implementation departments translates the Disaster Management Act which is the guiding document enacted by the parliament to protect the people within South African borders during the pandemic. The research process adopted for this study is informed by Soy (1997), six-step research process which outlines steps taken throughout the research process (Figure 3.1).

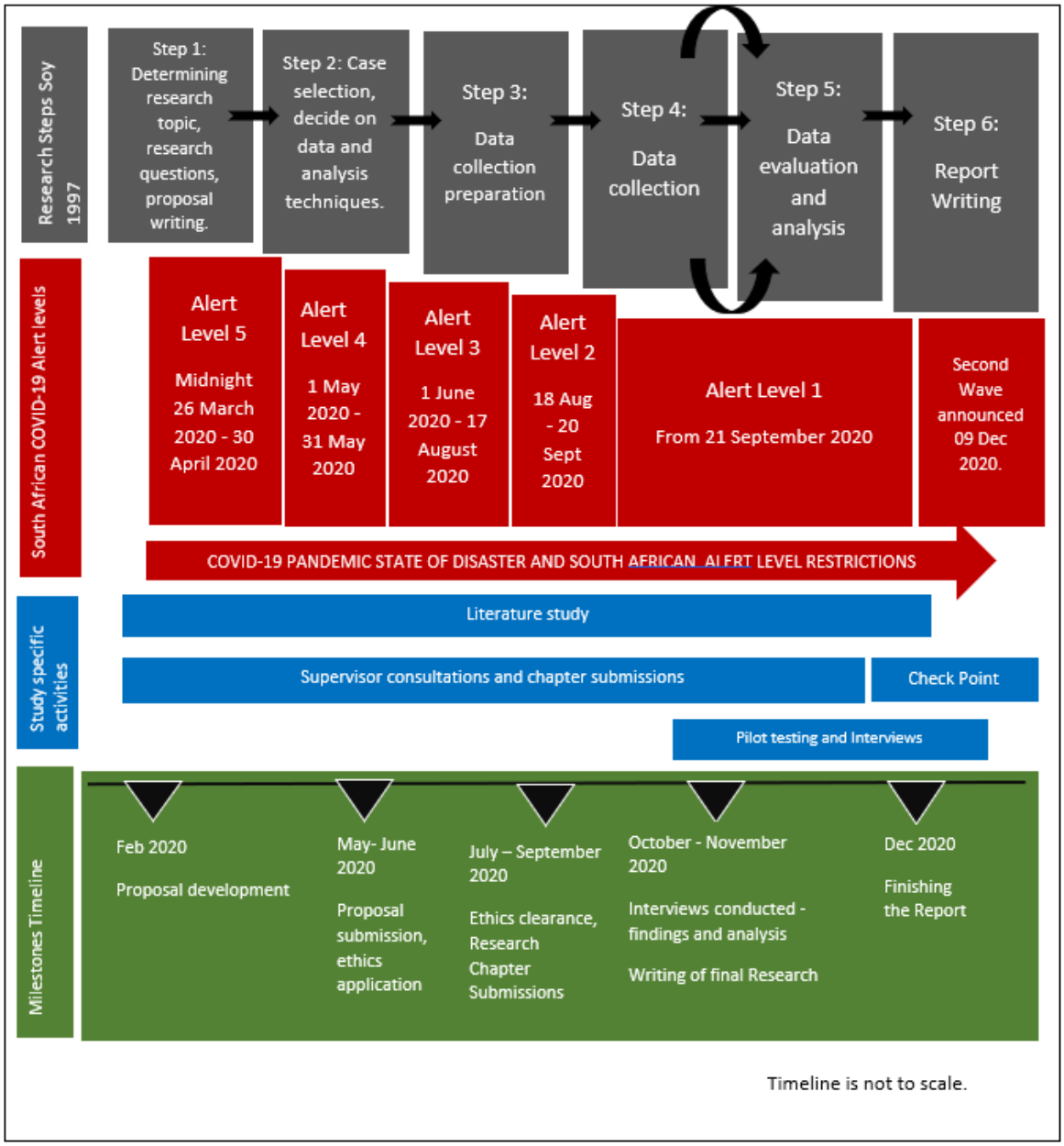

Figure 3.1: Research process under South African COVID-19 Pandemic Lockdown Alert Level restrictions (authors work, based on Soy, 1997)

3.3 Research Process

3.3.1 Determining the research topic and proposal writing

The incidence of disasters in cities of the south greatly affects informal settlements due to vulnerable housing and access to basic services deprivation that characterise these areas (Simiyu et al., 2019; San Lau et al., 2020). During the early stages of the pandemic, it was predicted that the COVID-19 virus was going to affect and impact informal settlement residents the most as their health and social needs are often invisible (Wilkinson, 2020). I took a keen interest in researching

the challenges of COVID-19 responses in one informal settlement in Johannesburg, namely Stjwetla. This resulted in the student developing a research topic, drafting an academic research proposal that was submitted and approved. An ethics clearance was also obtained for this study.

3.3.2 Research Participants and data collection

The research used both primary and secondary data sources. Primary data was collected through semi-structured interviews conducted through online media platforms (Microsoft Teams) and face to face interviews done under Alert Level 1 in strict adherence to physical distancing protocols at the Stjwetla informal settlement community centre. Secondary data sources included media release statements from both government and civil society groups, newspaper articles, government documents and reports, print and video media - even social media platforms that cover the research topic. Research participants for this study were selected based on their knowledge and proximity to the phenomenon under study and I had prior knowledge of how to locate and contact the participants. The research employed a combination of purposeful sampling and snowball sampling technique in determining the research participants. The research participants were chosen based on their knowledge of the phenomenon under investigation. I also has prior knowledge of who I wanted to interview for the study. Snowball sampling was employed based on recommendations of the initial study participants who helped identify other participants who could be helpful for the study. In the end, the study participants were selected because I was satisfied that they could provide the best information for the study based on their knowledge and proximity to the study. A sample size of twelve (n=12) participants were interviewed during alert level 3 and 1 through online platforms (during level 3) and face to face (during level 1). The saturation technique was used to determine data satisfaction. Saturation is achieved when the addition of more there is no new data or themes that can alter already gathered data indicating that adequate data for a detailed analysis has been collected (Guest et al., 2006). The participant distribution includes four (4) participants from Stjwetla Community Leaders, government officials - one (1) participant from the City of Johannesburg Metropolitan Human Settlement Department and two (2) participants from Region E Human Settlement Department), two participants from the academia (the University of Witwatersrand - School of Architecture and Planning), one (1) journalist, and from the civil society - (one (1) participant form the Social Economic Rights Institute of South Africa (SERI) and one (1) participant form Planact). Having finalised determining the data collection techniques, identified participants and obtained an ethical certificate, applications to research with government departments and higher education institutions were done. I established communication with

potential participants and finalised the interview schedule and prepared for the interviews. The data collection phase was conducted from September - November 2020.

3.3.3 Data Analysis

Interviews were recorded and transcribed for analysis. Data collected for this study were analysed using thematic content analysis. “Arising from the grounded theory, thematic content analysis involves the analysis of transcripts, identification of themes within data and gathering examples of themes from field notes” (Burnard et al., 2008:5). According to Neuman (2003), thematic content analysis is a technique applied to examine written down data to draw connections and concepts to establish the essence of the data. Data analysis was conducted both during the course of the interview process and after. According to Baxter et al (2008), in qualitative research data collection and data analysis is done concurrently in an iterative process of conducting interviews while further conducting an in-depth literature review substantiating the research findings.

A thematic approach underpinned by the four stages of data analysis in the interpretive phenomenological analysis was utilised (Callary et al., 2015). As postulated by Callary et al. (2015), data was manually analysed using six stages of interpretive phenomenological analysis – raw data familiarisation, identifying themes, indexing, charting and mapping and interpretation. After finishing transcribing and organising the data, I proceeded to read the transcripts to familiarise with the content while taking notes and flagging key themes and cross-referencing against the study objectives leading to analytical interpretation and explanation of the data. I focused at understanding the participants views about the study. The study derives from a wider social connotation in the discussion and analysis of generated data for this study. That is, it enabled me to discuss issues beyond the specific Stjwetla Informal settlement case study. The last step was in synthesising the literature, findings, analysis, recommendations and conclusions of the research report.

3.4 Qualitative research in a pandemic: My research experiences

The 2020 academic year was unprecedented, challenging, and complex due to the ongoing global public health crisis – the COVID-19 pandemic. The pandemic and subsequent lockdown regulations had a bearing on this study. The restrictions on movement created a vastly changing landscape and I had to find new ways of embodying the qualitative research design to meet deadlines and outcomes. Applying the research methodology had its challenges and frustrations which challenged both my personal and academic determination in conducting the research study. Most

of the research was conducted under Alert level 3 and 2 and I relied mainly on desktop research and online platforms like Microsoft Teams to conduct interviews. Whether the incidence of the global public health crisis like the COVID-19 pandemic accelerates the Fourth Industrial Revolution (4IR) (Khagram and Davis, 2020) in shaping cities of the future through the fusion of the physical and digital worlds remains to be seen. For this research, digitalisation meant that I was able to conduct most of my interviews through the Microsoft Teams digital platform and most importantly keeping safe from being exposed to the pandemic. However, this came with its own unique set of problems that highlighted cracks within the digital infrastructure that needs significant improvements for example network connectivity and speeds, availability of electricity and data tariffs. The greatest frustration resulted from planning and coordinating with different research participants especially in creating and agreeing to a schedule of interview dates and time. In some instances, I got late email responses which affected my interview phase timelines. In two of the interviews conducted with academic and civil society experts, we had to reschedule the interview due to bad internet connectivity. To add on, not only did the bureaucratic processes prove difficult to navigate but also the alert levels restricted my physical movement and ability to make a physical follow up to my applications. I had to rely on making follow up phone calls which proved expensive and sending follow up emails which sometimes took longer than anticipated to get responses. This in my perspective highlighted a struggle in different institutional systems to fully adapt to the new reality of the digital world while maintaining institutional efficiencies.

I encountered delays in conducting interviews with community leaders because of lack of access to either a computer, smartphone gadget and data highlight inequalities between different sections of society. Interviews with the leaders were postponed until such a time when the alert levels allowed the student to visit the community thereby significantly delaying me in concluding the data collection phase. I remember when I initiated communication with the community leaders and asked if we could have the interviews on the digital Microsoft Teams platform. He hinted to the fact that I should remember that people within the community that might want to interview might not have the privilege of owning a gadget like a smartphone or a laptop and data unless these are provided to them. I later visited the community during Alert level 1 to conduct the interviews with the community leaders who also volunteered to show me around the community to see their lived realities.

3.5 Conclusion

The chapter presents the research design and methodology for this study. The study adopted an exploratory qualitative research design. The research adopted Soy (1997) six-step research process. The pandemic created a complex situation where qualitative research was faced with challenges and difficulties due to lockdown restrictions. I used primary and secondary data sources for this study. Primary data was collected through semi-structured interviews which were conducted through a mixture of online media platforms (Microsoft Teams) and face to face interviews which were done under Alert Level 1 in strict adherence to physical distancing protocols in Stjwetla. Furthermore, the chapter presents the research participant selection process and sampling techniques. A thematic anlysis approach was used to analyse data collected for this study. The chapter concludes with an account of my research experiences which I encountered during the course of conducting this research.

Chapter 4

Context Chapter:

Stjwetla Informal Settlement

4.1 Introduction to Stjwetla Informal Settlement

This chapter presents the case study - Stjwetla informal settlement. To contextualise the study area, the chapter primarily focuses on presenting Stjwetla informal settlement background, its locality, and the socio-economic conditions that make the community vulnerable and at risk to the COVID-19 pandemic. There are many informal settlements in South Africa showing the deep socio-economic inequalities of entrenched apartheid planning that excluded the rights of the poor to urban land. Stjwetla informal settlement was selected based on its proximity to the study. Stjwetla was selected as one the 30 informal settlements that were identified by the National Department of Human Settlements (NDHS) as densely populated settlement required to be de-densified based on a vulnerability and density analysis (NDHS,2020). Currently, Stjwetla residents are faced with a multitude of social, economic, and political factors that shape their environment and affect their well-being.

4.2 Stjwetla Informal Settlement Locality

Located in Johannesburg Region E, on Alexandra Township's (established in 1912) northern boundary along the Jukskei River, Stjwetla Informal Settlement was established in the 1980s (Bonner and Nieftagodien, 2008). Stjwetla informal settlement exemplifies a community manifesting deep-rooted spatial and structural vulnerability that is a common feature that characterizes the disparities between South African human settlements (low income versus high-income communities). Stjwetla community is one of the many poorly serviced and neglected informal settlements in South Africa. The link between informal settlement resident's health and inadequate living conditions has long been recognized, but there exist fundamental challenges impeding on improving the conditions due to issues like shortage of vacant, well located, and affordable land, overcrowding, high densities, complex migratory patterns, and insecure livelihoods (Smit, 2020).



Figure 3.1: Top: Stjwetla location (red area) at the northern boundary of Alexandra Township (purple area). Bottom: Stjwetla informal settlement zoomed-in. (Source: Morgan, 2019)

Stjwetla community's approximate area of 13 hectares is confined between the Alexandra West Bank cemetery and the Jukskei River (Morgan, 2019). The Jukskei River is degraded and highly polluted (Figure 4.2) because of the high incidence of perennial flooding, waste disposal on its banks

due to the existence of densely populated informal settlements along its banks. As captured by Webster (2020, unpaginated), the community is located on the banks were,

> "everything flows downhill… Some of the rivulets have been turned into concrete gutters, others run through the middle of dusty footpaths. But all of them stand-in for the settlement's lack of sanitation and services, transporting its waste into the river. The Juks'kei accepts everything and denies nothing."



Figure 4.2: Stjwetla informal settlement building structures and polluted Jukskei Riverbank (Photo: Ihsaan Haffejee, 2020; https://theafricanmirror.africa/africities/bringing-de-densification-home-in-alexandra/)

4.3 COVID-19 and the Study Area

The 1997 Urban Development Framework (UDF) states that informal settlements and townships represent an 'under-utilised resource for the future.' It envisaged that these communities should be transformed into habitable, sustainable, productive, safe, and environmentally healthy urban environments, free from violence and crime (Department of Housing, 1997). While there have been some attempts to intervene and try to transform Stjwetla informal settlement, the community still fundamentally lack basic services to cater for the community. Residents of Stjwetla informal settlements are particularly at risk to the COVID-19 pandemic because they lack adequate water supply and sanitation facilities which make practicing good hygiene extremely difficult, and overcrowded living conditions mean that practicing social distancing is often impossible. Consequently, due to these existing patterns of urban segregation and living conditions in Stjwetla, implementing government lockdown measures is difficult and practically impossible.

According to Webster (2020), Stjwetla has high population densities of approximately 5300 households. A significant portion of Stjwetla residents is housed in informal dwelling units made of makeshift material like wood, zinc sheets and cardboard box while the other section has brick and cement building structures. Observing social distancing protocols is highly impractical and difficult in Stjwetla due to overcrowding. The shack dwelling households (Figure 4. 3) consist of an average of 6 – 8 family members congregating within a shack size of 6 - 15 m^2 making it difficult to adhere to physical distancing or isolation within households (Morgan, 2019).



Figure 4. 3 An artistic visual illustration of what a lockdown looks like in a typical township shack. Many structures do not have windows, and water and toilets are outside and often communally shared. In such environments like Stjwetla 'staying at home is untenable' (Source: https://www.thestanfields.org/updates/south-africa-is-facing-a-humanitarian-crisis-of-hunger)

Although efforts to regularize and upgrade have been made, the informal settlement largely lacks basic infrastructure and services like electricity, water and sanitation services, roads, and solid waste management. The settlement has electricity, but most shack dwellings are illegally connected to the electricity grid. Solid waste management is poor in the community with people

disposing of waste on the Jukskei riverbanks or piles within the community. Services like water and sanitation have become a matter of life and death in the COVID-19 pandemic era. The issue of health and housing in Stjwetla has previously been raised by the residents but ignored by the state. The community voices have been deliberately frustrated, silenced, and marginalized (Ibid). This informal community is driven by social exclusion and poverty which has made it vulnerable to all kinds of crime, drug abuse, violence as well as diseases like cholera, tuberculosis (TB) and HIV/AIDS (Ibid). Informal settlement residents are faced with a multitude of political, economic, and social issues that characterize their built environment negatively impacting their wellbeing and health (Bernardo, 2020). These factors aggravate the risk factors which may accelerate the COVID-19 transmissions. This poses the risk and spread of the disease not only within the community but surrounding communities as well due to the symbiotic dependency of communities. Connectivity of places is believed to also contribute to the spreading of the pandemic (Sharifi and Khavarian-Garmsir, 2020) and for places like Stjwetla, this becomes disastrous because of the poor and unsanitary living conditions.

As stated by Bernardo (2020), “urban environments have a profound impact on human health.” In the age of the COVID-19 pandemic, more than 95% of COVID-19 pandemic cases have been recorded in urban areas (UN-Habitat, 2020). According to Webster (2020), Stjwetla is classified as extremely vulnerable to the pandemic in line with the geographic vulnerability mapping by the Council for Scientific and Industrial Research. This mapping suggested that Stjwetla is more exposed to infection than the township around it. The CSIR uses a COVID-19 vulnerability index that indicates community vulnerability to the potential COVID-19 impacts by firstly looking at how the COVID-19 spread can be effectively contained (transmission potential) and secondly, the susceptibility of the population's to COVID-19 effects (health susceptibility) (CSIR, 2020). Stjwetla ranked high against all the variables. The lack and limited access to infrastructure and services is a regular topic of protest and the COVID-19 pandemic amplifies that call. Currently, Stjwetla informal settlement is at the center of government public health concern regarding the highly infectious COVID-19 pandemic and in recent history fires and flooding disasters.

4.4 Conclusion

The chapter presented the context of the study. The chapter framed Stjwetla informal settlements in the age of COVID-19 pandemic. Stjwetla is one of the poorest and under-serviced areas in the City of Johannesburg. When the COVID-19 pandemic began, the community was identified as one of the informal settlements that might be at risk and most vulnerable. The dense and inadequate living conditions in Stjwetla make it impossible and difficult to adhere to the COVID-19 lockdown measures. Hence, the COVID-19 pandemic has a potential to cause health and socio- economic impacts in Stjwetla informal settlement.

Chapter 5

Research Findings Discussion:

The COVID-19 Pandemic, Informal Settlements in South African Cities & Government Responses

5.0 Introduction

The COVID-19 pandemic has laid bare and heightened South Africa's systemic challenges and its enduring legacy of inequalities as evidenced in Stjwetla informal settlement. This chapter presents empirical findings from Stjwetla informal community and, where possible, links them back to literature. The main purpose of the research findings chapter is to respond to the main research question which sought to understand the challenges that impact resilience building against the COVID-19 pandemic in South African informal settlements using Stjwetla as a case study. I structured the findings into four different parts that discuss informal settlement vulnerabilities, the responses to the pandemic and effects of the responses on the community as well as debates on the responses.

5.1 Collective Understanding from Meaning Making

At the start of the pandemic, there were fears of a looming coronavirus threat in informal societies (Fèvre and Tacoli, 2020). As stated by Wilkinson (2020), the discussion of informal settlement vulnerability which was previously absent has become critical due to the risk posed by the COVID-19 pandemic to these communities. The threat of a virus that can rapidly spread into and within cities has amplified the call to overhaul current urban planning and development approaches in the short and long term (Fèvre and Tacoli, 2020). There are differentiated impacts based on spatial and socio-economic inequalities which greatly entrenches vulnerabilities and perpetuates risk for Stjwetla informal settlement residents. The pandemic serves as an impetus for all state institutions and relevant stakeholders to promote equal access to urban land and for the development of human settlements for spatial transformation, just place and city making inclusively and sustainably. It has undoubtedly stimulated a discourse and reimagination of cities and informal settlements, but this discourse should encompass a critical review of existing urbanism patterns that generate these settlements exclusion and inequities. The Stjwetla COVID-19 experience like other informal settlements, however, suggests that in an environment lacking effective support and where threats like the pandemic exist, informal community residents created their coping mechanisms and tried to redress their lived experiences in creative ways despite their limited access to resources. At the same time, informal settlement residents may be to some extent protected from the virus due to the relative demographic youthfulness (Weston, 2020) opening a discussion on informal settlement vulnerability and resilience in the age of the COVID-19 pandemic.

5.2 Stjwetla Informal Settlement Vulnerability to COVID-19 transmission

The capacity of Stjwetla informal settlement residents to comply with public health regulations which were imposed during the pandemic is highly differentiated and exposes substantial inequalities and injustices that predate the pandemic. I engaged the Stjwetla community leaders for an interview session to bring to perspective the challenges the community is faced with during the pandemic. We later visited some sections of the community to understand and see the extent of the challenges and issues within the community. As stated by Stjwetla Community Leader 3, (comms. 02/12/2020), "there is concern about the virus in Stjwetla, but for now that feels eclipsed by the more pressing issues of lost jobs, unaffordable food, and the near impossibility of isolating for any extended period when home is a single room with no running water or toilet." The next subsections highlight the vulnerability and inequalities in Stjwetla and how they affect the community in the age of the COVID-19 era.

5.2.1 Socio-economic Contexts

Stjwetla Informal settlement residents should be at the centre of developments that strengthen their local resilience. They are confronted by unique socio-economic vulnerabilities that are moulded by resource, geographic and systematic based disparities. According to Stjwetla Leader 2 (comms, 02/12/20), the Stjwetla community has a history of temporary accommodation dating back to 1986 when the community was formed, and this influences the community's displeasure to any relocations and temporary accommodation strategies. The demographic characteristic of the community reveals that Stjwetla is occupied by both South African nationals with Tsonga being the dominant ethnic group. A considerable percentage of the migrant community from other African countries like Zimbabwe and Mozambique also live in the community. A considerable percentage of people in the community rely on informal livelihoods as sources of income and are susceptible to economic shocks (Morgan, 2019). According to Webster (2020), only 12% of Stjwetla households earn above R3 500 a month while 14% do not earn an income. In terms of housing, according to Stjwetla Community Leader 2 (comms, 02/12/20), a considerable proportion of Stjwetla residents live in informal housing structures made of makeshift materials. Another part of the settlement is however built with brick structures but face the same vulnerabilities as the rest of the community. Most households that occupy that section of the community have the same socio-economic profile as the rest of the community - informal livelihoods and were also affected by the lockdown regulations (Ibid). Although some of them have backroom rentals, the tenants also struggled to pay their monthly rentals because of the lockdown creating a cyclical effect (comms. Stjwetla

Community leader 3). The housing structures lack adequate living and private space to accommodate households that sometimes range between 5 -7 family members sharing a single room or 2 rooms (comms, Stjwetla Community Leader 2). The housing conditions are regarded as overcrowded if we are to take the UN-Habitat definition of overcrowding where more than 2 people occupy a single habitable room (Hall, 2010).

The community has inadequate access to basic infrastructure and services like sanitation and water services, roads, and solid waste management. Other challenges that characterize the community include the haphazard infrastructure layouts, low sense of security as no policing and very few NGOs work with the community (comms. Stjwetla Community leader 3). The poverty levels have crippled and paralyzed the community (Morgan, 2019). According to Stjwetla Community leader 2 (comms. 02/12/2020), “the City of Johannesburg has not addressed the community’s concerns over the deplorable housing and health issues in the community.” This further entrenches their vulnerability, marginalisation, and exclusion while exposing the community to poverty and incidence of crime and drugs and diseases. The Council for Scientific and Industrial Research (CSIR) mapping of geographic vulnerability to the pandemic also suggested that Stjwetla informal community was more vulnerable to the infections (Figure 5.1). The CSIR uses a COVID-19 vulnerability index that indicates community vulnerability to the potential COVID-19 impacts by firstly looking at how the COVID-19 spread can be effectively contained (transmission potential) and secondly, the susceptibility of the population to COVID-19 effects (health susceptibility) (CSIR, 2020). Stjwetla ranked high against all the variables.

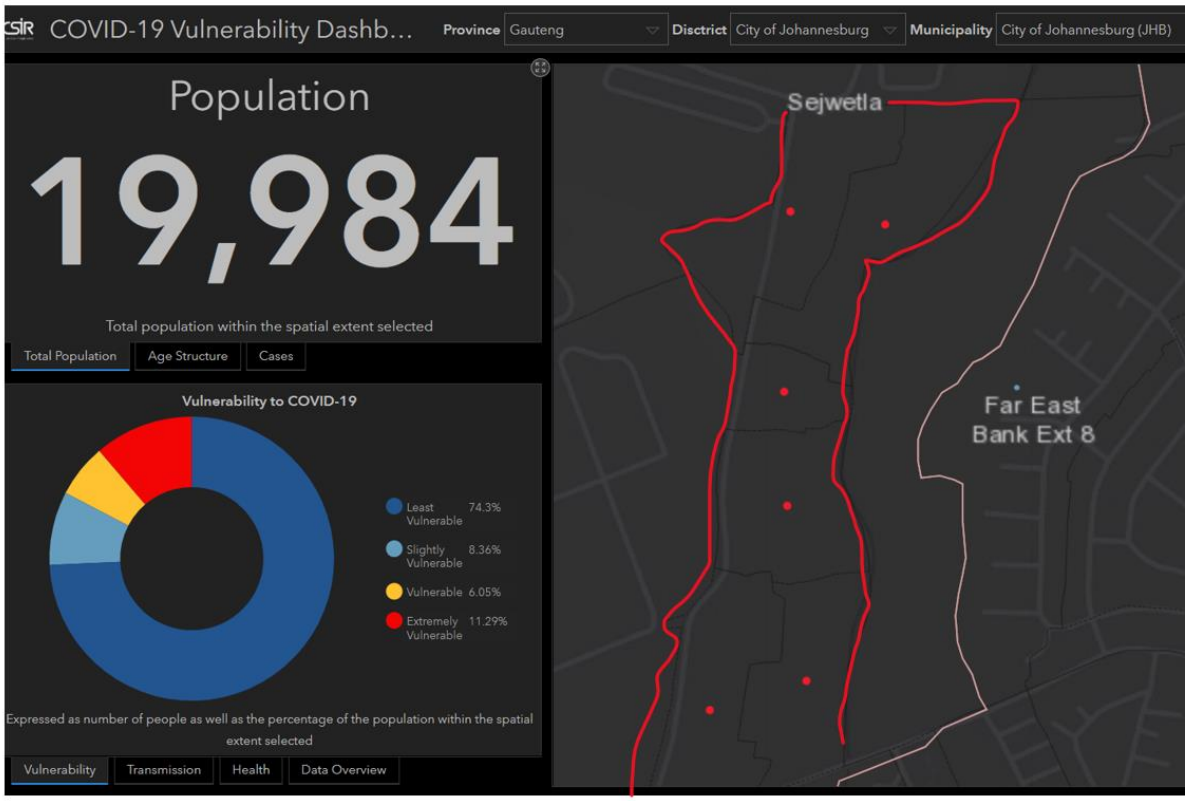

Figure 5.1 the CSIR mapping of Stjwetla vulnerability to the pandemic. (Source: https://pta-gis-2-web1.csir.co.za/portal2/apps/opsdashboard/index.html#/390a74fb10844c7a85396e60555a866d)

5.2.2 Infrastructure and Basic Services

Due to the legacy of unequal access to the urban built environment, significant spatial and demographic disparities exist in South African cities. In particular, informal settlements are characterised by profound inequalities in access to basic services such as electricity, water, and sanitation. Stjwetla informal settlement like many other informal settlements has severe infrastructure and services deficits. According to the City of Johannesburg report on Stjwetla informal settlement after the Mayor and officials visited to inspect sanitation facilities, Stjwetla is a typical example of a high-density informal settlement with limited access to basic services (City of Joburg 2020). This consequently reflects how the City is partly to blame for the current state of Stjwetla informal settlement. According to Community Leader 2 (comms. 02/12/20), the Stjwetla community has bare minimum access to water and sanitation and electricity facilities that were installed as a response measure to the community during the regularisation process. This enabled the installation of a few shared water taps and chemical toilets along strategic points in the community. This is highlighted in Figure 5.2 which shows two separate points in the community where chemical toilets and a water tap are located. The number of households in the Stjwetla community sharing communal toilets and standpipes is a big problem in dealing with the COVID-19

pandemic as the ratios far exceed the acceptable standards due to high population densities and few services. Stjwetla is serviced by a few water taps installed in the community less than twenty in total in a population of close to 5 100 households (comms. Stjwetla Community Leader 4).

Although this study could not determine the actual ratios due to lack of current updated data caused by fluctuating population densities, the household ratio per chemical toilet or tap is not in line with the accepted national standards and norms in the City of Johannesburg and other municipalities in the country. According to the Emergency Housing Programme compliance, municipalities should provide a ratio of 1 water tap per 25 households within a radius of 200 metres and a ratio of 1 toilet per 5 households (SERI, 2018). This is not the case in Stjwetla. As stated by Stjwetla Community Leader 2 (comms. 02/12/2020), "the toilets are located on road servitudes and more households utilise a single toilet and water standpipe. The ratio of households utilising the water and toilet facilities are more than the prescribed ratios"

The majority of Stjwetla households utilise the chemical toilets (short-term solutions that have become de facto permanent) provided and maintained by a private company. The toilets and water taps are placed along road servitudes at the periphery of the community. According to Webster (2020), three in every 10 Stjwetla households use bucket toilets while the rest of the households share portable chemical toilets. However, according to StatsSA (2016), more than two thirds (68%) of households living in South African informal settlements are forced to share toilet facilities. A sanitation census conducted by ENVIROSOURCE (2019), established that 236 toilets were in the community. According to the same source, the average ratio per households was 1: 25 households (Ibid). This is considered higher against the accepted norms and standards. During the interview with the community leaders, it was established that, "the available chemical toilets were not enough and that the community leaders had tried to engage the municipality for more toilets without success" (comms. Stjwetla Leader 3, 02/12/20). The Stjwetla community also share communal standpipe taps.

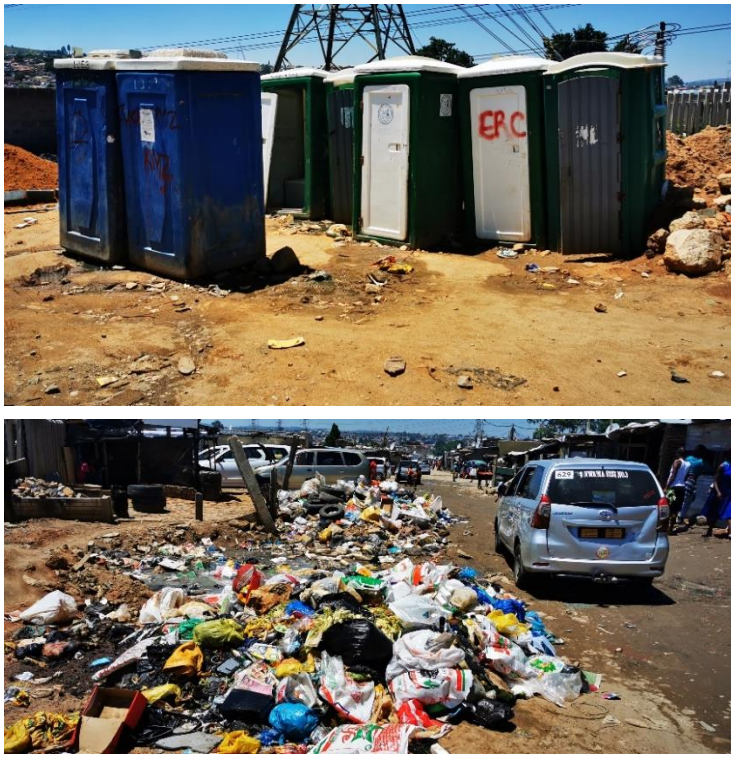



Figure 5.2: Stjwetla community shared community toilets (left) and water tap (right) increasing the vulnerability and risk of the community to the virus. Also uncollected waste at the entrance of the community (bottom) (Photographer: Sonono, 02/12/20)

The high population of the community results in high demand which overwhelms the supply system capacity. According to Stjwetla Community Leader 4 (comms. 02/12/20), there is hardly any maintenance of water facilities and responses are significantly delayed which makes people do makeshift repairs. In some sites, the congested nature of shack developments makes it impossible or difficult to access the facilities for maintenance purposes (Ibid). In terms of electricity connectivity, apart from those housing structure that received electricity during the electrification programme, most shack dwellings have resorted to illegal connections to access electricity (comms. Stjwetla Community Leader 2). As observed during the walk-around of the community, areas surrounding the communal taps are usually characterised with greywater due to poor drainage systems and uncollected waste next to the roadside (Figure 5.2). The implication of these prevailing conditions in Stjwetla is grave in the context of the scientific explanations on the spread of the COVID-19 pandemic. As experts stress, the disease is spread when one touches contaminated surfaces with viral droplets then rubs their eyes, nose, or mouth. It is vital to prevent the transmission of the virus through surface contamination. For Stjwetla residents, how to minimise and avoid spreading the virus through touching shared surfaces like water taps and toilets is a real challenge. According to Civil Society Expert 2 (comms. 05/11/20), the state of informal settlements has embarrassed the government and its informal settlement policies which have not significantly improved communities like Stjwetla either through in-situ upgrading or reblocking.

5.3 Dealing with the Pandemic in Stjwetla

When South Africa detected the coronavirus patient zero who had returned from Italy, the government rapidly responded to the COVID-19 threat through public health measures to limit the virus from spreading and "flatten the curve". The South African Government through the Minister of Cooperative Governance and Traditional Affairs, Dr Nkosazana Dlamini Zuma, instituted a National State of Disaster under Section 3 of the Disaster Management Act, 2002 (Act No. 57 of 2002) on 15 March 2020 (Government Gazette, 2020). The Government's goal was to introduce mitigation measures to reduce community virus transmission while providing adequate health care for those needing treatment. This approach was implemented through five risk-adjusted Coronavirus Alert Levels aimed at slowing down the infection rate to flatten the curve as shown in figure 5.2 (South African Government, 2020).

ALERT LEVEL 5	**ALERT LEVEL 4**	**ALERT LEVEL 3**	**ALERT LEVEL 5**	**ALERT LEVEL 1**
Effective 26 March 2020	Effective 01 May 2020	Effective 01 June 2020	Effective 18 Aug 2020	Effective 21 Sept 2020
Objective Drastic measures to contain the spread of the virus and save lives.	Objective Extreme precautions to limit community transmission and outbreaks, while allowing some activity to resume.	Objective Restrictions on many activities, including at workplaces and socially to address a high risk of transmission.	Objective Physical distancing and restrictions on leisure and social activities to prevent a resurgence of the virus.	Objective Most normal activity can resume, with precautions and health guidelines followed at all times. Population prepared for n increase in alert levels if necessary.

Figure 5.3 Risk-Adjusted Coronavirus Alert Levels introduced in South Africa as a response to the COVID-19 pandemic (South African Government, 2020).

The government's 'urgent and drastic measures in managing the crisis and protecting the citizens while reducing the impact of the pandemic on the society and economy attracted a lot of challenges, debates and complexities particularly in the context of this research. The application of measures to combat the spread of COVID-19 has exposed and tested the responsiveness of the physical planning and architecture of South Africa's human settlements especially in informal settlements. As mentioned in more detail in Chapter 2, the 'one size fits all' approach had the risk of overlooking the precarious nature of Stjwetla community. According to Stjwetla Community

Leader 1 (comms. 02/12/20), the hard lockdown Alert level 5 regulations were difficult and unsustainable to implement in Stjwetla as they failed to recognise the community's challenges. The COVID-19 pandemic and responses were torn between constraining lives or containing the virus undoubtedly increased urban poor's health and socio-economic vulnerability thereby impeding upon the resilience of communities like Stjwetla against the pandemic. Commenting on the general impact of the pandemic on South Africa, a Civil Society expert 1 (comms. 06/10/2020), mentioned the fact that the pandemic will not only have a health and wellbeing impact but an overarching influence on our socio-economic and local political economy landscape.

However, along with the national risk-adjusted coronavirus alert levels and the socio-economic plan, the government through the National Department for Human Settlements (NDHS), Minister Lindiwe Sisulu, introduced coronavirus responses to suit conditions in informal settlements. Policy pronouncement responses aimed at providing water and sanitation services, promote social distancing which was going to be pursued through reblocking (initially labelled de-densification) (National Department of Human Settlements, 2020). The overall South African government response also included the COVID-19 grant systems in the form of cash benefits and food parcels, and mass COVID-19 screening and testing (South African Government, 2020). Civic Society also responded by donating food parcels to vulnerable households within the community. At a localised scale, Stjwetla informal settlement residents found themselves at the centre of the COVID-19 pandemic responses from both government and civil society organisations. This section presents the policies and measures implemented in Stjwetla and highlights the effects it had on the community.

5.3.1 De-densification Strategy and Temporary Relocation Areas (TRAs)

Stjwetla informal settlement was identified by the National Department of Human Settlements as one of the 30 informal settlements that are dense and earmarked for de-densification with 1600 temporary relocation units (TRUs) and plans to relocate 1600 households (NDHS, 2020). De-densification was part of the Department of Human Settlement's central strategy in dealing with informal settlement densities which the government believed would cause massive community transmissions of the virus. According to Stjwetla Community Leader 1 (comms. 02/12/20), Stjwetla is densely populated with limited access to basic services and limited space to observe social distancing leaving community members at risk of transmitting the virus. De-densification would thereby reduce the high population densities allowing residents to observe some form of social distancing and reduce community transmissions. In Stjwetla, "de-densification" officiates the

uneasy marriage between the Upgrading of Informal Settlements Programme (UISP) and the Emergency Housing Programme (EHP) (Webster, 2020). Through the EHP, the 1 600 households will be relocated, the settlement development will then follow with improved services, better homes and secure tenure using the UISP (Ibid). “The state identified land in Marlboro where the TRUs are to be constructed” (Figure 5.5) (comms. Government Official 2). I visited the TRAs site in Marlboro (02/12/20) where construction work was underway but behind schedule as shown in Figure 5.4. As noted by Webster (2020, unpaginated), in an interview with Mlungisi Mabaso, a member of the City of Johannesburg Mayoral Committee in charge of housing, “the earlier plan targeted to move identified households for relocation by September 2020.”



Figure 5.4 Temporary Relocation Area in Marlboro to relocate Stjwetla Community residents in response to the COVID-19 pandemic (Source: Sonono, 02/12/2020)



Figure 5.5 Proposed Stjwetla Relocation arial view in Marlboro (Source: Chothia, 21-04-2020)

The Temporary Relocation Units (TRUs) being built in Marlboro are sub-divided converted container structures on a concrete base with full services including water, sanitation, and electricity. The completed TRUs will be allocated to selected households from Stjwetla, a move that is believed to ease congestion in the settlement. As observed at the site and a sentiment expressed by the community leaders, it does not seem like the state is building the container houses as temporary accommodation structures. According to Stjwetla Community Leader 1 (comms. 02/12/20), at a meeting with state officials, it was discussed that “the structures could last a period more than 10 years and he expressed that these container houses are better than what most people in the community are currently living in.” As observed during the interviews, there seem to be divisions amongst the leadership itself on how they view the temporary accommodation and how it should be implemented in the community. The same divisions according to Stjwetla Community Leader 3 (comms. 02/12/20) are evident within the community. The community leadership were divided on the lack of community consultation, rationale of TRAs and the beneficiary selection criteria. On the rationale of the TRAs, other leaders noted that the community is tired of temporary relocations and instead want permanent homes. According to Stjwetla Community Leader 2 (comms. 02/12/20), "those containers look expensive; they should be using the money for something permanent. Also,

the land they are moving people to is big enough to build flats." On the other hand, other leaders believe that the TRUs offer improved living conditions which are better than the conditions which some community members are currently living in. According to Stjwetla Community Leader 1 (comms. 02/12/20), “the TRUs offer decent accommodation with access to full services - electricity, water, and sanitation.” Regarding the lack of consultation and unclear communication about the beneficiary criteria, the community leaders fear that the unclear communication would lead to favouritism. According to Stjwetla Community Leader 4 (comms. 02/12/20), "If they were clear with us on the criteria they are using to move people, it would eliminate a lot of things. Currently, we don't know who and how people would be moved." The community leaders also feared that people who would be moved to the TRAs might end up staying there permanently like others who were previously moved. According to Stjwetla Community Leader 3 (comms. 02/12/20), “people who were moved to temporary sites almost 10 years ago are still there. We are scared that this will also happen with these 1,600 people they are talking about.” The leaders also mentioned that the community members had expressed their dissatisfaction with the city.

As noted by the community leaders,

> “We did not know about the plans to densify the settlement or who was to benefit from it until the city officials told us about it. There was no consultation done with the community. What is also worrisome is that the number of the proposed beneficiaries continues to change. We started hearing that 1600 households will benefit, and that changed to 900 households and lastly 600 households, so we are unsure how many will benefit” (comms. Stjwetla Community Leader 3).

The same was reiterated by Stjwetla Community Leader 2 (comms. 02/12/20) who state that, “I only got the call from the municipality informing me about visiting the community and subsequent de-densification plans.” The same is reiterated by Webster (2020) where he notes that “initially ‘Stjwetlans’ were not aware of any relocation plans and they scoff at the idea that land could ever be cleared for development without immediately being reoccupied by people in need of a home.” It should be noted that this underlines the need for improved municipal communications and formalised mechanisms for engagement and collaboration between the municipality and Stjwetla community leadership and residents. Those who have been on the housing shortlist expect to be the first to benefit from the project and community leaders do not know who the beneficiaries will be or how they will be selected. “According to Government Official 1 (comms. 10/12/20), “the beneficiary management process has been contested and has caused delays in selecting who will

benefit from the project between the greater Alexandra and Stjwetla residents." What this points to, is contested top-down government intervention that lacked fundamental community participation and consultation procedures. According to Stjwetla Community Leader 3 (comms. 02/12/20), "community members were not happy with the idea of TRAs given the history of temporary accommodation and relocation previously implemented by the state." This invariably shaped the Stjwetla residents' mistrust of the government strategy. According to Media Reporter 1 (comms. 06/10/2020), the de-densification strategy has remarkable continuities of the urbanism discourse of informal settlement-free cities while lacking the critical inquiry of the prevailing pattern of urbanism that produces such inequalities and exclusion. There is concern that the state cannot let go of its informal settlement eradication mentality and approach (Webster, 2020). The pandemic brings to the fore the latest iteration in a long tradition of trying to get rid of informal settlements instead of engaging in meaningful development partnerships with informal settlement communities and other relevant stakeholders (comms. Media Reporter 1).

According to Huchzermeyer (comms. 03/11/20), "given the hierarchical nature of the COVID-19 response, the mandate to de-densify and create temporary relocation areas was given by the national department and was adopted by the local government and that shaped how it would be implemented." The implication is that the de-densification programme was far-reaching and a cause of concern for a lot of stakeholders (civil society organisations, NGOs, and academics). To begin with, there is no legislation or policy for de-densification (Webster, 2020). It was feared that it was going to be a shorthand for evictions (Clark, 2020). De-densification applies differently for the government who use it as a verb more than a programme while officials interpret it as a national directive to be implemented using the existing housing instruments. The outcry on the de-densification strategy as a central response strategy of COVID-19 on informal settlements was also highlighted by a coalition of civil society groups who considered the strategy as problematic and inappropriate (DAG, 2020). The civic society coalition reiterated that de-densification is complex and contested process that is not an appropriate at scale response during the Covid-19 disaster as it creates further shocks to a part of society that is most vulnerable. According to Ntseku (2020), there were concern on the political, technical, social, and economic impacts and the disruption that de-densification is likely to cause. Consequently, "de-densification is viewed with trepidation by those who fear that COVID-19 will be associated with evictions legitimated through this rationale" (Gupte and Mitlin, 2020: 10). It should be noted that arbitrary eviction was already widespread in many communities in the City of Johannesburg (Ntseku, 2020).

5.3.2 Basic Infrastructure and Services Responses

The provision of emergency basic infrastructure and services is part of the state's central response strategy for the Stjwetla community. This strategy recognised the severe deficiencies in service provision that made it impossible for informal settlements to observe the hygiene regiment of washing of hands. According to Stjwetla Community Leader 2 (comms. 02/12/20), the City through its COVID-19 emergency service delivery roll-out of water tanks provided seven water tanks in the entire ward and four tanks in Stjwetla (Figure 5. 6). In the community, no other water tanks were donated by non-state actors. The installation of the water tanks encountered some logistical and technical delays. This was also noted by Minister Sisulu at a media briefing in which she stated that "there had been a lag in the distribution of tanks because, for a tank to be of use, it needed to be mounted on a platform and these were not readily available because of lockdown" (NDHS, 2020). In Stjwetla, a community leader had to use his truck to go and collect the water tanks and the structure it was mounted on (comms. Stjwetla Community Leader 3). The leaders also bemoaned that the water tanks did not meet the need of the community. "Even though we received the water tanks, 4 water tanks and a few shared standpipes are insignificant to match a population of more than 40000 residents" (Ibid)



Figure 5.6 One of the four COVID-19 response water tanks in Stjwetla Community (Photographer: Sonono, 02/12/2020)

5.3.3 Lockdown Enforcement in Stjwetla

The South African President, Cyril Ramaphosa, deployed the National Defence Force and the South African Police Service from midnight on Thursday 26 March 2020 to enforce the 21 days national lockdown (ENCA, 2020). The army and police were going to help in ensuring that there was compliance on the movement restrictions according to the National State of Disaster and lockdown regulations. The President called the deployment a 'mission to save lives and that soldiers must "be a force of assurance, not of might… while reminding the SANDF to be respectful of the people of South Africa" (President Ramaphosa, 26 March 2020). As observed during this course of the lockdown, the deployment of the security forces to enforce lockdown regulations was marred by allegations of brutality and excessive use of force. According to Academic Expert 1 (comms. 03/11/20), "there was excessive use of force by the security forces and the country had a high amount of criminalisation as a result of people being charged for breaking the lockdown regulations." In Stjwetla and Alexandra, "police officers and members of the SANDF patrolled the streets, dispersed crowds in the streets and arrested those non-compliant residents to force compliance of the regulations" (comms. Stjwetla Community Leader 4).

An implication of the lockdown enforcement policy as noted by Media Expert 1 (comms. 06/10/20), was that "people in Stjwetla were not able to adhere to the solidarity message of staying indoors because it was difficult when they shared facilities and lacked adequate private space to stay indoors." Consequently, in Alexandra township, the security forces resorted to the use of excessive force which consequently resulted in the death of an Alexandra man (Pijoos, 2020). The 'care' of the state every so often seemed like rhetoric while its disciplinary hand was the most visible and experienced reality as portrayed in the police's selective brutality against citizens when enforcing lockdown regulations. Undoubtedly, the interaction between the government and Stjwetla community residents became a pressing point in adhering to the solidarity message in practice. However, it should be noted that the instituted Disaster Management Act 2002, Regulations relating to COVID-19 and the state's inherent right to protect does not allow for any human rights violations nor does it imply the overturn of any legislative or constitutional obligations of the state. In this instance, the state will have to enforce lockdown regulations while respecting people's rights.

5.3.4 Mass Testing and Screening

Following the confirmation of a positive case in Alexandra, the Gauteng Provincial Government engaged in a COVID-19 mass testing and screening exercise in Alexandra including Stjwetla communities in March 2020 (eNCA, 2020). The government was doing contact tracing and finding out the extent of community transmission. According to the Gauteng Health Department (2020), "Stjwetla, like many other parts of Alexandra, would be fertile ground for the coronavirus as contact with others is almost unavoidable hence contact tracing and testing was necessary." Also because of a surge in transmission rates in Gauteng province in May 2020, the Gauteng Premier David Makhura stated that the "testing is targeted, we are not doing it indiscriminately and we are looking at vulnerable communities" (Maphanga, 2020). However, despite the health nature of the pandemic, the government efforts for COVID-19 screening and testing in informal settlements were limited (Mahlati, 2020). Stjwetla Community Leader 1 (comms. 02/12/20), echoes this sentiment by stating that, "the government through its community testing initiative only came twice to test and that was not enough. The process was large scale screening and to a lesser extent testing process. There are no permanent health structures to cater for the health needs of the people in the community." He also implored the state to relook at what was happening in informal settlements before it became a disaster (Ibid). The same was reiterated by Stjwetla Community Leader 3 (comms, 02/12/20), who stated that "because there was limited comprehensive testing and screening of the virus in Stjwetla, the community did not know the exact figures and extent of community transmissions." According to Pienaar (2020), the experience of community screening and testing reveals the battle against the spread of misinformation and building community trust as communities were initially suspicious about the pandemic and the testing teams because of no prior consultation.

The community leaders also reiterated that most Stjwetla residents do not have or afford medical aid schemes and rely on public healthcare. According to Staunton et al. (2020), 16% of South Africans have access to medical aid whilst the rest rely on poorly managed and under-resourced public healthcare. The limited access to effective primary health care and a public health care system and mechanisms is an attribute of the victimisation, neglect and austerity measures directed to settlements like Stjwetla. "Region E, where Stjwetla is located was an epicentre of the virus in the city of Johannesburg when the virus broke out" (comms. Government Official 2). This meant that people were exposed and vulnerable to the virus. However, this could not be verified since the province took a position not to disclose the exact location of the infections beyond regional counts. As noted by the Media Reporter 1 (comms. 06/10/20), "I was not able to confirm the

cases in Stjwetla, but the frontline workers indicated people in the community were infected and taken to Charlotte Maxeke Hospital for isolation." Stjwetla Community Leader 2 (comms. 02/12/20) also noted the point that "people were afraid to come out when they tested positive but only confirmed of the disease after they recovered probably due to fear of victimisation or lack of knowledge and understanding about the disease." Cases of stigma and discrimination of those who contracted COVID-19 in South Africa were reported and organisations such as UNICEF and ACCORD among others tried to sensitize communities about the consequences of such actions (ACCORD, 2020 and UNICEF, 2020). This further worsened the pressures being experienced by informal settlement inhabitants while the COVID-19 pandemic represents yet another health threat.

According to Pienaar (2020), public health response programmes should be rolled out along with information dissemination to communities. While the existing resources were directed and preoccupied with containing the pandemic, other health services (tuberculosis and reproductive health needs) became neglected (Mahlati, 2020). For informal residents, the COVID-19 health risks might just be yet another threat among a host of threats they encounter in their daily lives, which may help explain the people's passive attitude towards the pandemic from the beginning. As noted by Media Expert 1 (comms. 06/10/20), when he stayed in Stjwetla during the first two weeks of Alert Level 4 Regulation in June 2020,

> "The COVID-19 pandemic was a secondary concern to people that I interviewed. They seemed more eager to talk about the development of the settlement and their frustration with the lack of it. People were concerned with issues that preceded the pandemic rather than the pandemic itself."

5.3.5 COVID-19 Relief – Food Parcels & Grants

The spread of the global COVID-19 pandemic in Stjwetla is causing further pressure on vulnerable households facing temporary or permanent employment interruptions. The instituted COVID-19 Alert levels which sort to control the movement of people to avoid transmitting the virus had far reaching consequences on the community of Stjwetla. The lockdowns led to a decrease in capacity to generate household income for many residents who rely on informal livelihoods which triggered hunger and an economic emergency. In response, the state introduced a socio-economic relief package intervention in the form of the Covid-19 grant system and food distribution initiatives to help keep vulnerable household's access to food security and to have disposable income through the grant system. Also of note is the contribution of NGOs, civic organisations, businesspeople, and churches through the creation of food banks and food distribution initiatives to augment

government efforts. The food parcels are provided as temporary relief for those who cannot meet their family's most basic needs. A range of qualifying criteria was set depending on which organisation was distributing the food parcels. However, a common denominator qualification criterion included the most vulnerable members of the community experiencing undue hardships which include the unemployed, child head households, the disabled, the elderly, people who cannot work for a period of 6 months for medical reasons (IOL, 2020; SASSA, 2020). Although the provision for food-assistance packages for the most vulnerable was instituted, those who fall outside of the qualification criteria are excluded and at most risk.

Those residents of Stjwetla who qualified for government assistance were able to receive the grants and food parcels. According to Stjwetla Community Leader 2 (comms. 02/12/20), "in the distribution of state-assisted food parcels, some residents were able to receive, and some did not due to allegations of favouritism." Also noted by Media Reporter 1 (comms. 06/10/20), "local ANC structures in Alex played an important role. However, there was a grey area and real problems of patronage in the distribution of food parcels which were problematic in ensuring that everyone in need benefited." Hence, it cannot be assumed that the donations reached all informal settlements and residents. Apart from the allegations of patronage, and favouritism, there were contestations on who should benefit from the food parcels and not as stipulated by the beneficiary criteria. The food distribution from the state stipulated that only those with a South African Identity card were eligible to benefit from state-assisted relief. Given that Stjwetla informal settlement residents are a mix of both local and the migrant community from other African countries, this excluded the migrant community and yet were in need like their local counterparts. In describing Stjwetla, the Media Reporter 1 (comms. 06/10/20), state that

> "Stjwetla is an environment where the economy and sustainability depend almost primarily on and above all else on the fact that South Africans and migrants are in collaboration in a fluid, flexible, informal, responsive environment which signifies cosmopolitan residency. Excluding the migrant community goes against the preamble of the South African Constitution which states that "South Africa belongs to all who live in it" (S.A Constitution, 1996), and yet in reality the COVID-19 pandemic and events on the ground have shown that it does not."

In terms of non-state actors that came to the aid of the community, the community leaders appealed for help from Gift of the Givers, Rays of Hope and Pastor Alph Lukau Alleluia Ministries

International Church for food parcels and cash gifts (comms. Stjwetla Community Leader 2). According to Stjwetla Community Leader 4 (comms. 02/2/20),

> "Initially when Rays of Hope started the distribution of food parcels, they were asking for an identity document which also excluded the migrant community. However, as time went on, they started to distribute to everyone including the migrant community and locals started to complain."

As noted by the Media Reporter 1 (06/10/20), a fundamental fault line that has always existed within South Africa whether in informal or formal settlements is the insider-outsider dynamics that takes on various iterations which often carries xenophobic undertones." In this case, it was expressed through complaints. According to Stjwetla Community Leader 4, "the local people would complain about why migrants were receiving getting food parcels from Rays of Hope and yet the migrant community like local South African citizens faced the same challenges." In response to complaints from South Africa ID-holders, he also stated that Rays of Hope organisation explained that it was there to help all Stjwetla residents in need regardless of nationality.

5.4 Coping mechanism to the COVID-19 Regulations in Stjwetla

While the benefits of the measures like improved hygiene, social distancing, and the strict lockdown in curbing the pandemic cannot be contested, the South African history of COVID-19 infections proved that at the beginning of the pandemic, the spread was successfully limited. As expressed by Lippi et al. (2020, unpaginated), "in fact, such measures may be said to be a 'necessary evil' in tackling the COVID-19 pandemic." However, the global health regulations are simplistic in nature with blanket recommendations of what constitutes a lockdown assuming that everyone can adhere to the regulations. Gupte and Mitlin (2020), raises concern in the COVID-19 messaging and responses that are frequently top-down and missing local ownership. Within the context of the South African government response to the COVID-19 pandemic, the capacity of informal settlements like Stjwetla and its residents to comply with the regulations is significantly differentiated and exposes inequalities that predate the public health crisis. Indeed, social policies can impact the economic and social well-being of citizens (Ozili, 2020). In the context of Stjwetla informal settlement, the pandemic and lockdown regulations came with difficulties in observing social distancing, over-burdened infrastructure, loss of income and lack of savings, hunger, and food insecurity. It is difficult to make statements that hold true everywhere in the community as experiences were differentiated within the community itself, pointing to the complexity that defines the settlement.

5.4.1 Coping with the Health Dimension of Covid-19

According to Friesen et al. (2020), public health disasters like the COVID-19 pandemic put unprecedented strain on informal settlement residents who live in vulnerable conditions that lack basic infrastructure. Before the first COVID-19 pandemic wave, there was an impression that informal settlements because of the disparities and mismatch between high densities and limited access to basic infrastructure and services, there were going to be devastated by the pandemic (comms. Academic Expert 1). However, events did not pan out as anticipated and it is a subject under scientific research as to why it was so. “The high prevalence transmission rates did not translate into high hospitalisation and mortality rates in informal settlements” (comms. Academic Expert 1). According to Huchzermeyer (comms. 03/11/2020), “it is still unclear how the pandemic affected informal communities as a disease due to community transmissions or how people suffered as a direct result of the disease itself.” The pandemic has highlighted the vulnerability and limited capacity of communities like Stjwetla when faced with health hazards like the COVID-19. What is clear and evident is that the government instituted lockdown measures that had more socio-economic impacts on households which increased their vulnerability while weakening their resilience. There is consensus among the study participants and emerging literature (Gil et al., 2021) that informal settlements were more impacted by the social and economic adverse effects of the pandemic more than by its health dimension.

5.4.2 Coping with the Socio-Economic Dimension of Covid-19

Observing social distancing protocols was highly impractical and difficult in Stjwetla. With a settlement of more than 5 300 households consisting of an estimated of 6 – 8 family members congregating within a shack of 6 -15 m^2 observing distancing of any form was highly impractical. According to Stjwetla Community Leader 3 (comms. 02/12/20), “people lived in fear of contracting the disease and yet observing social distancing was impossible because of lack of space both within households and outside on the narrow streets around them. There is no space to observe the 1–2 meters distancing as prescribed.” At the same time, children and grown-ups alike would go outside without masks. As observed by Media Reporter 1 (comm. 06/10/20), “masks were not being properly worn (1 person in every 15-20 people wore a mask during level 4 - informal count), physical distancing was difficult and falls away when accessing water and toilets. To access one tap servicing multiple households people congregating around one tap desperate to get the hand on something important in the best of time and a matter of life and death in worst of times.” How one realises physical distancing in a shack dwelling, using communal toilets and water taps remain epitomes of how unfeasible these recommendations are for informal communities. Asivikelane assumes that

approximately 45% of informal settlement inhabitants were infected by the COVID-19 pandemic first wave between March – December 2020 because communities share toilets and water taps (Asivikelane, September 30, 2020). It should be noted that the percentage is an assumption due to the absence of COVID-19 mass testing campaigns in informal settlements. Asivikelane publishes bi-weekly data that is collected from informal settlements residents based on three questions about their access to clean toilets, water, and waste removal in metros including Johannesburg, Cape Town, Tshwane, Ekhurhuleni; and non-metro municipalities including Emfuleni, Msunduzi, Witenberg, Knysna, and Mossel Bay (ibid).This reveals that for Stjwetla residents and other informal settlements where there is limited access to infrastructure and where high densities and overcrowding are the norms, it is highly impractical to transform their daily lives in the required ways.

The new norm required by the compulsory lockdown regulations meant that people were staying at home and within the community more due to the lockdown as compared to the pre-lockdown period putting pressure on stressed infrastructure facilities and services. According to Stjwetla Community Leader 4 (comms. 02/12/20), “there are more people in the community in comparison to the pre-lockdown period during the day and night and the place gets overcrowded.” This puts pressure on the existing infrastructure. The community leaders in response tried to secure more chemical toilets and tanks but failed in their quest. The provision of 4 water tanks within the community as part of the government roll-out emergency services programme meant people could wash hands. The leaders noted that the water tanks were regularly filled up by a contractor tasked by the government although sometimes there were delays in doing so most of the times the tanks had water (comms. Stjwetla Community Leader 3). However, while the tanks made it possible for people to wash hands, the sheer number of residents sometimes made it difficult.

The government lockdown intervention made income generation for Stjwetla residents difficult to impossible. Informal livelihoods were the first to be lost under lockdown regulations. A substantial proportion of Stjwetla residents lost their income and became food insecure. The lockdown regulations at the beginning of the pandemic (Alert level 5) shut down all non-essential services. The concern for the people in Stjwetla was in losing their informal livelihoods for example domestic workers, restaurant workers, gardeners, and informal traders (comms. Stjwetla Community Leader 3). Many residents were affected as they lost their means of survival during the hard lockdown period. A significant number of residents also did not have savings to help stock food pre-lockdown (ibid). According to Stjwetla Community Leader 4 (comms. 02/12/20), “shops were opened but people did not have disposable income or savings to fall back on”. However, the rescue of many

came through food donations and a state-assisted COVID-19 grant system. At the same time staying at home and staying indoors was not feasible for Stjwetla residents due to the informal nature of livelihoods. People had to go out to try and sustain their lives. According to Media Reporter (comms. 06/10/20), people were on the streets due to hunger and the need to economically participate and sustain themselves. Stjwetla economy was characterised by two distinct night and day economies. "The streets were packed, and it was business as usual during daylight but the night economy which is sustained by the sale of alcohol which was unavailable at the time was closed" (comms. Media Reporter). According to Webster (2020), during alert level 4 regulations, "Stjwetla was open for business. Its narrow alleyways heaved with the impossibility of physical distancing and its economy of spaza shops, hot-food stalls, hairdressers, and hustlers was in full swing."

According to Civil Society 2 (comms. 05/11/20), "people tried to use their assets to try and alleviate the disaster but at best this was very minimal." In the absence of real resources, the residents could do the bare minimum as managing and surviving through a disaster requires resources. At the same time, communities have limited capacity on what they can do on their own. It should be noted that while communities do not have adequate and necessary assets, they devised their coping mechanism to deal with disasters which should be commended. As noted by one of the leaders, "there was solidarity within community although it was severely compromised because everyone was trying to confront the threat of the pandemic (comms. Stjwetla Community Leader 1). As stated by Nyashanu (2020), informal settlement residents were committed to observing the health guidelines but accessing information regarding what to do about COVID-19 was limited. Many did not have access to COVID-19 information which was being relayed through mainstream media platforms. As noticed by Media Reporter (comms. 06/10/20), during the transition from period to level 5 - 4, there was a surprising amount of adhering to regulations. Regardless of the scale and nature of the settlement and how it is overlooked in terms of access to basic services, there were efforts made by homes to sanitize and many did not have the capacity unless these were provided for them (ibid). However, neighbourhood cooperation within informal settlements decreased over time suggesting increased vulnerability within communities where residents often depend on community links in accessing resources like food, labour, and income lending schemes among others (comms. Civil Society Expert 2). This meant that the coping capacity of the community sometimes expressed through solidarity was compromised because of the pandemic.

The Stjwetla residents were not happy with the targeted responses the community received from the state because of alleged lack of consultation and that the responses were inadequate to meet their needs. According to Stjwetla Community Leader 2 (comm. 02/12/20), "as a community, we are

largely not satisfied with what the state did in helping the community against the pandemic." The COVID-19 blanket response did not reflect the different variations in distribution and forms of risk within and between communities. This severely impacts the resilience building of the Stjwetla community against the pandemic given a background of serious infrastructure and basic services deprivations. According to Government Official 1 (comms. 10/12/20), the conventional approaches of addressing informal settlement challenges cannot deliver a rapid response at a sufficient scale in the COVID-19 era due to a range of underlying constraints in which no solution is easily available. The human settlement programmes as contained in the National Housing Code of 2009 are implemented in line with Section 2 of the Housing Act of 1977 (comms. Government Official 1). However, the Human Settlement Department has struggled to engage during the COVID-19 pandemic as dictated by the Housing Act of 1997 (Ibid).

A way of life depending on shared, multiple, and negotiated uses of the street, and physical connections with other sections of the city for its survival was and still is threatened by the coronavirus pandemic and its response measures (Bhide 2020). According to Stjwetla Community Leader 4 (comms. 02/12/20), hard lockdown restrictions had a cumulative and negative impact on the livelihoods of Stjwetla community households which heavily rely on insecure informal sources of income. Many of Stjwetla residents were food insecure and relied on food parcel distributions because of the hard lockdown restrictions. Before the lockdown began, the wealthier citizens stockpiled essentials like food to avoid having to regularly leave their homes during the lockdown while at the same time those with irregular or low income, limited financial reserves or those who rely on government social grants were unable to stockpile (comms. Civil Society Expert 1). While the lockdown did not prohibit daily shopping the catalyst for food insecurity was not unavailability but their limited capacity which was directly linked to loss of livelihoods and income to access and buy food. People tried to use their assets to try and alleviate the disaster, but this was minimal (comms. Academic Expert 1). In Stjwetla, households rely on informal trading and spaza shops for daily shopping. The informal sector, therefore, is an essential element for food security and for the informal community's capacity to comply with the lockdown regulations (De Groot and Lemanski, 2020).

Household food security was severely threatened at the initial stages of the lockdown due to the prohibition of informal food vending. Informal roadside traders and spaza shops were closed while supermarkets, food delivery companies and registered spaza shops could operate. For Stjwetla residents, the lockdown was largely problematic as it coincided with the period of the month and week which is considered cash lean or hungry season (Joubert, 2020). Only after significant

stakeholder pushback was informal trading allowed to reopen under strict regulations and even then, only a small number of traders were able to obtain a permit (Rajgopaul, 2020). The Government Gazette of 6 April 2020 stipulated that subject to obtaining a temporary permit and increased safety regulations, informal traders of uncooked food items could operate (Government Gazette, 2020). According to Stjwetla Community Leader 2 (comms. 02/12/20), the lockdown was a difficult situation and it had negative implications on the livelihoods and income of the already vulnerable households. The shutdown directly threatened household food security and resulted in enormous loss of income and livelihoods of those working in the informal sector (comms. Civil Society is Expert 2). While the South African government's U-turn on informal food vendors demonstrates the state's responsiveness capacity to the urban poverty realities, it also invariably demonstrates its lack of knowledge on the poor's food purchasing patterns and their daily lives which is a grave concern (De Groot and Lemanski, 2020). It reveals the South African governments' reliance on adopting global public health advice and their problematic application without local adaptation.

Despite the widespread and evident challenges, living in informal communities is less predictive of the risk emanating from health and social issues. As the pandemic spread through our cities and informal communities, the pandemic mitigation responses needed to acknowledge the underlying inequalities that locate women and the migrant community at an even bigger risk. In the age of the COVID-19 pandemic, vulnerability is complex and unevenly distributed across people. The stark realities of the migrant community and gender inequality were predominantly evident in communities. According to Kadt (2020), women and child-headed and migrant households were more exposed to the health risk and the socio-economic impacts of the pandemic. For the Stjwetla community, the socio-economic vulnerability was influenced by factors like household structure and composition which are shaped by gender disparities and inequality and citizenship (migrant households). Women in informal settlements are worse off in comparison to their male counterparts and other women outside of the informal environments in accessing private spaces, health and hygiene facilities, employment, and secure housing. The work that most women in the community do is informal, temporary, low-paid, and strenuous (comms. Stjwetla Community Leader 2) likely placing them in the 'work poor' category (Azcona et al., 2020). Women are also faced with an increased risk of unpaid care burden and the twin pandemic of gender-based violence (Dlamini, 2020). Many are either domestic workers, cleaners or informal traders who cannot render their services remotely as stipulated by the lockdown restrictions which resulted in the loss of income multiplying their household vulnerabilities and pushing them further behind.

On the other hand, the migrant community was disproportionally affected by the measures to address the pandemic as they often were excluded from benefiting from the relief initiatives. According to Stjwetla Community Leader 4 (comms. 02/12/20), “several households within Stjwetla were excluded as they did not qualify for state-assisted grants and food parcels because there are migrants and yet these are the people in greater need.” As noted by Media Reporter 1 (comms. 06/10/20), there is no doubt the migrant community was confronted by a complicated experience in Stjwetla. Migrants face levels of violence and exclusion that are more extreme regardless of their shared COVID-19 experiences with their fellow South African counterparts. The COVID-19 pandemic and its aftermath are likely to exacerbate the increase of extreme poverty. Ultimately, the worst affected by the pandemic are those confronted by numerous and intersecting deprivations (Maseland, 2020). Another notable concern is the increase of domestic violence and gender-based violence against women and children during the lockdown period as well as other antisocial behaviours. According to Civil Society 1 (comms. 06/10/20), “the violence often arises from toxic masculinity from men who have lost their capacity to economically contribute the household and expressed through violence on women and children.” This further increases their vulnerability and limits their resilience. The pandemic should serve as a wake-up call for solidarity and prioritize now, more than ever, the principle of leaving no one behind especially the most vulnerable and marginalized. These are mainly the urban poor, informal settlement residents, women, the homeless and the migrant community who are confronted with the greater challenge of not having resources or a voice to withstand the effects of the pandemic. It is therefore crucial that COVID-19 preventative measures and supportive interventions recognise these deprivations and should be tailored to, informed by, and with an understating of underlying disparities of household structure and local challenges and conditions.

5.5 Conclusion

The chapter presented the research findings for this study. Drawing on the early evidence reported in the literature, in this study, I tried to understand the challenges to building resilience against the COVID-19 pandemic in Stjwetla informal settlement. Risks in Stjwetla informal settlement are multidimensional and overlapping including health, social, economic, and infrastructural ones. The COVID-19 pandemic was experienced alongside these risks and vulnerabilities potentially heightening their vulnerability. The study revealed that Stjwetla informal settlement has a legacy of spatial inequalities highlighted by its inadequate access to decent housing and basic services like water and sanitation facilities. This negatively impact Stjwetla resident’s socio-economic and

health wellbeing. These disparities and inequalities make Stjwetla informal settlement vulnerable to the COVID-19 pandemic health and socio-economic impacts. While lack of data made it impossible to establish the extent of the COVID-19 health implications in the settlement, the study revealed that Stjwetla residents were socially and economically affected by the COVID-19 response measures. The study also revealed that it was difficult to adhere to the COVID-19 response measures like quarantine, self-isolation, lock downs, and regular washing of hands because of the living conditions, livelihoods, and existing patterns of urban segregation in Stjwetla. The findings also revealed a lack of community consultation and participation dividing the community's perceptions towards the government responses. The case of Stjwetla also showed that the COVID-19 pandemic control measures tended to result in harm beyond the direct health threats.

Chapter 6

Recommendations & Conclusions:

Adapting to the New Normal - Informal Settlement Resilience in the COVID-19 Pandemic

6.1 What needs to happen?

The COVID-19 pandemic like the long history of public health crises (Spanish Flu, Ebola, HIV/AIDS etc) presents the world and humanity with a new normal on how we relate in space until comprehensive vaccination programs are implemented. Until now, a public policy developed and supported by scientific evidence and social data has tried to mitigate and control community transmission rates of the virus to flatten the curve of the pandemic to a varying degree of success and failures. However, we need to understand the need to look ahead of the pandemic's immediate health consequences as there are being superseded by the response measure impacts on those subjected to these measures. According to Gupte ad Mitlin (2020: 5), "social and economic interdependencies skew health and wellbeing outcomes." To me as an Urban Studies - Housing and Human Settlement Masters student, the pandemic does not only expose the fault lines and geography of our human settlements but presents an impetus to advocate for spatial transformation and justice. The challenges confronting the Global South in the age of the COVID-19 pandemic are intensified by the existence of typified densely populated informal settlements which lack formalized and adequate water and sanitation infrastructure which exposes residents to uneven socio-economic and health vulnerability. The recommended COVID-19 transmission prevention and containment measures like physical distancing, hand washing, self-isolation, self-quarantine, and community-wide lockdowns are impossible to implement and enforce in informal settlements.

The basic human rights of accessing decent housing with adequate private space, water, and sanitation infrastructure have suddenly become the difference between life and death. Although informal settlements are credited for possessing a powerful tool of resilience built upon community social capital, that is, the immense ability to self-organize, recognise their needs, and adopt innovative low-cost solutions (UN-Habitat, 2020), COVID-19 severely challenged informal settlement residents. For the National, Provincial and Local government, the time to act is now, to not only ensure the immediate emergency responses for informal settlements but plan for medium and long term infrastructural and structural solutions to the problems that render them vulnerable to achieve safe, resilient, inclusive, and sustainable communities and cities. There is a need for state institutions to mobilize a coordinated response with partners to immediately empower informal settlements like Stjwetla informal settlement. Societal relations play a critical role in addressing the COVID-19 pandemic and to achieve the level of behavioural change needed in Stjwetla, these cannot be imposed on the community.

6.2 Discussion & Policy Implications

The COVID-19 pandemic has severely changed our daily lives while imposing new costs, risks, and restrictions on everyday life for most of the world's population. However, these changes greatly affect informal settlements residents who are faced with worse off living conditions and lived experiences while having limited coping mechanism options. This study's empirical evidence from Stjwetla informal settlement highlights a grim situation because of the COVID-19 pandemic induced socio-economic impacts. Sufficient data is highlighting the devastating consequences of the pandemic control and lockdowns measures on economic activity and society in South Africa (Arndt et al., 2020; Heerden and Roos, 2020). At the same time, COVID-19 interventions amplify the need to engage with issues of social relations and inequality in our cities (Gupte and Mitlin, 2020).

The pandemic exacerbated the pre-existing social inequalities within the Stjwetla community. In the age of the COVID-19 pandemic, vulnerability is complex and unevenly distributed across people, communities and within communities. For instance, reduced economic activity induced by the lockdown measures had more negative impacts on migrants residing in informal settlements. Also, migrant households were excluded from government COVID-19 grant and food parcel distribution further increasing their vulnerability due to lack of support. This and other state community complex relationship is problematic during the pandemic. Apart from the migrant community, women were also negatively impacted by the lockdown regulations. According to Leburu-Masigo and Kgadima (2020), there was a spike of Gender-Based Violence cases within the first three weeks of the lockdown regulations which was referred to as the pandemic within a pandemic. There is no denying that the socio-economic and health situation of informal settlement residents may be worse than what this study managed to gather. There is increasing evidence of xenophobia (Rugunanan, 2020; Human Rights Watch, 2020) and stigma (Staunton, 2020; Lötter, 2020) against migrants and the poor during the COVID-19 pandemic.

Although social distancing measures were set as standard procedures, adhering to such protocols in Stjwetla was highly impractical. Residents congregated in the streets, at water taps and within their dwellings. For social distancing to be practical, there is a need for space to accommodate people and in Stjwetla there is limited space per the population densities/ overcrowding in the community to have such space. As noted by Gibson and Rush (2020), informal settlement residents live in small housing units with big families hence social distancing becomes impossible due to lack of space. This situation exposes people in informal settlements at risk of spreading the virus during the lockdown period. Apart from space constraints, people did not wear masks within the

community increases the risk of spreading the virus and yet afraid of contracting the virus. A possible explanation for this was the lack of information during the initial phases of the pandemic. The media reporter and community leaders all concurred that information dissemination of the pandemic was not as effective as it could have been since efforts made under-utilise all possible channels to educate people about the pandemic. In informal settlement environments, education and awareness are critical because of the inequalities that predate the pandemic. People did not know what to and why they needed to do it. It was only after awareness campaigns and pamphlet distribution by the civic organisations that people began to become aware. The need for long term solutions that create space in Stjwetla cannot be overstated. Rapid, vibrant, and robust policies on disseminating health information to poor communities during disasters (fires, flooding, health-related emergencies) are needed. To achieve this, an interdisciplinary approach to improve informal settlement conditions is needed (Hiwasaki & Arico, 2007).

The poor infrastructure, services, and social amenities in Stjwetla were strained during the lockdown due to the overcrowding of the community. Infrastructure deterioration like toilets, broken down standpipes and absent waste management processes potentially exposes residents to spreading and contracting diseases which also enables co-morbidities within the population (Wekesa et al., 2011). The community even failed in their engagement attempt with the municipality to get more toilets for the community. Another critical deprivation in Stjwetla is in accessing healthcare. As noted by the leaders, there were no mobile clinics and the community only got tested twice. The pandemic has the potential to put more strain on communities that reside in conditions that lack access to infrastructure and services. Efforts to regularise and upgrade Stjwetla should be a long-term priority to strengthen the access to infrastructure and services. Increased access to infrastructure and services reduces the inequalities that underpin the community which gives the community and its residents a pedestal that helps them build resilience against the incidence of disasters and pandemics. Additionally, there is a need to support the establishment of social amenities in Stjwetla with strong health promotion and communication that raises awareness of diseases in the community (Jewkes et al., 2014). More importantly, there was a need for frequent mobile health facilities that would enhance the community's access to healthcare to screen for the coronavirus and different other health conditions that residents would need to be treated for.

The issue of livelihoods was also central in Stjwetla. Residents due to their informal livelihoods hardly generate surplus income for savings to fall back on. Many of Stjwetla residents lost their jobs which meant that households lost income and became food secure. Households became food

insecure and relied on the distribution of food parcels for their survival. The government support was also generally poor. Not all people benefited from government programmes. According to Webster, (2020), only 18% of informal settlement residents had access to the COVID-19 grant. Although Stjwetla informal settlement residents were believed to be economically more vulnerable to the impacts of the pandemic due to their reliance on informal livelihoods, there is also an assumption that people with informal livelihoods recover much quicker compared to those people who lost a casual job informal employment. The government need to come up with comprehensive and inclusive policies that support vulnerable communities during disasters. In terms of food security, collaboration between the government, civil societies and business is critical to creating food banks that help feed communities during the pandemic. However, these food banks need to benefit everyone in need regardless of nationality since South Africa belongs to everyone within its borders. Exclusionary policies create pockets of deprivation which disproportionately affects communities.

Disasters like the ongoing public health crisis, fires, flooding among others that have affected Stjwetla in recent history exposes the fault lines of our urbanism and the geography of our cities. According to Maseland (2020), the prevailing conditions which lack adequate investments and deliberate policy responses make cities liabilities for resilient and inclusive development and transformation. While the COVID-19 pandemic poses significant challenges, it presents an opportunity to redefine the planning, management of our cities and human settlements. Addressing the underlying causes of under-financed, unplanned, and uncoordinated urban dynamics is more important now more than ever. The complex, vexed, and mutually constitutive link between the nature of urbanism and informal settlements should be acknowledged. This will prevent the implementation of cosmetic measures in times of disasters that do nothing to alter the reproduction of the same in newer places, scales and forms like in the proposed TRAs. This not only helps in reducing vulnerabilities faced by informal settlements but address the fault lines and antagonism that exists through the co-production of human settlements driven by the participation of communities in governance and policymaking while creating inclusive and resilient cities in South Africa. For Stjwetla informal settlement residents living on the margins, a crisis defines their lived experiences and change is overdue.

6.3 Recommendation

The study acknowledges the South African government efforts through the National Department of Human Settlements (NDHS) and civil society efforts and commitment to addressing COVID-19 pandemic impacts in Stjwetla informal settlement. Firstly, there is a longstanding need to improve the equitability, resilience, and sustainability of Stjwetla through an interdisciplinary approach to in-situ upgrading of services and infrastructure to reduce exposure to public health dangers that increase loss of life to people living in vulnerable conditions. Access to essential basic services and infrastructure is key for effective COVID-19 response, recovery, and resilience building to future crises in Stjwetla. There is a lack of locally adapted strategies developed in consultation and participation of the Stjwetla community. The COVID-19 pandemic responses should foster a long-time commitment of equitable community development and social justice through constructive engagement on what represents an appropriate COVID-19 response for Stjwetla. While the COVID-19 is an emergency, the state should not impose top-down regulations which are difficult and unfeasible to adhere to because of living conditions in Stjwetla. The COVID-19 pandemic is a wake-up call for city authorities to rethink their engagement with the people living in informal settlements. It highlights once again how governance, health, and equity are intertwined and demonstrates the fact that effective urban governance cannot be achieved without collaboration with and/or the engagement of residents and real governance actors.

A defining challenge of Stjwetla informal settlement was the lack of adequate data prior to, and during the COVID-19 pandemic. Informal settlements can be highly organised, with a range of local groups and community structures providing and advocating for services as well as collecting data on residential populations and facilities. Local data and knowledge are essential for the response, especially if this data can be translated into knowledge that helps to design effective response strategies in due time. Furthermore, public health interventions must be balanced with socio-economic interventions supported by a strong health promotion and communication agenda to raise awareness in Stjwetla. There is a need to increase equitable access to financial and food assistance programmes to mitigate and support Stjwetla residents especially targeting the most vulnerable and marginalized. Lastly, there is a need for equitable access to health services in Stjwetla to help protect lives.

6.4 Conclusion

The COVID-19 pandemic is a major problem for Stjwetla informal settlement. The community was least prepared for the virus due to legacy issues that predate the pandemic. This made the community susceptible, vulnerable, and at-risk to the socio-economic and health impacts of the pandemic. The study revealed that for Stjwetla informal settlement, a long-term multi-dimensional crisis already existed before the COVID-19 pandemic. The pandemic exposed the cracks in the practices of urban planning, governance and management, public health policy, and human settlement development and, more specifically, the inequalities that neighbourhoods such as Stjwetla manifest. Stjwetla residents found it difficult to adhere to the COVID-19 pandemic lockdown regulations, physical distancing requirements, and regular washing of hands due to the living conditions in Stjwetla. The study also revealed a lack of locally adapted regulation strategies developed in consultation and participation of Stjwetla community which reflects a broader tendency in South African public policy that lacks contextualisation when implementing international models. However, the pandemic also presents an opportunity to not only plan and implement short term cosmetic measures but also long-term transformative and sustainable solutions for Stjwetla informal settlement. Balancing the COVID-19 pandemic responses with the broader developmental and healthcare priorities is essential to ensure and strengthen the long-term resilience of Stjwetla informal settlement. Lastly, the COVID-19 interventions in Stjwetla informal settlement highlight the need to engage with issues of and inequality in the South African human settlements.

REFERENCES

Acioly C. Jr. 2003. Urban Management: an introductory note, Extracted from "The Meaning and Scope of Urban Management: an introductory note," In Azza Sirry 2003, 'Urban Management Practices in Secondary Cities in Egypt: the case of Belbeis', *Elias Modern Publishing House*, Cairo, Egypt.

Ajayi, J.R., 2012. Strategies for sustainable housing cooperatives in South Africa. *Unpublished Philosophiae Doctor Thesis,* Nelson Mandela Metropolitan University.

Alvesson, M. and Sköldberg, K. 2000. Reflexive Methodology: New Vistas for Qualitative Research. London: *Sage*.

Anderson, C., 2010. Presenting and Evaluating Qualitative Research. *American Journal of Pharmaceutical Education*, 74(8). pp.1-7.

Arndt, C., Davies, R., Gabriel, S., Harris, L., Makrelov, K., Modise, B., Robinson, S., Simbanegavi, W., Van Seventer, D., and Anderson, L. 2020. Impact of Covid-19 on the South African Economy: An Initial Analysis. *SA-TIED Working Paper 111*., pp.1-5.

Azcona, G., Bhatt, A., and Ndugwa, R. 2020. COVID-19 Exposes the Harsh Realities of Gender Inequality in Slums, *UN-Habitat*, Nairobi

Bernardo, C., 2020. Upgrades to Informal Settlements urgently needed, *University of Cape Town*, https://www.news.uct.ac.za/article/-2020-04-03-upgrades-to-informal-settlements-urgently-needed. (Accessed 13/08/2020)

Bhadra, A., Mukherjee, A. and Sarkar, K., 2021. Impact of Population Density on Covid-19 Infected and Mortality Rate in India. *Modeling Earth Systems and Environment*, 7(1), pp.623-629.

Bhide, A., 2020. Informal Settlements, The Emerging Response to COVID and the Imperative of Transforming the Narrative. *Journal of Social and Economic Development*, pp.1-10.

Bonner, P.L. and Nieftagodien, N. 2008. Alexandra: A History, *Witwatersrand University Press*.

Bryman, A. and Bell, E. 2007. Business research methods. *Oxford University Press*, USA

Chelleri, L., Waters, J.J., Olazabal, M. and Minucci, G., 2015. Resilience trade-offs: Addressing Multiple Scales and Temporal Aspects of Urban Resilience. *Environment and Urbanization*, 27(1), pp.181-198.

Chowell, G., Bettencourt, L.M., Johnson, N., Alonso, W.J. and Viboud, C., 2008. The 1918–1919 Influenza Pandemic in England and Wales: Spatial Patterns in Transmissibility and Mortality Impact. Proceedings of the Royal Society B: *Biological Sciences*, 275(1634), pp.501-509.

Clark, M. 2020. De-densification is Just a Fancy Word for Eviction, Coronavirus & Human Rights, *Daily Maverick*; https://www.dailymaverick.co.za/article/2020-04-17-de-densification-is-just-a-fancy-word-for-eviction/ (Accessed 12/11/2020)

Corburn, J., Vlahov, D., Mberu, B., Riley, L., Caiaffa, W.T., Rashid, S.F., Ko, A., Patel, S., Jukur, S., Martínez-Herrera, E. and Jayasinghe, S., 2020. Slum health: Arresting COVID-19 and Improving Well-being in Urban Informal Settlements. *Journal of Urban Health*, 97(3), pp.348-357.

DAG, 2020. An Urgent Call to Rethink De-densification as the Dominant Proposed Strategy in the Context of COVID-19, https://www.dag.org.za/wp-content/uploads/2020/04/ngos-submission-re-de-densification-covid-19-full.pdf (Accessed 11/08/2020)

Daily Maverick. 2020. De-densification of Informal Settlements as a Crisis Response is Bad Short Term Thinking - 14 Civil Society Groups, *Daily Maverick*, Published 20 April 2020, https://www.dailymaverick.co.za/article/2020-04-20-de-densification-of-informal-settlements-as-a-crisis-response-is-bad-short-term-thinking-14-civil-society-groups/ (Accessed 11/08/2020)

Davidson, D.J., 2010. The Applicability of the Concept of Resilience to Social Systems: Some Sources of Optimism and Nagging Doubts. *Society and Natural Resources*, 23(12), pp.1135-1149.

De Groot, J and Lemanski, C. 2020. COVID-19 Responses: Infrastructure Inequality and Privileged Capacity to Transform Everyday Life in South Africa. *International Institute for Environment and Development (IIED)*, Vol 33(1), pp.255–272.

De Kadt, J. 2020. COVID-19 Highlights South Africa's Need for Local-Level Social Data, The Conversation; https://theconversation.com/covid-19-highlights-south-africas-need-for-local-level-social-data-137804 (Accessed 14/07/2020)

Department of Housing. 1997. Urban Development Framework. Retrieved from https://www.gov.za/sites/default/files/gcis_document/201409/saurb.pdf(Accessed 13/12/2020)

Dlamini, N. J., 2020. Gender-Based Violence, Twin Pandemic to COVID-19. *Critical Sociology*, 47(4-5), pp.583-590.

Ducharme J. 2020. World Health Organization Declares COVID-19 a 'Pandemic.' Here's What That Means.https://time.com/5791661/who-coronavirus-pandemic-declaration/(Accessed 13/08/20)

Farha, L. 2020. COVID-19 Guidance Note, Protecting residents of Informal settlements, Special Rapporteur on the right to adequate housing, *UN Human Rights Special Procedures*, pp.1-3

Fèvre, E. and Tacoli, C. 2020. Coronavirus Threat Looms Large for Low-Income Cities, *International Institute for Environment and Development;* https://www.iied.org/coronavirus-threat-looms-large-for-low-income-cities (Accessed 13/12/2020)

Florida, R. 2020. The Geography of Coronavirus, Bloomberg CityLab; https://www.bloomberg.com/news/articles/2020-04-03/what-we-know-about-density-and-covid-19-s-spread (Accessed 13/11/2020)

Friesen, J., Friesen, V., Dietrich, I., and Pelz, P. F., 2020. Slums, Space, and State of Health – A link between settlement morphology and health data. *International Journal of Environmental Research and Public Health*, 17(6), https:// doi.org/10.3390/ijerph17062022

Garrett, T. A., 2010. Economic effects of the 1918 influenza pandemic: Implications for a modern-day pandemic. *Working paper CA0721.2007. Federal Reserve Bank of St. Louis*. https://www.stlouisfed.org/~/media/files/pdfs/community-development/research-reports/pandemic_flu_report.pdf (Accessed 13/12/2020)

Gibson, L. and Rush, D., 2020. Novel Coronavirus in Cape Town Informal Settlements: Feasibility of Using Informal Dwelling Outlines to Identify High Risk Areas for COVID-19 Transmission from a Social Distancing Perspective. *JMIR Public Health and Surveillance*, 6(2), p.e18844.

Gil, M. and Undurraga, E.A., 2020. COVID-19 Has Exposed How 'The Other Half'(Still) Lives. *Bulletin of Latin American Research*, 39, pp.28-34.

Greeff, M., 2020. Conducting Qualitative Research During a Period of Lockdown and Social Distancing. *African Unit for Transdisciplinary Health Research*, 1, pp.1-7.

Groenewald, L., Huchzermeyer, M., Kornienko, K., Tredoux, M.J., Rubin, M. and Raposo, I., 2013. Breaking Down the Binary: Meanings of Informal Settlement in Southern African Cities. In Bekker, S. & Fourchard, L. (eds.) 2013. Governing Cities in Africa: Politics and Policies, Cape Town, *HSRC Press.*

Gupte, J., and Mitlin, D. 2020. COVID-19: What is Not Being Addressed. *Environment and Urbanization*, pp.1.18.

Hamidi, S., Sabouri, S. and Ewing, R., 2020. Does Density Aggravate the COVID-19 Pandemic? Early Findings and Lessons for Planners. *Journal of the American Planning Association*, 86(4), pp.495-509.

Harding A., 2020. South Africa's Ruthlessly Efficient Fight Against Coronavirus, *BBC News*, https://www.bbc.com/news/world-africa-52125713 (Accessed 10/12/2020)

Hiwasaki, L. and Arico, S., 2007. Integrating the Social Sciences into Ecohydrology: Facilitating an Interdisciplinary Approach to Solve Issues Surrounding Water, *Environment and People. Ecohydrology & Hydrobiology*, 7(1), pp.3-9.

Huchzermeyer, M. and Karam, A. eds., 2006. Informal Settlements: A Perpetual Challenge? *Juta and Company Ltd.*

Huchzermeyer, M., 2014. Humanism, creativity and rights: invoking Henri Lefebvre's right to the city in the tension presented by informal settlements in South Africa today. *Transformation: Critical Perspectives on Southern Africa*, *85*(1), pp.64-89.

International Labour Organisation (ILO), 2020. COVID-19 Crisis and the Informal Economy: Immediate Responses and Policy Challenges. *ILO Brief*. (Accessed 10/12/2020)

Isensee, P, 2020. What is the Right to the City?, *RioOnWatch,* https://rioonwatch.org/?p=11668, (Accessed 10/12/2020)

Joubert, l. 2020. Containment Regulations Must Not Strangle the Flow of Food to Informal Markets, Researchers Urge, *Daily Maverick*. https://www.dailymaverick.co.za/article/2020-04-02-containment-regulationsmust-not-strangle-the-flowof-food-to-informal-marketsresearchers-urge (Accessed 10/01/2021)

Kao, C.L., Chan, T.C., Tsai, C.H., Chu, K.Y., Chuang, S.F., Lee, C.C., Li, Z.R.T., Wu, K.W., Chang, L.Y., Shen, Y.H. and Huang, L.M., 2012. Emerged HA and NA Mutants of the Pandemic Influenza H1N1 Viruses with Increasing Epidemiological Significance in Taipei and Kaohsiung, Taiwan, 2009–10. *PloS one*, 7(2), p.e31162.

Katz, R., Vaught, A. and Simmens, S.J., 2019. Local Decision Making for Implementing Social Distancing in Response to Outbreaks. *Public Health Reports*, 134(2), pp.150-154.

Khagram, S and Davis, N. 2020. Why Coronavirus will Accelerate the Fourth Industrial Revolution, The Economist. https://Why coronavirus will accelerate the fourth Industrial Revolutioneiuperspectives.economist.com/financial-services/why-coronavirus-will-accelerate-fourth- (Accessed 10/12/2020)

Kotas, D, 2016. Building Resilience in Informal Settlements, *City Talk*, https://talkofthecities.iclei.org/building-resilience-in-informal-settlements/ (Accessed 11/12/2020)

Lancet, T., 2020. Redefining Vulnerability in the Era of COVID-19. *Lancet, London, England*, 395(10230), pp.1089.

Lippi, G., Henry, B.M., Bovo, C. and Sanchis-Gomar, F., 2020. Health Risks and Potential Remedies During Prolonged Lockdowns for Coronavirus Disease 2019 (COVID-19). *Diagnosis*, 7(2), pp.85-90.

Lockett, H., Johnson, M., Evans, S. and Bastl, M. 2011, "Product Service Systems and Supply Network Relationships: An Exploratory Case Study", *Journal of Manufacturing Technology Management*, Vol. 22 No. 3, pp. 293-313. https://doi.org/10.1108/17410381111112684

Lötter, C. 2020. Covid-19 stigma: Revealing the Pre-Existing Fault Lines in Our Society, *Mail and Guardian*, https://mg.co.za/article/2020-04-23-covid-19-stigma-revealing-the-pre-existing-fault-lines-in-our-society/ (Accessed 11/12/2020)

Mapanga, C. 2020, Covid-19 Testing Figures Reaching 100 000 in Gauteng - Here is a Breakdown of the Numbers, *News24*, https://www.news24.com/news24/SouthAfrica/News/covid-19-testing-figures-reaching-100-000-in-gauteng-here-is-a-breakdown-of-the-numbers-20200507 (Accessed 10/12/2020)

Maseland, J (ed) 2020. COVID-19 in African Cities: Impacts, Responses and Policies*, UN-HABITAT, UNCDF, UCLG-A Africa, UNECA*, pp.1-29.

Mbambo, S.B. and Agbola, S.B., 2020. The Impact of the COVID-19 Pandemic in Townships and Lessons for Urban Spatial Restructuring in South Africa*. African Journal of Governance & Development*, 9(1.1), pp.329-351.

McFarlane, C., 2020. De/Re-densification: A Relational Geography of Urban Density. *City*, 24(1-2), pp.314-324.

McIntosh, K. 2020. Coronavirus Disease 2019 (COVID-19) https://www.uptodate.com/contents/coronavirus-disease-2019-covid-19. (Accessed 11/06/2020)

Meerow, S. and Stults, M., 2016. Comparing Conceptualizations of Urban Climate Resilience in Theory and Practice. *Sustainability*, 8(7), p.701.

Mitlin, D., 2020. Dealing with COVID-19 in the Towns and Cities of the Global South. I*nternational Institute for Environment and Development*, 27.

Monana T., 2020. Alex Residents Vow to Halt Planned Relocation to Temporary Housing, Say Move Only Benefits Foreigners, *IOL*, Published 8 May 2020, https://www.iol.co.za/the-star/news/alex-residents-vow-to-halt-planned-relocation-to-temporary-housing-say-move-only-benefits-foreigners-47717161 (Accessed 10/06/2020)

Morgan G., 2019. Ideas Towards Water Sensitive Settlements, *ENVIROSOURCE (Pty) Ltd*, WRC Report No. 2519/1/19, pp.1-110.

National Department of Human Settlements (NDHS), 2020, Minister Lindiwe Sisulu on Interventions to Curb the Spread of Coronavirus COVID-19, https://www.gov.za/speeches/minister-lindiwe-sisulu-interventions-curb-spread-coronavirus-covid-19-25-mar-2020-0000 (Accessed 10/06/2020)

Nishiura, H., & Chowell, G. 2008. Rurality and Pandemic Influenza: Geographic Heterogeneity in the Risks of Infection and Death in Kanagawa, Japan (1918–1919). *The New Zealand Medical Journal*, 121, pp.18–27.

Nombembe P. 2020. 'Wash your hands - with what?' – Cape Town Shack Dwellers Protest Over Water a Day Before Lockdown. *TimesLive*; https://www.timeslive.co.za/news/south-africa/2020-03-25-wash-your-hands-with-what-cape-town-shack-dwellers-protest-over-water-a-day-before-lockdown/. (Accessed 10/06/2020)

Ntseku, M. 2020. "Covid-19: Civil Society Bodies Warn Against De-densification of Informal Settlements", *IOL*, 21 April, https://www.iol.co.za/capeargus/news/covid-19-civilsociety-bodies-warn-against-de-densification-ofinformal-settlements-46971831, (Accessed 10/06/2020)

Nyashanu, M., Simbanegavi, P. and Gibson, L., 2020. Exploring the Impact of COVID-19 Pandemic Lockdown on Informal Settlements in Tshwane Gauteng Province, South Africa. *Global Public Health*, 15(10), pp.1443-1453.

Olsen, H. 2020. The United States Might Have a Secret Weapon Against Coronavirus. *The Washington Post*. https://www.washingtonpost.com/opinions/2020/03/19/united-states-might-have-secret-weapon-against-coronavirus/ (Accessed 10/11/2020)

Ozili, P., 2020. COVID-19 in Africa: Socio-Economic Impact, Policy Response and Opportunities. *International Journal of Sociology and Social Policy*.

Parker, A. and Kadt, J. 2020. A Close Look at Some South African Households Gives Insights into COVID-19 Vulnerability, *The Conversation*; https://theconversation.com/close-look-at-some-south-african-households-gives-insights-into-covid-19-vulnerability-143107 (Accessed 10/11/2020)

Parmet, W. E., & Rothstein, M. A. 2018. The 1918 Influenza Pandemic: Lessons Learned and Not. *American Journal of Public Health*, 108(11), pp.1435–1436.

Pettinger, T. 2017. Population Density, Economics, https://www.economicshelp.org/blog/20614/economics/population-density/ (Accessed 10/12/2020)

Pienaar, J. 2020. Old Lessons, New Pandemic: 'When We Showed up to do Covid-19 Testing, Communities told us to Pack our Bags,' *News24,* https://www.news24.com/news24/columnists/guestcolumn/old-lessons-new-pandemic-when-we-showed-up-to-do-covid-19-testing-communities-told-us-to-pack-our-bags-20200622 (Accessed 10/07/2020)

Pijoos, I.2020. Alex Man 'Choked, Kicked, Hit with Machine Gun' Before He Died, *HeraldLIVE*, https://www.heraldlive.co.za/news/2020-04-15-alex-man-choked-kicked-hit-with-machine-gun-before-he-died/ (Accessed 10/06/2020)

Quinn, S. C., and Kumar, S., 2014. Health Inequalities and Infectious Disease Epidemics: A Challenge for Global Health Security. Biosecurity and Bioterrorism: Biodefense Strategy, Practice, and Science, 12(5), 263–273. https://doi.org/10.1089/bsp.2014.0032

Rahman, M.S., 2020. The Advantages and Disadvantages of Using Qualitative and Quantitative Approaches and Methods in Language "Testing and Assessment" Research: A Literature Review. *Journal of Education and Learning*, pp.1-3.

Rajgopaul, D. 2020. Government to Allow Small Businesses and Spaza Shops to Operate During Lockdown", *IOL,* https://www.iol.co.za/businessreport/companies/governmentto-allow-small-businesses-and-spaza-shops-to-operateduring-lockdown-46370673. (Accessed 10/11/2020)

Richards P. 2016. Ebola: How a People's Science Helped End an Epidemic. *London: Zed Books,* pp.1-192.

Rothe, C., Schunk, M., Sothmann, P., Bretzel, G., Froeschl, G., Wallrauch, C., Zimmer, T., Thiel, V., Janke, C., Guggemos, W. and Seilmaier, M., 2020. Transmission of 2019-nCoV infection from an Asymptomatic Contact in Germany. *New England Journal of Medicine*, 382(10), pp.970-971.

San Lau, L., Samari, G., Moresky, R.T., Casey, S.E., Kachur, S.P., Roberts, L.F. and Zard, M., 2020. COVID-19 in Humanitarian Settings and Lessons Learned from Past Epidemics. *Nature Medicine*, 26(5), pp.647-648.

Satterthwaite, D., Archer, D., Colenbrander, S., Dodman, D., Hardoy, J., Mitlin, D. and Patel, S., 2020. Building Resilience to Climate Change in Informal Settlements. *One Earth*, 2(2), pp.143-156.

Seeliger, L. and Turok, I., 2014. Averting a Downward Spiral: Building Resilience in Informal Urban Settlements Through Adaptive Governance. *Environment and Urbanization*, 26(1), pp.184-199.

Sharifi, A. and Khavarian-Garmsir, A.R., 2020. The COVID-19 Pandemic: Impacts on Cities and Major Lessons for Urban Planning, Design, and Management. *Science of The Total Environment*, p.142391.

Simiyu, S., Cairncross, S. and Swilling, M., 2019. Understanding Living Conditions and Deprivation in Informal Settlements of Kisumu, Kenya. *In Urban Forum* (Vol. 30, No. 2), *Springer Netherlands*, pp. 223-241.

Staunton, C., Swanepoel, C. and Labuschagine, M., 2020. Between a Rock and a Hard Place: COVID-19 and South Africa's response. *Journal of Law and the Biosciences*, pp.1-12.

Soy, S.K., 1997. The Case Study as a Research Method. *University of Texas at Austin*. Available at: http://www.ischool. utexas.edu/~ssoy/usesusers/l391d1b.htm.

The Guardian. 2020. Brazil Gangs Impose Strict Curfews to Slow Coronavirus Spread. *The Guardian*, https://www.theguardian.com/world/2020/mar/25/brazil-rio-gangs-coronavirus (accessed 19/06/2020).

Turok, I. and Borel-Saladin, J., 2018. The Theory and Reality of Urban Slums: Pathways-out-of-poverty or cul-de-sacs? *Urban Studies*, 55(4), pp.767-789.

UN-HABITAT 2020. Fighting COVID-19 in Africa's informal settlements Published on 8 Jun 2020 https://unhabitat.org/fighting-covid-19-in-africa%E2%80%99s-informal-settlements (Accessed 10/09/2020)

Valeri, L., Patterson-Lomba, O., Gurmu, Y., Ablorh, A., Bobb, J., Townes, F. W., & Harling, G. 2016. Predicting Subnational Ebola Virus Disease Epidemic Dynamics from Socio-Demographic Indicators. *PloS One*, 11(10), e0163544. https://doi.org/10.1371/journal.pone.0163544

Van Belle, S., Affun-Adegbulu, C., Soors, W., Srinivas, P.N., Hegel, G., Van Damme, W., Saluja, D., Abejirinde, I., Wouters, E., Masquillier, C. and Tabana, H., 2020. COVID-19 and Informal Settlements: An Urgent Call to Rethink Urban Governance. *International Journal for Equity in Health*, 19(1), pp.1-2.

Van Doremalen, N., Bushmaker, T., Morris, D.H., Holbrook, M.G., Gamble, A., Williamson, B.N., Tamin, A., Harcourt, J.L., Thornburg, N.J., Gerber, S.I. and Lloyd-Smith, J.O., 2020. Aerosol and Surface Stability of SARS-CoV-2 as Compared with SARS-CoV-1. *New England Journal of Medicine*, 382(16), pp.1564-1567.

Van Heerden, J. and Roos, E.L., 2021. The Possible Effects of the Extended Lockdown Period on the South African Economy: A CGE Analysis. *South African Journal of Economics*, 89(1), pp.95-111.

Webster. D. 2020. Bringing De-densification Home in Alexandra, *New Frame* https://www.newframe.com/bringing-de-densification-home-in-alexandra/ (Accessed 10/06/2020)

Weston, M. 2020. How to Tackle Covid-19 in Informal Settlements*, The Mail & Guardian;* https://mg.co.za/article/2020-03-27-how-to-tackle-covid-19-in-informal-settlements/ (Accessed 10/04/2020)

WHO. 2020. What Are the Health Risks Related to Overcrowding? https://www.who.int/water_sanitation_health/emergencies/qa/emergencies_qa9/en. (Accessed 10/04/2020)

WHO. 2020. WHO Director-General's Opening Remarks at the Media Briefing on COVID-19 - 11 March 2020; https://www.who.int/director-general/speeches/detail/who-director-general-s-opening-remarks-at-the-media-briefing-on-covid-19---11-march-2020 (Accessed 10/04/2020)

Wilkinson, A. 2020. The Impact of COVID-19 in Informal Settlements. *Cities Alliance* – Cities without Slums. https://www.citiesalliance.org/newsroom/news/urban-news/impact-covid-19-informal-settlements (Accessed 10/12/2020)

Wong, D.W. and Li, Y., 2020. Spreading of COVID-19: Density Matters. *Plos one*, 15(12), p.e0242398.

Zandiatashbar, A., Hamidi, S., Foster, N., and Park, K. 2019. The Missing Link Between Place and Productivity? The Impact of Transit-Oriented Development on the Knowledge and Creative Economy. *Journal of Planning Education and Research*, 39(4), 429–441

Zerbo, A., Delgado, R.C. and González, P.A., 2020. Vulnerability and Everyday Health Risks of Urban Informal Settlements in Sub-Saharan Africa. *Global Health Journal*, 4(2), pp.46-50.

Zhang, Y., 2018. The Credibility of Slums: Informal Housing and Urban Governance in India. *Land Use Policy*, 79, pp.876-890.

Interviews

Civil Society Expert 1, Personal Communication, 06/10/2020

Media Reporter 1, Personal Communication, 06/10/2020

Huchzermeyer, M., Personal Communication, 03/11/2020

Academic Expert 1, Personal Communication, 03/11/2020

Civil Society Expert 2, Personal Communication, 05/11/2020

Stjwetla Community Leader 1, Personal Communication, 02/12/2020

Stjwetla Community Leader 2, Personal Communication, 02/12/2020

Stjwetla Community Leader 3, Personal Communication, 02/12/2020

Stjwetla Community Leader 4, Personal Communication, 02/12/2020

Government Official 2, Personal Communication, 03/12/2020

Government Official 3, Personal Communication, 03/12/2020

Government Official 1, Personal Communication, 10/12/2020

APPENDIX

APPENDIX 1 ETHICS CERTIFICATE



SCHOOL OF ARCHITECTURE AND PLANNING
HUMAN RESEARCH ETHICS COMMITTEE

SCHOOL of ARCHITECTURE & PLANNING

CLEARANCE CERTIFICATE
PROTOCOL NUMBER: SOAP086/06/2020

PROJECT TITLE:	The 'liveability' state of informal human settlements in the face of migration and climate change. An investigation on the Gauteng Province, Human Settlements Department adaptation and resilience policies towards informal human settlements
INVESTIGATOR/S:	Tatenda Sonono (Student No: 1927060)
SCHOOL:	Architecture and Planning
DEGREE PROGRAMME:	Master of Urban Studies (**MUS HHS**)
DATE CONSIDERED:	05 August 2020
EXPIRY DATE:	05 August 2021
DECISION OF THE COMMITTEE:	Approved

CHAIRPERSON _____
(Dr Brian Boshoff)

DATE: Signed under lockdown: 10.8.20

cc: Supervisor/s: Raffael Beier

DECLARATION OF INVESTIGATORS
I/We fully understand the conditions under which I am/we are authorized to carry out the abovementioned research and I/we guarantee to endure compliance with these conditions. Should any departure to be contemplated from the research procedure as approved I/we undertake to resubmit the protocol to the Committee.

School of Architecture & Planning
University of the Witwatersrand
Private Bag 3 Wits 2050
Johannesburg South Africa
www.wits.ac.za

T + 27 11 717 7623
F + 27 11 717 7649

APPENDIX 2- SCHOOL OF ARCHITECTURE AND PLANNING PERMISSION LETTER

UNIVERSITY OF THE WITWATERSRAND, JOHANNESBURG | SCHOOL OF ARCHITECTURE PLANNING

15 October 2020

Dear Michelle Tatenda Sonono:

Reference: Permission to Conduct Research Among SoAP's Staff

This memorandum is in support of your request to interview staff at SoAP for your research. Please make sure that ethics clearance certificate is obtained and be aware that participation by staff is by choice and availability. Let me know if I can be of further assistance to you. Good luck in your research.

Sincerely

Professor Nnamdi Elleh,
Head: School of Architecture and Planning,
Faculty of Engineering and the Built Environment,
University of Witwatersrand, Johannesburg

Nnamdi.Elleh@wits.ac.za

+27 11 717 7720 Office

APPENDIX 3 UNIVERSITY OF WITWATERSRAND PERMISSION LETTER

UNIVERSITY OF THE WITWATERSRAND, JOHANNESBURG

OFFICE OF THE DEPUTY REGISTRAR

19 August 2020

Michelle Sonono
Student number (1927060)
Master of Urban Studies (Housing and Human Settlements)
School of Architecture and Planning

TO WHOM IT MAY CONCERN

"South African Informal Settlements in the Age Of Covid-19 Pandemic. An Investigation on Stjwetla Informal Settlement Resilience Challenges against the Covid-19 Pandemic"

This letter serves to confirm that the above project has received permission to be conducted on University premises, and/or involving staff and/or students of the University as research participants. In undertaking this research, you agree to abide by all University regulations for conducting research on campus and to respect participants' rights to withdraw from participation at any time.

If you are conducting research on certain student cohorts, year groups or courses within specific Schools and within the teaching term, permission must be sought from Heads of School or individual academics.

Ethical clearance has been obtained. (Protocol number: **SOAP086/06/2020**)

Research commencement: (As per HOS/HR consent and guidelines)

Potgieter

Nicoleen Potgieter
University Deputy Registrar

Private Bag 3, WITS, 2050, South Africa | **T** +27 11 717 1204/8 | **E** nicoleen.potgieter@wits.ac.za | www.wits.ac.za
IYUNIVESITHI YASEWITWATERSRAND | YUNIVESITHI YA WITWATERSRAND

APPENDIX 4 CITY OF JOHANNESBURG DEPARTMENT OF HOUSING PERMISSION LETTER

City of Johannesburg
Department of Housing

11th Floor
222 Smit Street
Braamfontein
Johannesburg
2017

PO Box 1049
Braamfontein
South Africa
2017

Tel +27(0) 11 018 6667
E-mail:PatrickP@joburg.org.za

www.joburg.org.za

29 September 2020

Enquiries:
Mr. Moyahabo Mabala
Tel no.: 011 018 6767
Ref no.: Son02

To: Michelle Tatenda Sonono
cc: DR Raffael Beier

RE: PERMISSION AND SUPPORT TO CONDUCT RESEARCH FOR ACADEMIC PURPOSES FOR – MICHELLE TATENDA SONONO.

Official permission is hereby granted to Michelle Tatenda Sonono to conduct research for academic purposes.

The permission is granted based on the research request form and concept paper submitted by Michelle Tatenda Sonono to the Housing Department of the City of Joburg. The purpose of the research is to contribute to the body of knowledge on the subject of management of informal settlement in the City of Johannesburg. The research project is intended to assess the resilience of vulnerable informal settlement in South Africa against the Covid-19 pandemic.

The student is requested to indicate to the Directorate Policy and Research on the identified participants in order for the directorate to facilitate introductions for him. No respondent should be identified by name without written consent from the individual and all contributions should be kept confidential and for purposes of this research only. Respondents may withdraw from the study if they are unable or not willing to assist further, this permission does not nullify individual's right to refuse to participate in the study.

A copy of the research report to be shared with the department on completion of the study. You are also expected to sign an agreement with the department within 10 days after receiving this letter, failing this will mean this letter in null and void. All research techniques will be shared and explained in details with the respondents and department prior undertaking the study.

We trust that all necessary research ethics will be adhered to in the conducting of the study. We will endeavor to provide whatever support required.

Kind Regards,

.....
Patrick Phophi
Acting Executive Director
City of Johannesburg Housing
Date: 30/09/2020

Tel: +27 (11) 018-6667
Tax: +27 (11) 018-6669
Email: PatrickP@joburg.org.za

APPENDIX 5 CITY OF JOHANNESBURG INFORMATION PARTICIPANT SHEET

City of Johannesburg Participant Information Sheet

Dear Sir / Madam

My name is Michelle Tatenda Sonono. I am a student at the University of Witwatersrand currently studying towards a Masters in Urban Studies (Housing and Human Settlements) in the School of Architecture and Planning. As part of my academic requirements for the degree, I am researching to investigate South African Informal Settlement vulnerability and resilience in the age of COVID-19 pandemic using Stjwetla Informal Settlement as my case study. It is hoped that the data gathered in this research may enhance understanding of the study phenomenon.

As part of this research, I would like to invite you to take part in this study. Participants have been chosen because of their potential to best inform the research questions and enhance understanding of the topic under study. Involvement in the study involves your participation in an interview that will last at most approximately one hour. The interview would be conducted at a time and place that is suitable for you.

With your permission, I would also like to record the interview using a digital device. The audio files will strictly be used for academic purposes only. You will not receive any direct benefits from participating in this study, and there are no disadvantages or penalties for not participating. You may withdraw at any time or not answer any question if you do not want to. The information you provide will be kept confidential and anonymous; the information you give to me will be held securely and not disclosed to anyone. The data I collect will be anonymous as I will not be asking for your name or any identifying information, and I will be using a pseudonym (false name) to represent your participation, in my final research report. If you have any questions afterwards about this research, feel free to contact me on the details listed below. This study is undertaken solely for academic purposes and will be written up as a research report which will be available online through the university library website. If you wish to receive a summary of this report, I will be happy to send it to you upon request. If you have any concerns or complaints regarding the ethical procedures of this study, you are welcome to contact the University Human Research Ethics Committee (Non-Medical), telephone +27(0) 11 717 1408, email hrec-medical.researchoffice@wits.ac.za

Yours sincerely,

Michelle Tatenda Sonono.

Researcher Details: Michelle Tatenda Sonono, 1927960@students.wits.ac.za
Supervisor Details: Raffael Beier, raffael.beier@wits.ac.za, tel: 0763382016

APPENDIX 6 CITY OF JOHANNESBURG CONSENT FORM

CITY OF JOHANNESBURG FORMAL CONSENT FORM:

Research Title: South African Informal Settlements in the age of COVID-19 Pandemic. An investigation on Stjwetla Informal Settlement Resilience Challenges against the COVID-19 Pandemic.

Student name: Michelle Tatenda Sonono
Student email: 1927060@students.wits.ac.za

Supervisor name: Raffael Beier
Supervisor email: raffael.beier@wits.ac.za
Supervisor contact number: 0763382016

	Tick your response	
I have read and understood the participant information sheet, and have had the opportunity to ask questions.	**Yes**	**No**
I understand I am no under obligation to take part in this study		
I understand I have the right to answer and not to answer particular questions for whatever reasons		
I understand this research is for academic purposes and that through publication my contribution will be made available to the public		
I understand I have the right to withdraw from the study for whatever reason		
It has been explained that anonymity might not be fully guaranteed.		
I accept for this interview to be audiotaped		
I accept the use of verbatim (direct) quotes from this interview		

PARTICIPANT:

I herewith confirm that I have been fully informed about the study and have given consent to participate as indicated above.

Printed Name Signature Date

RESEARCHER:

Printed Name Signature Date

APPENDIX 7 ACADEMIA PARTICIPANT INFORMATION SHEET

Academia Participant Information Sheet

Dear Dear Sir / Madam

My name is Michelle Tatenda Sonono. I am a student at the University of Witwatersrand currently studying towards a Masters in Urban Studies (Housing and Human Settlements) in the School of Architecture and Planning. As part of my academic requirements for the degree, I am undertaking a research to investigate on South African Informal Settlement vulnerability and resilience in the age of COVID-19 pandemic using Stjwetla Informal Settlement as my case study. It is hoped that the data gathered in this research may enhance understanding of the study phenomenon.

As part of this research I would like to invite you to take part in this study. Participants have been chosen because of their potential to best inform the research questions and enhance understanding of the topic under study. Involvement in the study involves your participation in an interview that will last at most approximately one hour. The interview would be conducted at a time and place that is suitable for you.

With your permission, I would also like to record the interview using a digital device. The audio files will strictly be used for academic purposes only.You will not receive any direct benefits from participating in this study, and there are no disadvantages or penalties for not participating. You may withdraw at any time or not answer any question if you do not want to. The information you provide will be kept confidential and anonymous; the information you give to me will be held securely and not disclosed to anyone. The data I collect will be anonymous as I will not be asking for your name or any identifying information, and I will be using a pseudonym (false name) to represent your participation, in my final research report. If you have any questions afterwards about this research, feel free to contact me on the details listed below. This study is undertaken solely for academic purposes and will be written up as a research report which will be available online through the university library website. If you wish to receive a summary of this report, I will be happy to send it to you upon request. If you have any concerns or complaints regarding the ethical procedures of this study, you are welcome to contact the University Human Research Ethics Committee (Non-Medical), telephone +27(0) 11 717 1408, email hrec-medical.researchoffice@wits.ac.za

Yours sincerely,

Michelle Tatenda Sonono.

Researcher Details: Michelle Tatenda Sonono, 1927960@students.wits.ac.za
Supervisor Details: Raffael Beier, raffael.beier@wits.ac.za, tel: 0763382016

APPENDIX 8 ACADEMIA CONSENT FORM



ACADEMIA FORMAL CONSENT FORM:

Research Title: South African Informal Settlements in the age of COVID-19 Pandemic. An investigation on Stjwetla Informal Settlement Resilience Challenges against the COVID-19 Pandemic.

Student name: Michelle Tatenda Sonono
Student email: 1927060@students.wits.ac.za

Supervisor name: Raffael Beier
Supervisor email: raffael.beier@wits.ac.za
Supervisor contact number: 0763382016

	Tick your response	
I have read and understood the participant information sheet, and have had the opportunity to ask questions.	**Yes**	**No**
I understand I am no under obligation to take part in this study		
I understand I have the right to answer and not to answer particular questions for whatever reasons		
I understand this research is for academic purposes and that through publication my contribution will be made available to the public		
I understand I have the right to withdraw from the study for whatever reason		
It has been explained that anonymity might not be fully guaranteed.		
I accept for this interview to be audiotaped		
I accept the use of verbatim (direct) quotes from this interview		

PARTICIPANT:

I herewith confirm that I have been fully informed about the study and have given consent to participate as indicated above.

Printed Name Signature Date

RESEARCHER:

Printed Name Signature Date

APPENDIX 9 CIVIL SOCIETY AND MEDIA INFORMATION SHEET



Civil Society and Journalists Participant Information Sheet

Dear Dear Sir / Madam

My name is Michelle Tatenda Sonono. I am a student at the University of Witwatersrand currently studying towards a Masters in Urban Studies (Housing and Human Settlements) in the School of Architecture and Planning. As part of my academic requirements for the degree, I am undertaking a research to investigate on South African Informal Settlement vulnerability and resilience in the age of COVID-19 pandemic using Stjwetla Informal Settlement as my case study. I hope that the data gathered in this research may enhance understanding of the study phenomenon.

As part of this research I would like to invite you to take part in this study. Participants have been chosen because of their potential to best inform the research questions and enhance understanding of the topic under study. Involvement in the study involves your participation in an interview that will last at most approximately one hour. The interview would be conducted at a time and place that is suitable for you.

With your permission, I would also like to record the interview using a digital device. The audio files will strictly be used for academic purposes only.You will not receive any direct benefits from participating in this study, and there are no disadvantages or penalties for not participating. You may withdraw at any time or not answer any question if you do not want to. The information you provide will be kept confidential and anonymous; the information you give to me will be held securely and not disclosed to anyone. The data I collect will be anonymous as I will not be asking for your name or any identifying information, and I will be using a pseudonym (false name) to represent your participation, in my final research report. If you have any questions afterwards about this research, feel free to contact me on the details listed below. This study is undertaken solely for academic purposes and will be written up as a research report which will be available online through the university library website. If you wish to receive a summary of this report, I will be happy to send it to you upon request. If you have any concerns or complaints regarding the ethical procedures of this study, you are welcome to contact the University Human Research Ethics Committee (Non-Medical), telephone +27(0) 11 717 1408, email hrec-medical.researchoffice@wits.ac.za

Yours sincerely,

Michelle Tatenda Sonono.

Researcher Details: Michelle Tatenda Sonono, 1927960@students.wits.ac.za
Supervisor Details: Raffael Beier, raffael.beier@wits.ac.za, tel: 0763382016

APPENDIX 10 CIVIL SOCIETY AND MEDIA CONSENT FORM

CIVIL SOCIETY AND MEDIA FORMAL CONSENT FORM:

Research Title: South African Informal Settlements in the age of COVID-19 Pandemic. An investigation on Stjwetla Informal Settlement Resilience Challenges against the COVID-19 Pandemic.

Student name: Michelle Tatenda Sonono
Student email: 1927060@students.wits.ac.za

Supervisor name: Raffael Beier
Supervisor email: raffael.beier@wits.ac.za
Supervisor contact number: 0763382016

	Tick your response	
I have read and understood the participant information sheet, and have had the opportunity to ask questions.	**Yes**	**No**
I understand I am no under obligation to take part in this study		
I understand I have the right to answer and not to answer particular questions for whatever reasons		
I understand this research is for academic purposes and that through publication my contribution will be made available to the public		
I understand I have the right to withdraw from the study for whatever reason		
It has been explained that anonymity might not be fully guaranteed.		
I accept for this interview to be audiotaped		
I accept the use of verbatim (direct) quotes from this interview		

PARTICIPANT:

I herewith confirm that I have been fully informed about the study and have given consent to participate as indicated above.

Printed Name Signature Date

RESEARCHER:

Printed Name Signature Date

APPENDIX 11 COMMUNITY LEADERS' INFORMATION SHEET



Community Leaders Participant Information Sheet

Dear Dear Sir / Madam

My name is Michelle Tatenda Sonono. I am a student at the University of Witwatersrand currently studying towards a Masters in Urban Studies (Housing and Human Settlements) in the School of Architecture and Planning. As part of my academic requirements for the degree, I am undertaking a research to investigate on South African Informal Settlement vulnerability and resilience in the age of COVID-19 pandemic using Stjwetla Informal Settlement as my case study. It is hoped that the data gathered in this research may enhance understanding of the study phenomenon.

As part of this research I would like to invite you to take part in this study. Participants have been chosen because of their potential to best inform the research questions and enhance understanding of the topic under study. Involvement in the study involves your participation in an interview that will last at most approximately one hour. The interview would be conducted at a time and place that is suitable for you.

With your permission, I would also like to record the interview using a digital device. The audio files will strictly be used for academic purposes only.You will not receive any direct benefits from participating in this study, and there are no disadvantages or penalties for not participating. You may withdraw at any time or not answer any question if you do not want to. The information you provide will be kept confidential and anonymous; the information you give to me will be held securely and not disclosed to anyone. The data I collect will be anonymous as I will not be asking for your name or any identifying information, and I will be using a pseudonym (false name) to represent your participation, in my final research report. If you have any questions afterwards about this research, feel free to contact me on the details listed below. This study is undertaken solely for academic purposes and will be written up as a research report which will be available online through the university library website. If you wish to receive a summary of this report, I will be happy to send it to you upon request. If you have any concerns or complaints regarding the ethical procedures of this study, you are welcome to contact the University Human Research Ethics Committee (Non-Medical), telephone +27(0) 11 717 1408, email hrec-medical.researchoffice@wits.ac.za

Yours sincerely,

Michelle Tatenda Sonono.

Researcher Details: Michelle Tatenda Sonono, 1927960@students.wits.ac.za
Supervisor Details: Raffael Beier, raffael.beier@wits.ac.za, tel: 0763382016

APPENDIX 12 COMMUNITY LEADERS CONSENT FORM



COMMUNITY LEADERS FORMAL CONSENT FORM:

Research Title: South African Informal Settlements in the age of COVID-19 Pandemic. An investigation on Stjwetla Informal Settlement Resilience Challenges against the COVID-19 Pandemic.

Student name: Michelle Tatenda Sonono
Student email: 1927060@students.wits.ac.za

Supervisor name: Raffael Beier
Supervisor email: raffael.beier@wits.ac.za
Supervisor contact number: 0763382016

	Tick your response	
I have read and understood the participant information sheet, and have had the opportunity to ask questions.	**Yes**	**No**
I understand I am no under obligation to take part in this study		
I understand I have the right to answer and not to answer particular questions for whatever reasons		
I understand this research is for academic purposes and that through publication my contribution will be made available to the public		
I understand I have the right to withdraw from the study for whatever reason		
It has been explained that anonymity might not be fully guaranteed.		
I accept for this interview to be audiotaped		
I accept the use of verbatim (direct) quotes from this interview		

PARTICIPANT:

I herewith confirm that I have been fully informed about the study and have given consent to participate as indicated above.

Printed Name Signature Date

RESEARCHER:

Printed Name Signature Date