Informal Settlements: The Intersection of Social Networks, Livelihoods, and the Built Environment in Johannesburg, Nairobi, and Accra.

by

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Dedication

To Carmen, Carolina, Michael, and Maya.

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Table of Contents

Dedication ..... **ii**

Acknowledgments ..... **iii**

List of Tables ..... **xi**

List of Figures ..... **xiv**

List of Appendices ..... **xviii**

Abstract ..... **xix**

Chapter 1 Introduction **1**

1.1 Setting the Scene 1

1.2 Why Now? 3

1.3 Why Social Networks? 6

1.4 Purpose of the Study 11

1.5 Research Questions 14

1.6 Sites of Observation 15

1.7 Overall Dissertation Structure 18

1.8 Operational Definition of Terms 19

Chapter 2 Literature Review Framework **22**

2.1 Introduction 22

2.2 Social Networks 22

2.3 Importance of Social Networks 28

2.4 Urban Informality in sub-Saharan Africa 34

2.5 Government Response 38

2.6 Literature Review Summary 44

Chapter 3 Methodology and Research Design 46

3.1 Introduction 46

3.2 Johannesburg, South Africa: Setswetla and Far East Bank 47

3.3 Nairobi, Kenya: Silanga and Canaan Estates 53

3.4 Accra, Ghana: Agbogbloshie/Old Fadama and Adjen Kotoku 57

3.5 Participant Selection and Recruitment 64

3.6 Participant Demographics 67

3.7 Research Design 68

3.7.1 Surveys and Interviews 70

3.7.2 Social Network Mapping 72

3.8 Fieldwork 73

3.9 Approach to Data Analysis 74

Chapter 4 South Africa – Results, Analysis, and Selected Narratives 75

4.1 Introduction 75

4.2 Results for Research Question 1 77

4.2.1 Quantitative Analysis: Social Networks and Spatial Organization 78

4.2.2 Qualitative Analysis: Social Networks and Spatial Organization 83

4.3 Results for Research Question 2 91

4.3.1 Quantitative Analysis: Spatial Organization and Livelihood Activities 91

4.3.2 Qualitative Analysis: Spatial Organization and Livelihood Activities 95

4.4 Results for Research Question 3 102

4.4.1 Quantitative Analysis: Impact of Relocation on Social Networks and Livelihoods 102

4.4.2 Qualitative Analysis: Impact of Relocation on Social Networks and Livelihoods 105

4.5 South Africa – Summary of Findings 112

Chapter 5 Kenya – Results, Analysis, and Selected Narratives.....117

5.1 Introduction..... 117

5.2 Results for Research Question 1..... 119

5.2.1 Quantitative Analysis: Social Networks and Spatial Organization..... 120

5.2.2 Qualitative Analysis: Social Networks and Spatial Organization..... 124

5.3 Results for Research Question 2..... 130

5.3.1 Quantitative Analysis: Spatial Organization and Livelihood Activities..... 131

5.3.2 Qualitative Analysis: Spatial Organization and Livelihood Activities..... 134

5.4 Results for Research Question 3..... 141

5.4.1 Quantitative Analysis: Impact of Relocation on Social Networks and Livelihoods..... 142

5.4.2 Qualitative Analysis: Impact of Relocation on Social Networks and Livelihoods 144

5.5 Summary of Findings in Kenya..... 153

Chapter 6 Ghana – Results, Analysis, and Selected Narratives.....157

6.1 Introduction..... 157

6.2 Results for Research Question 1..... 159

6.2.1 Quantitative Analysis: Social Networks and Spatial Organization..... 160

6.2.2 Qualitative Analysis: Social Networks and Spatial Organization..... 165

6.3 Results for Research Question 2..... 170

6.3.1 Quantitative Analysis: Spatial Organization and Livelihood Activities..... 171

6.3.2 Qualitative Analysis: Spatial Organization and Livelihood Activities..... 172

6.4 Results for Research Question 3..... 177

6.4.1 Quantitative Analysis: Impact of Relocation on Social Networks and Livelihoods..... 178

6.4.2 Qualitative Analysis: Impact of Relocation on Social Networks and Livelihoods 180

6.5 Summary of Findings for Ghana..... 187

Chapter 7 Summary, Conclusion, and Recommendations 189

7.1 Summary of Key Findings 189

7.1.1 Summary of Key Findings – Research Question 1 189

7.1.2 Summary of Key Findings – Research Question 2 193

7.1.3 Summary of Key Findings – Research Question 3 197

7.2 Concluding Thoughts 203

7.3 Recommendations 206

7.4 Areas of Further Study 211

7.5 Contribution to Knowledge 212

Appendices 214

Bibliography 250

List of Tables

Table 1.1: List of research sites 18

Table 3.1: Research activities conducted between October 2021 - March 2023 by author..... 68

Table 4.1: Descriptive statistics of residents at research sites in Johannesburg, South Africa.... 75

Table 4.2: Research activities in Johannesburg, South Africa by author. 76

Table 4.3: Logistic regression model - Demographic differences between control and treatment groups in South Africa based on settlement location. 78

Table 4.4: Multinomial logistic regression - Demographic characteristics and housing location between control and treatment groups in South Africa. 80

Table 4.5: Income Generating Activities of Survey Respondents at Research Sites in Johannesburg, South Africa. 91

Table 4.6: Logistic regression model reflecting variables that influence income generating activities status at research sites in Johannesburg, South Africa. 92

Table 4.7: Logistic regression model reflecting the influence of commuting time on the income generating activities of residents at the research sites in Johannesburg, South Africa. ... 94

Table 4.8: Logistic regression model reflecting the impact of relocation on the social networks of residents at the research sites in Johannesburg, South Africa. 103

Table 4.9: Logistic regression model reflecting the impact of relocation on the livelihood activities of residents at the research sites in Johannesburg, South Africa. 104

Table 4.10: Level of satisfaction with current living conditions between the control and treatment group in Johannesburg, South Africa. 105

Table 5.1: Descriptive statistics of residents at research sites in Nairobi, Kenya..... 117

Table 5.2: Research activities in Nairobi, Kenya, by author. 118

Table 5.3: Logistic regression model - Demographic differences between control and treatment groups in Nairobi based on settlement location. 121

Table 5.4: Multinomial logistic regression - Demographic characteristics and housing location between control and treatment groups in Nairobi, Kenya. 123

Table 5.5: Income generating activities of survey respondents at the research sites in Nairobi, Kenya. 131

Table 5.6: Logistic regression model reflecting variables that influence income generating activities at research sites in Nairobi, Kenya. 132

Table 5.7: Logistic regression model reflecting the influence of commuting time on the income generating activities of residents at the research sites in Nairobi, Kenya. 133

Table 5.8: Logistic regression model reflecting the impact of relocation on the social networks of residents at the research sites in Nairobi, Kenya. 142

Table 5.9: Logistic regression model reflecting the impact of relocation on the livelihood activities of residents at the research sites in Nairobi, Kenya. 143

Table 5.10: Level of satisfaction with current living conditions between the control and treatment group in Nairobi, Kenya. 145

Table 6.1: Descriptive statistics of residents at research sites in Accra, Ghana. 157

Table 6.2: Research Activities in Accra, Ghana, by author. 158

Table 6.3: Logistic regression model - Demographic differences between control and treatment groups in Accra based on settlement location. 161

Table 6.4: Multinomial logistic regression - Demographic characteristics and housing location between control and treatment groups in Accra, Ghana. 163

Table 6.5: Income Generating Activities of Survey Respondents at Research Sites in Accra, Ghana. 171

Table 6.6: Logistic regression model reflecting the impact of relocation on the social networks of residents at the research sites in Accra, Ghana. 178

Table 6.7: Logistic regression model reflecting the impact of relocation on the livelihood activities of residents at the research sites in Accra, Ghana. 179

Table 6.8: Level of satisfaction with current living conditions between the control and treatment group in Accra, Ghana. 181

Table 7.1: Percentage of owners and renters in the study areas. 191

Table 7.2: Percentage of residents who build their shelter compared to those who occupy existing structures across the research sites. 192

Table 7.3: Percentage of residents with access to income generating activities across the research sites. 194

Table 7.4: Median household size and the most frequent (mode) household size surveyed across the research sites in this study..... 199

Table 7.5: Residents' mode of travel to places of primary income generating activities across the research sites in this study..... 200

Table 7.6: Level of satisfaction with current living conditions between the control and treatment groups in all the research sites included in this study..... 201

Appendix Table G.1: Descriptive Statistical Demographic Analysis of Research Site Residents 229

List of Figures

Figure 1.1: Map of study areas across sub-Saharan Africa. 16

Figure 2.1: Representation of an egocentric social network (Crotty et al., 2015) 23

Figure 2.2: Location of Major Informal Settlements in Nairobi, relative to the central business district (CBD). Image is from Bird et al. 2017, p.499. 36

Figure 3.1: Map of Johannesburg showing the locations of Setswetla and the Far East Bank relative to various commercial districts. Map by author..... 48

Figure 3.2: Aerial view of Setswetla showing homes along the Jukskei River. Image by author. 49

Figure 3.3: RDP houses in the Far East Bank with additions to accommodate families. Image by author. 52

Figure 3.4: Map of Nairobi showing the locations of Silanga and Canaan Estates within Kibera, and their relative distance to the city center. Map by author. 53

Figure 3.5: A local road in Kibera in the village of Silanga. Image by author..... 55

Figure 3.6: A typical interior walkway at Canaan Estates. Image by author. 56

Figure 3.7: Map of Accra Metropolitan Area showing the locations of Agbogbloshie and Adjen Kotoku relative to the city center. Map by author. 58

Figure 3.8: Aerial view of Agbogbloshie showing the Korle Lagoon. Image by author. 59

Figure 3.9: Agbogbloshie Market. Image by author..... 61

Figure 3.10: Adjen Kotoku market. Image by author..... 63

Figure 3.11 Stages and methods used for data collection in this research..... 69

Figure 3.12: Illustration of the egocentric social network framework model for this research. Illustration by author..... 70

Figure 4.1: Site map showing the locations of Setswetla (control) and Far East Bank (treatment). Map by author using Google. 83

Figure 4.2: Egocentric social network map for Lungelo and Isaac. 87

Figure 4.3: Aerial view of Setswetla showing examples of similar construction materials and architectural details. Image by author. 89

Figure 4.4: Examples of a *shebeen* and *spaza* shops in Setswetla. Image by author. 95

Figure 4.5: Egocentric social network map for Miracle. 100

Figure 4.6: Image of Sibongile's salon which sits on a prominent street in Setswetla. Image by author. 106

Figure 4.7: Aerial view of Setswetla showing its natural and man-made boundaries. Image from Google. 107

Figure 4.8: Examples of drainage systems constructed by residents using local knowledge and labor. Images by author. 108

Figure 4.9: Informal settlement shacks along the Juksei River in Setswetla. Image by author. 110

Figure 4.10: Aerial view of the Far East Bank (RDP) housing showing the prevalence of backyard shacks. Image from Google. 111

Figure 5.1: Map of the 13 villages that comprise of Kibera in Nairobi, Kenya. Image from WordPress.com. 120

Figure 5.2: Egocentric social network map for Frederick. 127

Figure 5.3: Community-built public bathroom in Silanga. Images by author. 129

Figure 5.4: Residents working on church/meeting hall building. Image by author. 130

Figure 5.5: Site map showing the locations of Silanga (control) and Canaan Estates (treatment) within Kibera. Map by author using Google. 135

Figure 5.6: Image of Kevin in his bakery in Kibera. Image by author. 136

Figure 5.7: One of the few commercial activities inside of Canaan Estates. Image by author. 139

Figure 5.8: Egocentric social network map for Gladys. 140

Figure 5.9: Local neighborhood adjudicators seated by the side of the road in Silanga. Image by author. 146

Figure 5.10: Image of Boniface behind the register in his convenience store in Kibera. Image by author. 147

Figure 6.1: Map showing the area occupied by Agbogbloshie/Old Fadama in Accra, Ghana. Image by author using Google. 159

Figure 6.2: Map showing the area occupied by Adjen Kotoku within the residential neighborhood in Accra, Ghana. Image by author using Google. 160

Figure 6.3: Location of informal settlement research site within Accra. Image from Amoako (2016, p.9) 167

Figure 6.4: Egocentric social network map for Esther. 174

Figure 6.5: Egocentric social network map for Patience. 176

Figure 6.6: Aerial and ground level views of Agbogloshie Market. Images by author. 182

Figure 6.7: Meeting with the regional planning director to review current and future plans for Adjen Kotoku. 186

Figure 6.8: Aerial and ground level views of the formal market at Adjen Kotoku. Images by author. 187

Appendix Figure E.1: Relationships between household members in control group. 232

Appendix Figure E.2: How social ties aid residents in finding shelter. 232

Appendix Figure F.1: Relationships between household members in control group. 235

Appendix Figure F.2: How social ties aid residents in finding shelter. 235

Appendix Figure F.3: How well do residents know their neighbors. 236

Appendix Figure F.4: The relationship between residents and neighbors. 236

Appendix Figure F.5: Who do residents depend on daily. 237

Appendix Figure F.6: Who do residents turn to for assistance in an emergency. 237

Appendix Figure G.1: Relationships between household members in control group. 238

Appendix Figure G.2: How social ties aid residents in finding shelter. 238

Appendix Figure G.3: How well do residents know their neighbors. 239

Appendix Figure G.4: The relationship between residents and neighbors. 239

Appendix Figure G.5: Who do residents depend on daily 240

Appendix Figure G.6: Who do residents turn to for assistance in an emergency. 240

Appendix Figure H.1: Relationships between household members in control group. 241

Appendix Figure H.2: How social ties aid residents in finding shelter. 241

Appendix Figure H.3: How well do residents know their neighbors. 242

Appendix Figure H.4: The relationship between residents and neighbors. 242

Appendix Figure H.5: Who do residents depend on daily..... 243

Appendix Figure H.6: Who do residents turn to for assistance in an emergency. 243

Appendix Figure I.1: Relationships between household members in control group..... 244

Appendix Figure I.2: How social ties aid residents in finding shelter..... 244

Appendix Figure I.3: How well do residents know their neighbors. 245

Appendix Figure I.4: The relationship between residents and neighbors. 245

Appendix Figure I.5: Who do residents depend on daily. 246

Appendix Figure I.6: Who do residents turn to for assistance in an emergency. 246

Appendix Figure J.1: Relationships between household members in control group. 247

Appendix Figure J.2: How social ties aid residents in finding shelter. 247

Appendix Figure J.3: How well do residents know their neighbors. 248

Appendix Figure J.4: The relationship between residents and neighbors. 248

Appendix Figure J.5: Who do residents depend on daily..... 249

Appendix Figure J.6: Who do residents turn to for assistance in an emergency..... 249

List of Appendices

Appendix A: Networks Survey Questionnaire 215

Appendix B: Focus Group Discussion Prompts 227

Appendix C: Key Informant Interview Prompts 228

Appendix D: Tables 229

Appendix E: Descriptive Statistics of Question Combinations Comprising of Strength of Social Ties Within the Control Group in Johannesburg, South Africa.....232

Appendix F: Descriptive Statistics of Question Combinations Comprising of Strength of Social Ties Within the Treatment Group in Johannesburg, South Africa. 235

Appendix G: Descriptive Statistics of Question Combinations Comprising of Strength of Social Ties Within the Control Group in Nairobi, Kenya. 238

Appendix H: Descriptive Statistics of Question Combinations Comprising of Strength of Social Ties Within the Treatment Group in Nairobi, Kenya. 241

Appendix I: Descriptive Statistics of Question Combinations Comprising of Strength of Social Ties Within the Control Group in Accra, Ghana. 244

Appendix J: Descriptive Statistics of Question Combinations Comprising of Strength of Social Ties Within the Treatment Group in Accra, Ghana. 247

Abstract

Major cities in sub-Saharan Africa grapple with a persistent issue: despite extensive efforts to tackle urban informality with policies and financial investments, informal settlements continue to proliferate. Moreover, residents relocated to formal developments often encounter ongoing challenges. Unfortunately, prevailing discourse oversimplifies urban informality as an affordable housing problem, leading policies to narrowly focus on affordable housing solutions. This research delves into the complexities of urban informality by exploring the role of social networks in shaping informal settlements. Three key questions are addressed: (1) How do social networks and livelihood activities influence the built environment of informal settlements? (2) What impact does this built environment have on residents' livelihoods? (3) How does resettlement affect social networks and livelihoods? Using mixed methods, six case studies in Johannesburg, Nairobi, and Accra are analyzed. These cities offer insights into longstanding informal settlements (control groups) and newly developed formal housing (treatment groups), with data collected through surveys, focus groups, and interviews with municipal officials. Findings reveal the overlooked significance of social networks in fostering a sense of place within informal settlements. Understanding these dynamics is crucial for crafting more effective urban policies and ultimately curbing the growth of informal settlements in sub-Saharan Africa.

Keywords: social networks, prototypical informal settlements, affordable housing, built environment, planning policy.

Chapter 1 Introduction

1.1 Setting the Scene

Major cities in sub-Saharan Africa are currently facing three converging issues. First, despite decades of financial investments to mitigate urban informality, cities in sub-Saharan Africa continue to experience an increase of informal settlements (Awumbila et al., 2014; Paprocki, 2020; World Bank, 2021). Second, even when a portion of informal settlement residents are relocated to state-sponsored formal developments, some of the residents continue to experience significant daily challenges (Barnhardt et al., 2007; Broughton, 2023; Jordhus-Lier, 2015). Finally, in some cases, informal settlement residents who have been relocated to state-sponsored formal developments decide to leave and return to an informal settlement, thus negating any informal settlement mitigation initiatives (Barnhardt et al., 2007; Kijilwa, 2018; Livability, 2022; The New Humanitarian, 2009).

The final issue of residents returning to an informal settlement after being relocated to formal developments is one that requires further exploration. After all, there is a stark difference between the built environment of a prototypical informal settlement and formal housing that is difficult to overlook. The typical prototypical informal settlement[1] is incredibly dense, and most residents live in poorly constructed one-room mud and tin shacks. It is not unusual to find a

[1] The term "Prototypical informal settlement" is defined in Section 1.8 of the dissertation. It is derived from conversations with residents in the settlements who do not approve of the word "slum", while attempting to differentiate between the legal definition of the term 'informal settlement'.

garbage-filled stream adjacent to the prototypical informal settlement emitting a pungent stench. Along these streams, one is likely to find people bathing, washing clothes, cooking, and relieving themselves, often within eyesight of each other (*The World's Largest Slums*, 2017). The area usually lacks sanitation, a road, and minimal social services such as a hospital or well-equipped school. In addition, electricity is typically accessed illegally through unsafe methods, which often leads to fires that can decimate an entire section of the settlement due to poor response times by emergency personnel and a lack of roads to access the affected shacks (Baptista, 2019; Murray, 2009).

On the other hand, formal housing designed to accommodate relocated residents of informal settlements presents a somewhat different built environment. The dwelling units are well-constructed with durable materials (MacDonald, 2014; The New Humanitarian, 2009). The units have multiple rooms, allowing different functions, such as cooking and sleeping, to have defined spaces and much-needed privacy (*KENSUP*, 2013; Maphanga, 2020; Shapurjee & Charlton, 2013). Sanitation and roads are much improved. Furthermore, there is formal and safe access to electricity and potable water.

Given what appears to be a favorable built environment, why would some of the residents of informal settlements relocated to formal housing projects continue to have similar social and economic outcomes – and sometimes worse – than the residents who still live in prototypical informal settlements? After years of being relocated to formal housing and yet having the same social and economic outcomes as residents of informal settlements, the built environment of formal housing can begin to resemble and take on the characteristics of prototypical informal settlements.

The more remarkable phenomenon remains that despite all efforts to rehouse residents of informal settlements, cities in sub-Saharan Africa continue to see an increase, rather than a decrease, in prototypical informal settlements. How can appropriate policies ensure that current and future strategies for mitigating informal settlements have the desired effect? This dissertation discusses these issues by focusing on the influence of social networks and livelihood activities and their impact on the built environment of prototypical informal settlements and how this knowledge can be incorporated into relocation policies to achieve sustained positive outcomes.

1.2 Why Now?

For the past 50+ years, cities in sub-Saharan Africa have been trying to minimize the visibility of informal settlements while promoting new development projects to enhance their aesthetic global appeal (Afenah, 2012; Agbo, Jr., 2021; Ammann & Förster, 2018; Burbank et al., 2002). Meanwhile, African cities become new homes to over 40,000 people every day (World Bank, 2021) due to rural-to-urban migration, political conflicts in neighboring countries, and displacement due to natural disasters (Awumbila et al., 2014; Berke & Larsen, 2022; Giambra & McKenzie, 2019; Paprocki, 2020). Many of these migrants do not have the financial means to access housing in the formal sector and usually find themselves without a roof over their heads, thus ending up in informal settlements (Fox, 2014; Fox & Goodfellow, 2016; Huchzermeyer, 2011; J. Paller, 2015; Roy, 2005). The severe lack of housing due to rapid urbanization has created a 'boom' in the housing construction market and an unfortunate increase in residential real estate prices across many African cities in recent years (Pitcher, 2017, p. 365). Sparked by growing urbanization, housing shortages, and increased consumer spending, the demand for housing prompted governments and investors to recognize not only the magnitude of the housing need but

also the importance of housing markets (Pitcher, 2017, pp. 365–366). Shifts in the views of states and the public from 'housing as a social right' to 'housing as an asset' have also occurred (ibid). Thus, the lack of appropriate government interventions leaves the most vulnerable populations who have been priced out of the housing market – and frequently not eligible for public housing – to look for or build the accommodations that they could not find or afford in the regular city (Ascensão, 2015, p. 948). Moreover, in the absence of state-provisioned and formally regulated housing, urban Africans are finding creative ways to deal with the housing shortage and cope with uncertain and insecure living conditions (J. Paller, 2015, p. 32).

A great deal of evidence points to the fact that the spatial forms of many poor sections of cities in the Global South are primarily driven by the efforts of its low-income residents (Watson, 2009, p. 2263). After all, according to Appadurai (2002, p. 28), "*no one knows more about how to survive poverty than the poor themselves*." While many informal settlements initially seem haphazardly laid out and composed of a chaotic assortment of dwelling types, the reality is a complex physical form closely aligned to social networks and livelihood activities (W. Smit, 2007, p. 109). Most informal settlements are vibrant spaces for social and commercial enterprise, full of people with burgeoning businesses – both men and women – and where the most privileged people in the community live next to the poorest people, and together create a social network and built environment that ensures their security and safety, however tenuous their claim to the land might be (Gilbert, 2007; J. Paller, 2015; W. Smit, 2007; Weinstein, 2014). For example, some social networks are political relationships where people with political power in settlements assist other residents with everything from the ‘purchase’ of land to the acquisition of materials, the building of shelter, connection to the informal electrical grid, and the use of personal skills that can benefit

a community instead of paying rent (Deuskar, 2020; J. Paller, 2015). Liza Weinstein (2008, p. 10) discusses how residents in the informal settlement of Dharavi describe it as the heart of Mumbai, just as Mumbai is the heart of India. Residents mentioned that they can stay within a five-minute radius of where they live from when they were born until the day they die (ibid). Cemented social networks, or the infrastructure of people (Simone, 2004), allow for families and neighbors to benefit from living near each other regardless of economic standing, whereas, in more formal establishments, such proximity would only be possible based on a system of economic stratification.

Whilst there is a considerable amount of literature discussing how much residents of informal settlements have to rely on each other for political reasons (Berrisford, 2011, 2014; Deuskar, 2020; J. Paller, 2015), economic reasons (Banerjee & Duflo, 2009; Banerjee & Duflo, 2007; Deuskar, 2019; J. W. Paller, 2015; Roy & Ong, 2012), and social (Arabindoo, 2011; Huchzermeyer & Karam, 2007; Miraftab, 2009; J. W. Paller, 2015; Roy, 2009), as well as literature highlighting the state of urban informality (Boamah & Amoako, 2020; Deuskar, 2019; Fox, 2014; Huchzermeyer, 2011; Roy & Ong, 2012; Tusting et al., 2019), the relationship between the social networks and livelihood activities and the built environment of informal settlements has yet to connected with empirical research. This dissertation will provide an understanding of how residents of informal settlements live in concert with each other, and how these connections manifest themselves in their built environment, and how this knowledge can be used in policy language.

1.3 Why Social Networks?

A social network is basically a set of actors and relations that hold these actors together (Chung et al., 2005; Goodson, 2019; Lax & Krug, 2013). Actors can be individuals or aggregate units such as families or organizations, who form social networks by exchanging resources with each other (Chung et al., 2005; Goodson, 2019). These resources can be information, goods, services, social support, or financial support (Chung et al., 2005, p. 1). These kinds of resource exchanges are considered a social network relation, where individuals who maintain the relation are said to maintain a 'tie' (ibid).

It has been established that residents living in prototypical informal settlements are often experiencing severe poverty and do not receive much – if any – assistance from the state (Fox, 2014; Goodfellow, 2020; Huchzermeyer & Karam, 2007; Roy & Ong, 2012). Therefore, in the absence of formal social safety net programs, how are residents living in prototypical informal settlements getting by on a daily basis? The role of social networks between residents as a means of getting by on a daily basis as a substitute for the proverbial absence of state resources emerged as a strong theory after an initial visit to Khayelitsha, one of the largest prototypical informal settlements in Cape Town, South Africa in 2021. Additional research on social network theory provided critical insight into how strong relationships and the sharing of resources can impact marginalized groups in tangible ways. Exploring social network theory provided a possible lens for this research.

Social Network Theory involves identifying the pattern of the relationships between individuals, groups, organizations, or systems (Moolenaar & Daly, 2012 as cited in Reed, 2021).

Social network theory could – in general terms – be seen as a way of describing the patterning of everyday practices of social interaction, including those that take place within family structures, between friends, and in neighborhoods and communities (Merchant, 2012, p. 6). Therefore, understanding the mechanisms within which people meet and socialize to connect and communicate, as well as the reasons why particular individuals are chosen and their relationships are maintained over time, allow us to understand in more detail the nature and the impact of human interactions (Merchant, 2012 cited in Reed, 2021). However, it is not necessarily the size of the network, but the strength and reciprocity of the relationships between the individuals involved which hold the greatest influence (Reed, 2021, p. 15). The simplest form of a social network consists of actors and their connections to each other (Chung et al., 2005), referred to as an egocentric social network (Chung et al., 2005; Goodson, 2019; Reed, 2021).

According to an egocentric social network study conducted Kolek et. al. (2021), friends tend to live near friends – even in a digital age – demonstrating that multiple elements influence human connection across geographies, and that geography often influences friendships. Therefore, studying the spatial structures of communities, and the ties between individual actors, may shed insight into the geographies of social connections (Kolak et al., 2021), leading to a better understanding of the community.

In her research of egocentric social networks, Lisa Reed (2021, p. 9) studies to what extent social networks enable middle school teachers to be more resilient in the workplace. According to Reed, previous research studying this demographic has shown a rather high 'burnout' rate among middle school teachers. The basic premise of the research was that outside of the formal curriculum

support groups, middle school teachers have their own communities made up of perhaps teachers at other schools, teachers within their own schools, or teachers who they met through other social events. By having access to a wider community, these middle school teachers are able to rely on each other to be more resilient and not burn out as easily. Reed concludes that the opportunity for the study participants to engage in conversations with the people in their social networks allowed them to access expertise, find ways to reduce their workload, and discover alternative policy practices in their schools that allowed them to function better. Also, the proximity of their social networks was critical to the performance outcomes of the study participants. Reed's study is incredibly important because previous reports indicated a downward trend from government data around the number of teachers, and the research provides great insight into how to possibly prevent teachers from leaving the profession. By recognizing how middle school teachers are overly reliant on their social networks because the formal support systems are inadequate, Reed makes a significant point about how policies can be made to address this issue.

Similarly, Marva Goodson (2019) utilizes an egocentric social network framework to research how female criminal offenders access needed resources due to social stigmatization. The research monitors 379 women with one or more felony convictions who are out on parole. Several were experiencing extreme economic disadvantage represented by difficulty gaining income generating activities because of their criminal record. The research included face-to-face interviews with 160 of the female offenders regarding their social networks. The research concludes that these women are heavily dependent on their social networks because their felony status places them at a social disadvantage in their communities. Many are ineligible for most jobs such as being a janitor or cleaning lady because they would have access to places and items of

value. Being a babysitter was also out of the question. However, they trusted each other to babysit their children if they had errands to run, or with any luck, found income generating activities but could not afford daycare. Some of these women moved to different cities, and states, to be close to their social networks. This study is a very strong indicator of how the egocentric social network influences individuals – particularly people who are not prioritized by the state or have access to formal resources – and the decisions they make.

By using the egocentric network framework established by Reed (2021) and Goodson (2019), this study takes a similar approach by seeking to understand the structure of social networks in prototypical informal settlements and its influence on the resilience of the residents. There is a general absence of any formal mechanisms to study or even acknowledge how the social networks of residents living in informal settlements impact each other (Durand-Lasserve, 2007; Huchzermeyer et al., 2007), and how development initiatives impact these networks – either in a positive or negative way (Amnesty International, 2009, 2017, 2010). Residents living in informal settlements have found very creative ways to cope with the uncertainty associated with living in insecure conditions (Boamah & Amoako, 2020; J. W. Paller, 2015), and along the way have come to rely heavily on each other, and in a way established a culture of place based on their social networks (Levenson, 2022; Simone, 2004).

According to the findings of my research, when policies fail to acknowledge this established culture of place, there is a high likelihood that residents of informal settlements, even when offered new and improved housing, will refuse to relocate due to the disruption of social networks and livelihoods that took years to cement. Or when they are relocated, discover that the

adjustment required to live in their newly built environment takes a heavy toll due to the disruption of their social networks. As such, informal settlements should not be viewed as merely a 'housing problem' requiring a 'housing solution', but rather as a manifestation of multiple market failures, the resolution of which requires a multi-sectoral partnership, long-term commitment, and political endurance (Huchzermeyer, 2007; J. Paller, 2015; W. Smit, 2007). The pursuit of creating a better built environment for people to live and the ability for those same people to be able to afford to live in their new surroundings should not be a mutually exclusive endeavor. Unfortunately, current policies and interventions quite often take a rather narrow approach of seeing the issue of informal settlements as a housing problem to be solved with development and formalization. However, these physical solutions fail to address – directly or indirectly – the other social and economic aspects of settlements that are critical to the existence of the vulnerable households in these communities (Martin & Mathema, 2007, p. 140). In this regard, the egocentric social network model is an ideal framework to understand how residents of prototypical informal settlements can be impacted by their relationships and how this information can be used to inform policy.

In my study, I am capturing the social networks of residents living in prototypical informal settlements and those who have been relocated to formal housing to better understand the impact of these networks. For example: who do the residents at each location depend on with regularity; who would they turn to in case of an emergency; and how far would they need to travel to get to those people? Exploring the issues around social networks in the context of prototypical informal settlements is critical to understanding the institutions of urban informality and its impact on the built environment and livelihood activities of its residents.

1.4 Purpose of the Study

To date, the adopted approaches chosen to address the challenges of informal settlements have and continue to fall short because most policies choose to ignore the multiplicity of interrelated causes of informality and instead focus on a singular issue of housing. According to Mistro and Hensher (2009, p. 338), informal settlement upgrading takes one of two approaches: either total redevelopment or in situ development. Total redevelopment results in the entire area being demolished and families being relocated to another 'greenfield' site, which in turn destroys the social networks and adversely affects the economic network because 'greenfield' sites are usually further away from urban opportunities than the previously demolished informal settlement (ibid). The alternative is in situ upgrading which favors an incremental development approach which aims to minimize the extent of the disruption to social and economic networks by reducing the number of households that are relocated to another site or elsewhere within the informal settlement (Mistro & Hensher, 2009, p. 338). However, a study conducted by Mistro and Hensher (2009) indicated that *in situ* upgrading lacks consistency as residents opt for different upgrading alternatives which creates an uneven project delivery, and on the whole can be rather cost prohibitive and eventually ineffective. While governments in sub-Saharan Africa acknowledge that informal settlements are products of failed policies, ineffective governance, corruption, inappropriate regulation, exclusionary urban (economic) development, poor urban management strategies, dysfunctional and inequitable land markets, discriminatory financial systems, and a profound democratic deficit (Afenah, 2012; Arimah, 2011; Durand-Lasserve, 2007; Huchzermeyer, 2007), conventional solutions have thus far been largely focused on physical interventions without addressing the pressing social and economic causes of informality (Martin & Mathema, 2007, p. 140). As such, residents of informal settlements are forced to live under

constant threat of evictions – and in some cases, forced relocation – in order to rid the land of informal settlements in favor of new housing development on premium land (Adetayo, 2022; Electrònica, 2021). To prevent such atrocities from happening, certain households in Ethiopian settlements will often get together and communally build a religious structure – a church or a mosque – to legitimize their occupation of the land, so to say, and protect them from potential demolition (Martin & Mathema, 2007, p. 113). This simple act of a community coming together to ensure their survival is a great example of the power of social networks and its impact on the built environment of informal settlements. In Santiago, Chile, architect Alejandro Aravena talks about recognizing these social networks in social housing projects and acknowledging them through a participatory design approach. In the documentary *Urbanized* (2011), Aravena discusses the participatory process that led to the creation of Lo Barnechea, a social housing project designed by his firm Elemental in 2010. The social networks of informal settlements and its impact on their built environment is a criterion that also informs the work of the NGO Development Action Group (DAG) based in Cape Town, South Africa. As Warren Smit (2007) explains, DAG uses a sustainable livelihoods framework as a way to understand informal settlements and its residents. This includes being able to differentiate between households, understanding the linkages between informal settlements and their surroundings, rural to urban linkages, and the variety of vulnerabilities that plague the communities (W. Smit, 2007, p. 102).

However, current policies and initiatives continue to view urban informality as a lack of affordable housing options for the poor and thus focus largely on the physical interventions – housing, roads, water supply, sanitation, electricity, and of course evictions and demolitions. For example, the Zimbabwean government designed a program in July 2005 aimed at erasing slum

shelter through an unprecedented shack-demolition campaign which left over 200,000 people homeless (Huchzermeyer et al., 2007, p. 20), while in South Africa, the Informal Settlement Upgrading Program sought to transform 'visible' settlements in preparation for the 2010 World Cup by replacing shacks with formally constructed social housing blocks (Huchzermeyer, 2007, p. 45). None of these programs included the maintenance of current social networks, and perversely, they may have contributed to the perpetuation rather than the reduction of informal settlements (Huchzermeyer & Karam, 2007, p. 3). Hasan, Patel, and Statterwhaite (2005, p. 3) ask, "why has 50 years of development cooperation failed to address the needs of much of the population in low- and middle-income nations?" In response, Marie Huchzermeyer (2007, p. 54) says that solutions that are not affordable to the supposed beneficiaries in the long term will lead to their displacement to housing areas that impose fewer costs, usually new or remaining informal settlements, and thus repeating the seemingly never-ending cycle of poverty and urban informality.

In a recent survey of 77 residents (conducted as part of this study) in Setswetla (a prototypical informal settlement in Johannesburg, South Africa), 47% of the respondents indicated living in a household of 4-6 people. Some residents from Setswetla have been relocated to government provided housing in Far East Bank, about 1.8 miles (3km) away. When 81 residents in Far East Bank were surveyed, 49% of the respondents indicated that they live in a household of 1-3 people. Why has the size of the household been reduced? Interviews with residents and housing officials revealed that the government provided housing units were designed according to a specific size and budget which does not account for the average household size of informal settlement residents. Relationships within a household are the most fundamental of social networks. And when an obvious criterion such as the typical number of people who live in the

same household is not acknowledged in government programs, the result is a lack of willingness to relocate, or a strain on the limited resources of government housing which were not designed to meet the needs of its residents. Therefore, residents with large families decide to remain in the informal settlement of Setswetla while new families replace the ones that left for Far East Bank, and the problem of urban informality in Setswetla remains. Meanwhile, overpopulation in the Far East Bank leads to a fast deterioration of the government buildings and almost returns them to a state of urban informality due to a lack of maintenance and fast decay of services such as water and sanitation. Therefore, this research stresses the importance of social networks as critical to the sustained success of transitioning residents of informal settlements to formal housing. This research aims to better understand how social networks inform the lives of informal settlement residents and influences their built environment in order to create effective policies that improves their quality of life while mitigating against any disruptions to their networks and livelihood activities.

1.5 Research Questions

This research is a series of case studies in Johannesburg (South Africa), Nairobi (Kenya), and Accra (Ghana). Six total settlements will be selected for the study. Three informal settlements which have experienced little to no investment will serve as a control group, and three settlements that were designed to house relocated residents will serve as the treatment group for the study. Household surveys will be conducted in the selected settlements followed by interviews with both residents and government officials. The objective of the surveys and interviews will be to better understand the following:

1. What is the influence of social networks (familial, friends, economic, political, etc.) on the spatial organization of informal settlements?
2. How does the spatial organization of informal settlements impact the livelihoods activities of the residents?
3. How are social networks and livelihood activities impacted by the relocation of informal settlement residents?

1.6 Sites of Observation

The fundamental theory of this research is that social networks have a direct impact on the built environment of prototypical informal settlements. As such, the culture of a region must be considered since cultural norms affect social relationships in different ways across geographies (Huang & Deng, 2008). By selecting countries in eastern (Kenya), southern (South Africa), and western (Ghana) Africa (**Figure 1.1**), this research will emphasize how different cultures impact social networks in sub-Saharan Africa, which in turn impacts the built environment informal settlements in cities within those countries.

Figure 1.1: Map of study areas across sub-Saharan Africa.

Secondly, it is important for the selected countries to have similar trajectories according to the Human Development Index (HDI) due to the fact that poorer countries tend to have higher cases of urban informality than wealthier countries (Slum Dwellers International, 2016). The HDI was created to emphasize that people and their capabilities should be the ultimate criteria for assessing the development of a country, not economic growth alone (United Nations, 2022). The HDI is a summary composite measure of a country's average achievements in three basic aspects of human development: health, knowledge and standard of living (World Health Organization, 2022). The HDI sets a minimum and a maximum for each dimension, called "goalposts", then shows where each country stands in relation to these goalposts. This is expressed as a value between 0 and 1. The higher a country's human development, the higher its HDI value (ibid). Ghana has an HDI of 0.632, Kenya has an HDI of 0.575, and South Africa has an HDI of 0.713. The three selected countries – Ghana, Kenya, and South Africa – have HDI's between 0.5 and 0.8 which indicates medium human development according to the United Nations (2022).

The cities of Johannesburg, Nairobi, and Accra were selected based on the fact that they experience the most population growth in their respective countries. Rapid urbanization has been credited as another criteria for the proliferation of informal settlements in sub-Saharan Africa (Boamah & Amoako, 2020; Huchzermeyer & Karam, 2007; S. Smit et al., 2017). Accra, the capital city of Ghana has a population of almost 2 million residents with an annual growth rate of 1.88%. Nairobi is the capital city of Kenya with a population of approximately 2.75 million residents and an annual growth rate of 4%. Lastly, Johannesburg is the capital city of South Africa with a population of approximately 3.4% residents and an annual growth rate of 2.33% (World Population Review, 2022). For comparison, the 'global cities' of New York, Paris, and Tokyo (Sassen, 2000) have annual growth rates of 0.23%, 0.57%, and 0.09% respectively (World Population Review, 2022). Essentially, the selected cities – and much of sub-Saharan Africa – are urbanizing at a higher rate, and thus creating the conditions for the proliferation of urban informality.

Lastly, an informal settlement and a formal housing development project has been identified in each city as the research sites of observation. The selection criteria involved locating an informal settlement where a portion of the residents have been relocated into formal housing, thus presenting a sample of control and treatment groups for the purposes of the research. After preliminary visits the research sites and evaluating the contexts relative to the research questions (sites that present discrete control and treatment groups), the following locations were selected in each city:

Table 1.1: List of research sites

City, Country	Control Group	Treatment Group
Johannesburg, South Africa	Setswetla	Far East Bank
Nairobi, Kenya	Silanga	Canaan (Soweto East)
Accra, Ghana	Agbogbloshie/Old Fadama	Adjen Kotoku

The control group represents prototypical informal settlements where residents continue to live in their original shacks and little to no investments have been made to upgrade these settlements. The treatment group represents residents who have been relocated to formal state-sponsored housing developments.

1.7 Overall Dissertation Structure

The dissertation is structured around answering the research questions posed in section 1.5 by observing and capturing the social network and livelihood activities of the research participants. Chapter 2 details the literature around the areas of understanding urban informality in the context of sub-Saharan Africa, current and previous government response to this issue by examining policies and initiatives and establishing the importance of social networks and its implications towards addressing urban informality in sub-Saharan Africa. Chapter 3 explains my methodology and research design by addressing the epistemological dilemmas faced from a wholly qualitative social science study. I will explain why this approach is appropriate and the rationale for the scope of the study. The chapter concludes with a discussion of the methods I income generating activity

to capture the authentic narratives of the participants. Chapters 4, 5, and 6 represent the quantitative and qualitative analyses and discussion of the participant narratives. The chapters will focus on the research sites in each city from Johannesburg to Nairobi and finally Accra. The dissertation ends with chapter 7, which details the conclusions of my study and presents key findings as related to my research questions. The chapter will also include a wider conversation regarding policies around prototypical informal settlements and relocation strategies and will also detail my recommendations for practice and future research.

1.8 Operational Definition of Terms

One of the prominent challenges in the Global South is the rapid increase in informal settlements and/or slums (Deuskar, 2019; Gastrow, 2020; Muchadenyika & Waiswa, 2018; Roy, 2012), with many authors often using these terms interchangeably. Many of the terms used to describe places of settlement for the urban poor can be described as problematic or negative. Urban poor places of habitation are often defined in terms of what is lacking: a squatter lacks land tenure; a slum variously lacks space, durability, water, and sanitation; informality implies a lack of formal control over planning, design, and construction (Dovey & King, 2011, p. 11). However, there is nuance in how each term must be applied due to its possible impact on urban planning policy. These urban policies, in turn, impact development decisions affecting the lives of the urban poor. This section describes how specific terms are to be interpreted in the context of this research.

Informal settlement: An urban neighborhood or district that develops and operates without the formal control of the state (Deuskar, 2019; Dovey & King, 2011). It exists as "a state of exception from the formal order of urbanization…with claims and appropriation that do not fit neatly into

the ownership model of property" (Roy, 2005, p. 147). It is important to note that informality is in no way confined to places of poverty; just as every economy has a formal and informal sector, so does every city (Dovey & King, 2011, p. 12). Essentially, informal settlement identifies the legal status of a settlement.

Slum: Current literature and urban informality theories begin by attempting to define slums, and most start with – or settle for – the definition established by UN-Habitat, which define slums as:

> …any area that combines, to various extents, the following characteristics (restricted to the physical and legal characteristics of the settlement and *excluding the more difficult social dimensions*): inadequate access to safe water, inadequate access to sanitation and other infrastructure, poor structural quality of housing, overcrowding, and insecure residential status (United Nations Human Settlements Programme, 2003, p. 12 italics added for emphasis).

The major element in this definition is the perception that 'slums' are undesirable places to live (Gilbert, 2007, p. 702). Over time, the word 'slum' is income generating activity in popular usage to describe 'bad' shelter and is a word that can be used at different scales: anything from a house to a large settlement can be classified as a slum providing that it is perceived as to be substandard and is occupied by the poor (Davis, 2004; Gilbert, 2007; Weinstein, 2014). Additionally, an association between slums and the supposedly evil character of those who live there has become a rather worrying aspect of the continued use of the word 'slum' (Gilbert, 2007, p. 702). As such, a slum is not a statement of legality but rather an indictment of the physical appearance of a shelter or a group of structures and the residents who live within these settlements. However, given its negative connotation – and a direct plea from the residents in this study to refrain from using that

word – I have opted to use a different word to describe my research sites without conflating its legality by using ‘informal settlement’ or being derogatory by using the word ‘slum’.

Prototypical informal settlement: In the context of this research, ‘prototypical informal settlement' is a neutral term to describe an urban neighborhood or district with poor structural quality of housing, inadequate access to safe water, substandard sanitation and infrastructure, and overly crowded. This term was derived from one of my conversations with a focus group in Nairobi, where they denounced the term ‘slum’, and instead referred to themselves as living in a “traditional human settlement.” They regarded ‘slum’ as a derogatory term and that their living conditions were no different from formal neighborhoods. However, the word ‘tradition’ has connotations that may not be appropriate in this context. Meanwhile, ‘prototypical’ is a word often used to describe something that embodies the essential characteristics or features of a broader category or archetype, such as an informal settlement. In that discussion, we settled on addressing their neighborhood as a ‘prototypical informal settlement’, which would replace the use of the word ‘slum’ without conflating the legal meaning of informal settlement.

Chapter 2 Literature Review Framework

2.1 Introduction

This chapter discusses social networks in the context of prototypical informal settlement policies around development and relocation by reviewing literature around four main ideas: (1) introducing the concept of social networks and its relevance in this study, (2) the proliferation of urban informality in sub-Saharan Africa despite all mitigation attempts, (3) previous and current government response to this issue, and (4) establishing the importance of social networks and its implications towards successfully addressing urban informality in sub-Saharan Africa.

2.2 Social Networks

Within the context of this research, social network refers to the underlying structures through which resources are exchanged and/or shared due to a strong interdependence and reliance on members within the community. In social network methodology, a network consists of 'nodes' and 'ties' (Reed, 2021, p. 21). A 'node' could be considered as the focal point on the network map and could be, for example, an individual, specific groups, institutions, or organizations (ibid). Within this methodology, a community can be defined as 'groups of nodes within which the connections – or ties – are denser between them (Reed, 2021, p. 21). These ties manifest themselves within communities as connectedness, trust, and shared values. Using an ego-net structure, the central node is referred to as the ego and the nodes which represent other individual members of the network are often referred to as actors or alters (Reed, 2021, p. 21). The 'tie' is

the connection or relationship between nodes that are the focus of the network being studied, which may be singular or complex, for example, familial relationships, friendships, conflicts, or financial exchanges (Reed, 2021, pp. 21–22).

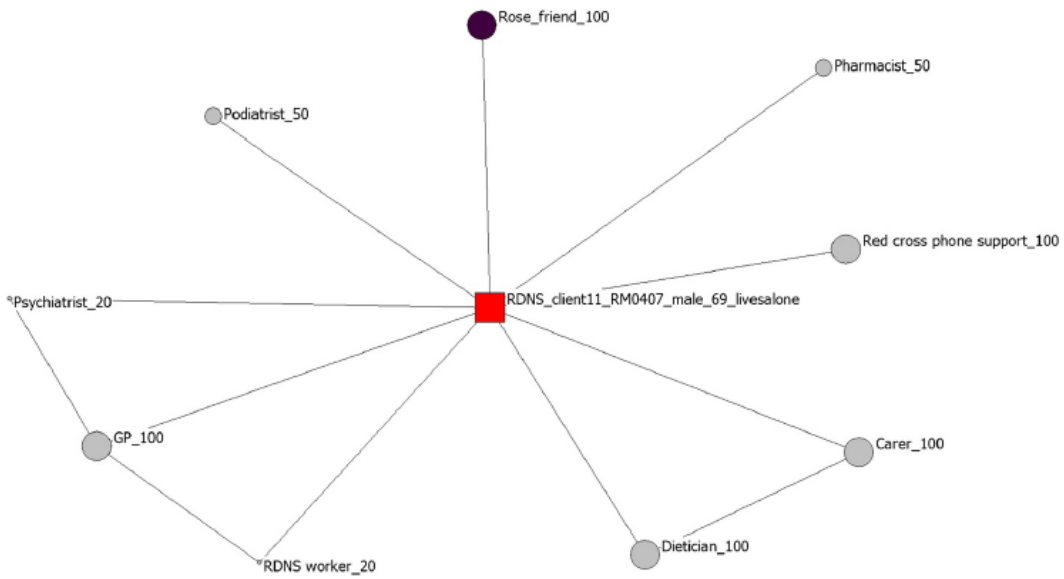


Figure 2.1: Representation of an egocentric social network (Crotty et al., 2015)

This research emphasizes the importance of social ties within social networks, which is an important distinction from the concept of social capital. Social capital refers to the resources embedded within social networks or social structures that individuals can access or mobilize to achieve certain goals. It encompasses the benefits that individuals derive from their social relationships and social networks. These benefits can include access to information, emotional support, opportunities for collaboration, and even tangible resources like financial assistance or job referrals. According to Pierre Bourdieu (1986), one of the pioneering theorists of social capital, the concept can be understood as the aggregate of actual or potential resources which are linked to possession of a durable network of more or less institutionalized relationships of mutual

acquaintance and recognition. Robert Putnam (1995), another influential scholar, emphasizes the role of social capital in fostering trust and cooperation within communities. The study of social capital has generated a large field of theory and research with important distinctions between 'bonding' social capital, 'bridging' social capital (Larsen et al., 2004), and 'linking' social capital (Putnam, 1995).

Social ties, on the other hand, specifically refer to the connections or relationships that individuals have with others within their social networks. These ties can be characterized by various attributes such as frequency of interaction, emotional closeness, and the nature of the relationship (e.g., kinship ties, friendship ties, professional ties). Mark Granovetter's (1973) work on the strength of weak ties highlights the importance of diverse social ties in accessing novel information and opportunities. Weak ties, which connect individuals across different social circles or networks, are often instrumental in providing access to new resources and opportunities. Martin Murray (2009, p. 175) describes informal settlements as places that are not fixed with stable boundaries. Instead, they are constantly evolving places with expanding parameters, and social capital is difficult to grasp with distinctive indicators in this context (Lax & Krug, 2013, p. 9). In a study conducted by Richards et al. (2007) to measure the quality of life in informal settlements in South Africa, the authors conclude that good family ties and friends are an important criteria to an improved quality of life for informal settlement residents. While social ties are not the only way to understand different aspects of the built environment, they are a dominant and useful one for understanding urban informality (Elorduy et al., 2024, pp. 5–6). This is because urban informality is a relational concept (Elorduy et al., 2024; Murray, 2009; S. Smit et al., 2017), and one which is impossible to isolate from other urban dynamics and intrinsically related to the physical

manifestation it takes (Elorduy et al., 2024, p. 6). Essentially, while social capital encompasses the benefits derived from social ties, social ties specifically refer to the connections or relationships between the individuals within social networks. Social capital emphasizes the resources embedded within these relationships, whereas social ties focus on the connections themselves, making social ties a more valuable measure to understanding the social networks of informal settlement residents.

In social network literature, studies often make the distinction between instrumental and expressive networks (Moolenaar & Daly, 2012). Instrumental networks contain social relationships aimed at achieving organizational goals and knowledge and may transfer resources such as work related information and knowledge, instructional materials, and task related advice (ibid). In contrast, expressive networks encompass social relationships that transfer resources with an effective component, such as social support, friendship, and advice about personal matters that are not directly related to achieving organizational goals (Moolenaar & Daly, 2012, p. 252). Expressive relationships are often more time-consuming to grow, given the level of trust that is involved, and tend to grow more stable and even stronger over time (ibid).

This is a concept that AbdouMaliq Simone (2004) aptly describes as ‘people as infrastructure’. While Simone discusses the concept of people as infrastructure in the specific context of Johannesburg in South Africa, the practice is applicable to any setting where people have to live with limited means and the state is perpetually absent or ineffective. According to Crotty et al. (2015, p. 2), social networks can reduce the use, or dependence, on professional services offered by the state. Similarly, the infrastructure that Simone refers to ‘is capable of facilitating the intersection of socialities so that expanded spaces of economic and cultural

operation become available to residents of limited means' (Simone, 2004, p. 407). That is to say that this infrastructure is a ritualized collaboration among residents seemingly marginalized from formal urban life. This notion of infrastructure relates directly to the daily activities of residents in informal settlements.

For example, Beier (2023, p. 12) describes the concept of "open doors" in Karyan Central, an informal settlement in Casablanca, where neighbors go in and out of each other's shacks without needing to knock. Residents described the settlement like a big family, and a place where people without much in terms of resources still help each other (Beier, 2023, p. 12). Simatele and Kabange (2022, p. 3) provide another example when discussing the lack of access to formal banking sources by residents of informal settlements. Formal financial institutions often see entrepreneurs who happen to be informal settlement residents as an investment risk, and thus these small business owners use informal networks to access financial capital for setup and growth (Simatele & Kabange, 2022). Specifically, the lack of access to financial capital is more pronounced amongst marginalized populations within informal settlements, such as women, ethnic minorities, the disabled, and those with little to no education (ibid). As such, social networks within informal settlements allow for vulnerable demographics to access financial capital that they would not have access to in formal markets.

Systems such as informal financial capital and "open door" environments also have downsides. In the informal financial market, interest rates can be absurdly high, and without regulation, can be predatory (Martinez Dy, 2020; Nguyen & Canh, 2021; Simatele & Kabange, 2022). There are cases where borrowers manipulate lenders for loans without any intention of

paying them back. However, such practices can render lenders as ‘persona non grata’ within an informal settlement because of overlapping social networks, and thus risking any future financial dealings or possibly being outcast (Simatele & Dlamini, 2019; Simatele & Kabange, 2022). Also, there are examples of borrowers in perpetual debt who need to borrow more money simply to pay of accrued interest on loans (Simatele & Dlamini, 2019). Within settlements, all of this is common knowledge because ‘everybody knows everybody’s business’, which is why trust is of the utmost importance, and choosing whom to trust is an important aspect of living in an informal settlement. When Beier (2023) describes the ‘open door’ environment in Casablanca, he is sure to mention that there are some residents who find this system problematic as not all neighbors can be trusted. As such, these residents ‘close their doors’ and only open them to trusted friends. This break in social norms can lead to a lack of integration into a neighborhood and feelings of distrust within settlements (Beier, 2023).

There is a specific economy of perception and collaborative practice that is constituted through the capacity of individual actors to circulate across and become familiar with a broad range of spatial, residential, economic, and transactional positions within urban informality (Simone, 2004, p. 408). And as roles and positions within the societal hierarchy become ritualized, particular spaces within the community become linked to specific identities, functions, lifestyles, and properties so that the spaces of the city become legible for specific people at given times and places (Simone, 2004, p. 409). State administrations and civil institutions have lacked the political and economic power to assign the diversity of activities taking place within the city (buying, selling, residing, etc.) to bounded spaces of deployment, codes of articulation, or the purview of designated actors (ibid). According to conventional imaginaries of urbanization, which locate urban

productivity in the social division of labor and the consolidation of individuation, African cities are incomplete (Simone, 2004, p. 409).

However, in order to be an effective planner withing the context of urban informality in Africa, one must understand the flexibility of spatial functions as it pertains to daily activities. The use of spaces evolves over the course of the day, just as the actors within those same spaces also evolve to correlate with the ever changing activities. There is also a level of dependence across the participants that creates a network which Simone refers to as infrastructure. What Simone describes in Johannesburg suggests a social network composed of individual actors who share a common knowledge under similar circumstances and are able to connect and share resources. Therefore, the outcome for the community becomes the result of the established connections between them, and their ability to share and exchange information. That is the essence of people as infrastructure or social networks and is a critical component of daily life in informal settlements.

2.3 Importance of Social Networks

The physical form of informal settlements – that is, the physical layout of settlements and the design of informal dwellings – can vary greatly and is often linked to social networks and livelihood requirements (Smit, 2007; Deuskar, 2020). In Ghana, for example, Jeffrey Paller (2015, p. 42) describes the daily life of a metal scrapper in Agbogbloshie/Old Fadama, an informal settlement in Accra. The very rich description paints the picture of a settlement that grows and evolves based on social relationships, which in turn can become political relationships that can assist in everything from the ‘purchase’ of land to the acquisition of materials, the building of

shelter, connection to the informal electrical grid, to the use of personal skills that can benefit a community in lieu of paying rent.

These socio-spatial connections observable at the macro-scale of settlement units also filter down to granular situations, such as the construction of one's home. The materials needed to construct homes must be purchased at an affordable price, and often negotiated. It must be light and small enough to be carried by men through the typically narrow alleyways of settlements (Veysseyre, 2014). Many residents build their homes with the help of friends, and when specialists are needed for more technical tasks, they tap into the settlement's extended social network of contacts (ibid). In some instances, payment is received in the form of material exchange, such as giving up extra tiles or sheet metal roof in exchange for the technical assistance required to install windows (Veysseyre, 2014). The built environment reflects these construction constraints. It also responds to the rules of social contracts established within the settlements, spoken and unspoken. Citing common examples from the favelas in Brazil, Soléne Veysseyre (2014) writes that most bedrooms will not have windows because it opens up onto a neighbor's house or an alley where people can view one's most intimate moments. It is also courteous to not obstruct the views of your neighbors by building tall structures. If a taller shelter is unavoidable, it is common to leave at least three feet of space between the structures (Veysseyre, 2014). There is a great deal of evidence that settlements are made up of smaller enclaves where everyone knows everyone else, and most people come to peaceful agreements among themselves on where and how to build. According to empirical research conducted in Ghana by Samuel Adyei-Mensah and George Owusu (2012), residents of informal settlements tend to cluster around similar ethnic groups, usually as a need for community support. When migrants first arrive, their area of settlement is

informed primarily by ethnicity, thus creating a variety of enclaves within every informal settlement (Agyei-Mensah and Owusu, 2012). As such, we must consider how housing is governed in informal settlements and the ways in which social networks shape the environment (J. Paller, 2015). Each social network has a leader who serves as the local strongman who plays a particularly important role in the daily lives of informal settlement residents (ibid). They serve as the means for determining access, setting affordable – or unaffordable prices – to housing, and providing security of tenure (J. W. Paller, 2015). In this instance, the newly arrived migrant represents the node – or focal point – in the egocentric model of social networks, while the landlords and local community leaders represent actors. The probability of a migrant successfully constructing, buying, or renting suitable accommodations depends on the strength of the ties between the node (the migrant) and the actors (landowner/community leader) in this social network model. Thus, the social networks in these instances influence the nature of the built environment.

In Santiago, Chile, architect Alejandro Aravena talks about recognizing these social networks in social housing projects and acknowledging them through a participatory design approach. In the documentary Urbanized (Urbanized, 2011), Aravena discusses the participatory process that led to the creation of Lo Barnechea, a social housing project designed by his firm Elemental in 2010. The project is located in a high-income area of Santiago and replaced 770 informal housing sites in four phases to ensure that no families were displaced (Axtman, 2016). According to Aravena, realizing the importance of location due to proximity to schools, transit, jobs, and essentially the richest parts of the city was a critical part of the process. As such, the design team realized that "more important than an extra square meter of house was a better located square meter of land" (Urbanized, 2011). Additionally, based on feedback from informal

settlement residents, designers agreed to produce a house in two parts: one half was outfitted with the most difficult to attain amenities, and the other half was left as a shell for the residents to upgrade as needed. Planners then mapped out the social network radius of residents in order to ensure that networks were minimally impacted by the project. This level of participation in the planning and decision-making process is rare. The political will to subsidize the project in order to have the residents remain on land that would be of immense value to a market-rate development must also be commended. Committing to keeping the project in its original location and not relocating residents to a different part of the city, it ensured that their social networks and livelihood activities would not be adversely impacted. In addition, a commitment was made to ensure that no families were displaced. This meant that project leaders and designers had to recognize and acknowledge the social networks within the community and its impact on their livelihoods and include this knowledge as part of the design process, which is what continues to make the Lo Barnechea social housing project a success today.

The social networks of informal settlements and their impact on their built environment is a criterion that also informs the work of the NGO Development Action Group (DAG) based in Cape Town, South Africa. As an organization, DAG has been instrumental in the construction of 7,323 new houses which has resulted in the improved tenure of over 27,000 people over a ten-year period (DAG.org, 2022). As Warren Smit (2007) explains, DAG uses a "sustainable livelihoods" framework as a way to understand informal settlements and its residents. The sustainable livelihoods approach dates back to the work of Robert Chambers in the 1980s and 1990s, and it is a way of thinking holistically about poverty and development (Smit, 2007, p. 104). Livelihoods comprises of "the capabilities, assets (including both material and social resources) and activities

required for a means of living. A livelihood is sustainable when it can cope with and recover from shocks and stresses and maintain and enhance its capabilities and assets both now and in the future, whilst not undermining the natural resource base" (Lax & Krug, 2013, p. 6). Implementing a sustainable livelihoods approach includes being able to differentiate between households, understanding the linkages between informal settlements and their rural and urban surroundings, and understanding the variety of vulnerabilities that plague the communities (Smit, 2007, p. 102). Attending to these material-social interfaces is a key reason why the sustainable livelihoods approach instituted by DAG has been so effective in providing direct assistance in securing land, infrastructure, housing, and community services to over 100,000 households across 80 projects (DAG.org, 2022).

As indicated by the Development Action Group (DAG), people living in informal settlements need access to shelter and services, access to social facilities, and access to income-generating opportunities, all of which is part of a livelihood. Understanding the livelihood activities of informal settlement residents is particularly important so they can be strengthened whenever possible, and the negative impacts of upgrading interventions on people's lives can be minimized (Smit, 2007, p. 117). Conventional policies and initiatives have thus far focused largely on the physical interventions in informal settlements – housing, roads, water supply, sanitation, and of course evictions and demolitions. Very often, however, these physical solutions fail to address – directly or indirectly – the other social and economic aspects of settlements (Martin and Mathema, 2007, p. 140) that are central to the social networks and livelihoods of its residents.

Quite often, most of these physical interventions can result in the forcible eviction and demolition of prototypical informal settlements. In the process of exploring how decision-makers decide which prototypical informal settlements to demolish, Zachary Levenson (2022) concludes that contrary to popular belief that the location of a settlement determines its fate, the reality is that the structure of its social network can be the most important factor in the decision-making process. Levenson comes to this conclusion after reviewing the formation of two prototypical informal settlements in Cape Town, South Africa, and the eventual demolition of one of the settlements. In his book Delivery as Dispossession, Levenson makes the argument that while Kapteinsklip and Siqalo (two prototypical informal settlements in Cape Town) started as illegal land occupations, the tight-knit structure of the social network of Siqalo kept it from being demolished despite its rather prominent location on prime land, while Kapteinsklip was demolished due to its lack of a communal social network structure even though it was discretely located.

In fact, not only was Kapteinsklip discretely located, but the residents did not face any opposition from the adjacent formal housing communities. These are usually ideal conditions for a prototypical informal settlement to remain. However, Levenson describes a social network structure based on a 'politics of seriality' (2022, pp. 82–85) which is when residents in the community act on individual interests and see each other as competition and threats rather than as collaborators. And because of this fractured approach, the residents were never able to present a united front to the decision-makers, which led to their eventual eviction and demolishing of the settlement. On the other hand, the residents of Siqalo created a social network that Levenson describes as a 'politics of fusion' (2022, pp. 96–115). As evidenced in the name, the politics of fusion is based on a social network built on mutual interests, trust, and support of each other. In

this regard, the residents of Siqalo were able to band together and remain united despite efforts from the state and adjacent formal housing communities to evict them and have the settlement demolished. Such is the strength of a good social network, and understanding how these networks function and accommodating their continued existence in policies related to prototypical informal settlements is essential to the success of any intervention.

2.4 Urban Informality in sub-Saharan Africa

Ananya Roy (2005, p. 147) defines informal settlements as "a state of exception from the formal order of urbanization…with claims and appropriation that do not fit neatly into the ownership model of property". Similarly, Dovey and King (2011, p. 11) define informal settlements as "an urban neighborhood or district that develops and operates without the formal control of the state, co-existing, but not synonymous with 'squatter' settlements and 'slums'. Essentially, informal settlements are economically, socially, and spatially integrated within their urban spatial contexts to such an extent that most developing cities would be unsustainable without them (ibid). And yet, the desire to remove them persists due to their physical appearance and poor aesthetics in the urban landscape. These settlements have become notorious and developed an almost iconic status in literature and popular culture, such as Kibera (Kenya), Dharavi (India), Alexandra (South Africa), and Old Fadama (Ghana). It is important to note that informality is in no way confined to places of poverty; just as every economy has a formal and informal sector, so does every city (Dovey & King, 2011, p. 12).

The absolute number of people living in informal settlements worldwide grew to over 1 billion in 2018, with about 80% attributed to three regions: Eastern and South-Eastern Asia (370

million), sub-Saharan Africa (238 million), and Central and Southern Asia (227 million) (United Nations, 2018). According to the same report from the United Nations Statistics Division (2018), the growing number of informal settlements can be attributed to population growth that is outpacing the construction of affordable housing. As such, renewed policy attention and increased investments are needed to ensure affordable and adequate housing for all by 2030 (United Nations, 2018) in order to mitigate the proliferation of informal settlements worldwide.

According to Dovey and King (2011), there appear to be three primary modes or processes of informal settlement growth. The first is *settling,* whereby residents often occupy unclaimed land. The second is *inserting* into the uninhabited, abandoned, or leftover fragments of urban space. The third is *attaching,* as informal settlements grow out of, or attach themselves to, the structures of the formal city (Dovey & King, 2011, p. 13). These three processes can take multiple forms, such as a defined district within the formal urban fabric. For example, in Nairobi, a city of 5.3 million people in 2023 [2], one of the most well-known informal settlements in all of Africa, Kibera, is located just a few kilometers from the central business district (Bird et al., 2017, p. 499).

[2] Nairobi's 2023 population is now estimated at 5,325,160 according to the World Population Review (https://worldpopulationreview.com/world-cities/nairobi-population).

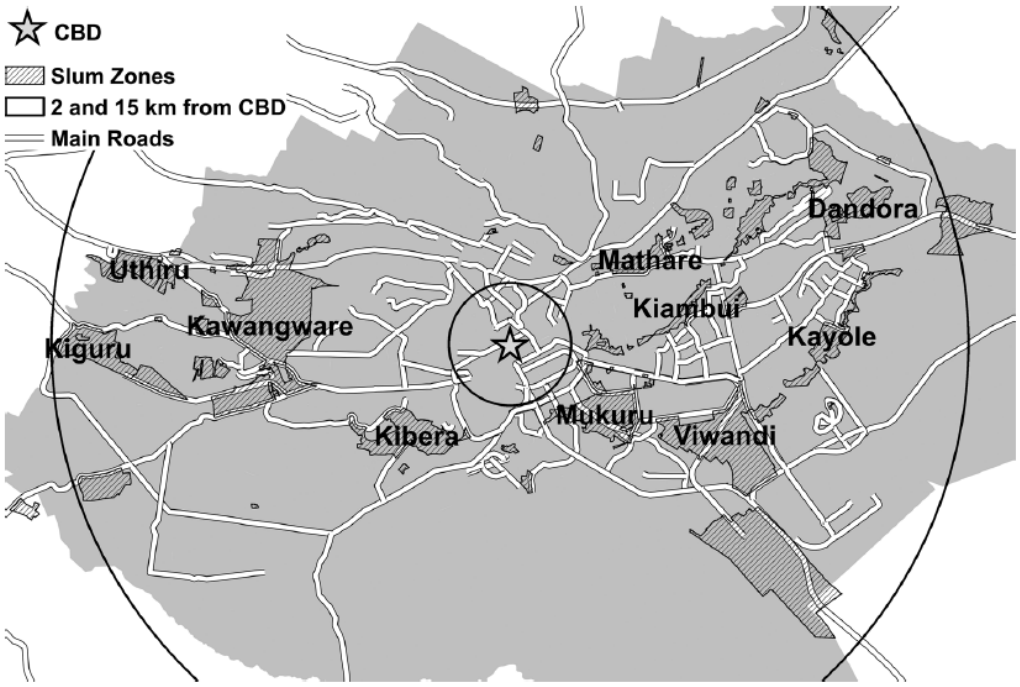


Figure 2.2: Location of Major Informal Settlements in Nairobi, relative to the central business district (CBD). Image is from Bird et al. 2017, p.499.

Figure 2.2 shows the numerous other informal settlements spread throughout the city of Nairobi, varying in size, density, proximity to the CBD, and access to main roads. Rosa Flores Fernandez (2012, pp. 3–4) claims that most prototypical informal settlements are initially formed on the outskirts of city, but are subsequently absorbed by the latter during the expansion of the city's urban area. These urban informal settlements often have very high population densities because of the proximity to centers of economic activity and urban infrastructure such as schools, hospitals, etc., and sources of income generating activities (ibid). There are prototypical informal settlements which are located on the outskirts of the urban perimeter and far from other areas of the city. For these residents, this distance from the city center limits access to infrastructure and urban facilities, which slows down population growth (Fernandez, 2012, p. 4). As a result,

available land surface area is often greater compared to informal settlements located within the urban core (ibid). It is important to note that regardless of location, prototypical informal settlements have become somewhat of a "Chinese puzzle" to government authorities (Fernandez, 2012) as they attempt to create effective land-use plans and development initiatives, which includes the mitigation traditional urban informal settlements (Boamah & Amoako, 2020; Deuskar, 2019; Fox, 2014; Goodfellow, 2020).

However, according to Samper et al (2020, p. 24), despite initiatives to diminish the prominence of informal settlements as an urban reality on a global scale, it is estimated that the number of informal settlements continues to grow. This information is corroborated by the United Nations Economic and Social Council's evaluation of the progress of the Sustainable Development Goals (SDGs), "despite some gains, the absolute number of urban residents who live in slums [informal settlements] continued to grow, owing in part to accelerating urbanization, population growth, and a lack of appropriate land and housing policies" (ibid). As recently as 2021, the International Finance Corporation, a subsidiary of the World Bank launched a $300 million investment to develop affordable housing in Africa (World Bank, 2021). This is in addition to the $300 - $400 million raised between 2015-2016 by the International Housing Solutions (IHS) to assist in affordable housing efforts in South Africa, Ghana, Zambia, Botswana, and Mauritius (Chilongo & Rayner, 2015). These responses to the proliferation of informal settlements have become an opportunity for African governments to promote new urban development in attempts to reduce the population pressure in and around the central business districts of major cities in sub-Saharan Africa. Unfortunately, the problem of informality still persists because the solution is not holistic. This is because slum clearance results in the destruction of fixed capital and livelihoods,

loss of social and safety networks, family disintegration, psychological and emotional trauma, exacerbation of housing deficit, and increased impoverishment (Arimah, 2011, pp. 5–6). When considered together, the combination of continued investment in development in sub-Saharan Africa that is not made affordable for the most vulnerable populations creates a condition that forces the urban poor into informal settlements.

2.5 Government Response

Elorduy et al. (2024, p. 5) conceive of the built environment as sets of overlapping relations: the social links that that physical space affords; the economic ties that produce built forms; and the physical connections between components and materials that enable stable structures. Essentially, the built environment consists of social networks, livelihood (income generating) activities, and housing. However, current policies around the mitigation of informal settlements tend to focus solely on the provision of affordable housing for residents of informal settlements (Crentsil & Owusu, 2018; Huchzermeyer et al., 2007; *KENSUP*, 2013). In South Africa, the Reconstruction Development Program (RDP) focuses on providing free housing to all South African citizens as an attempt to provide access to dignified housing to all those who were denied such access during apartheid (Cameron, 1996; Corder, 1997). In Nairobi, the Kenyan Slum Upgrading Program (KENSUP) focuses on upgrading the informal settlement of Kibera by providing affordable housing units to the residents (Kijilwa, 2018; The New Humanitarian, 2009). While the policy focuses on housing, the method of relocation as allowed for social networks to be relocated together, which has led to a relatively successful initiative as per the residents. In Accra, decongestion policies have led to the relocation of residents from an informal market within the city to a formal market located at the edge of the city. The policy focuses on livelihood

activities, because only residents selling onions were included in the relocation policy (Daily Graphic, 2022). However, because of the inherent social networks present within the specific livelihood activity, the relocation has not had a negative impact on the income generating activities of the residents, but it has been challenging because of where residents have been relocated to. The different outcomes of these policies are emblematic of the decision-making processes involving the mitigation of informal settlements across sub-Sahara Africa when viewed through the lens of housing.

Government officials are often more concerned about the visible presence of informal settlements in their cities than they are about addressing the wellbeing of the settlement residents themselves (Huchzermeyer et al., 2007, p. 20). For example, multiple city governors in sub-Saharan Africa have engaged in 'cleaning up' the city through the heavy-handed erasure and bulldozing of unruly housing constructions, converted containers functioning as bars and street shops, and any 'irregular' structure that does not enhance the preferred visual aesthetic of the city (de Boeck, 2011, p. 319). To cite a specific example, the National Department of Housing for the city of Cape Town chose in 2004 to locate a major housing flagship project along the N2 highway as part of the process for 'dressing up for the world' (Huchzermeyer & Karam, 2007; Jordhus-Lier, 2015). For context, Cape Town experiences a huge pressure from inward migration, socio-spatial segregation, and poverty – manifested by hundreds of dense informal settlements along the main arterial road into the city, the N2 highway (Jordhus-Lier, 2015, p. 169). And in preparation for the FIFA 2010 World Cup, the city unveiled a new housing policy which would also address a desired aesthetic experience for the expected guests and tourists during the mega event (Agbo, Jr., 2021; Burbank et al., 2002; Huchzermeyer, 2007; W. Smit, 2007). And thus, due to the focus on

the physical rather than the social, policies often focus on eradicating the symptoms which are the visible and unattractive structures (Boamah & Amoako, 2020; de Boeck, 2011; Huchzermeyer et al., 2007; W. Smit, 2007).

Focusing on symptom eradication overlooks the important value of social networks and its critical influence on the spatial organization and productive activities of residents in informal settlements (Agbo, Jr., 2021; Huchzermeyer et al., 2007). In fact, most governments in sub-Saharan Africa would agree that informal settlements are an indication of the failure of the public sector, the legislative framework, and the economy to provide conditions through which the poor may be housed formally (Arimah, 2011; Boamah & Amoako, 2020; Huchzermeyer et al., 2007). As Marie Huchzermeyer (2011, p. 23) rightfully points out, informal settlements sit at the intersection where various dimensions of globalization meet local political decisions and processes. They are a complex manifestation of more than just poverty, but there remains a political and bureaucratic tendency to blame the existence and growth of informal settlements on simplistic 'problems' and to focus only on eliminating the symptoms (ibid).

Perhaps nothing has been more impactful to residents of informal settlements than having their living conditions reduced to an issue of inadequate housing in academic literature, government reports, and planning policy. Stephen Berrisford (2011, p. 209) indicates that planning law reform in African countries is widely acknowledged to be a prerequisite for better urban (and rural) development, both by donor organizations and by African governments. In addition, planning legislation has also tended to have the effect of being no more than an irritant to developers but an oppressive force on the poor, without yielding any significant societal benefits

(Berrisford, 2014, p. 167). There is also a tendency for new planning legislation to propose compliance standards concerning, for example, building materials, lot coverage, and urban design standards that are not affordable to a vast majority of citizens (ibid). Not infrequently, these very laws have been used even more directly to justify campaigns of demolition or forced evictions, as was notoriously the case with Zimbabwe's 'Operation *Murambatsvina* [3] in 2005 (Berrisford, 2011, p. 215). This was a program designed by the Zimbabwean government in July, 2005 aimed at erasing slum shelter through an unprecedented shack-demolition campaign which left more than 200,000 people homeless within that month (Huchzermeyer et al., 2007, p. 20). In addition to Zimbabwe, the governments of Nigeria, South Africa, Kenya, Angola, and Ghana, to name a few, have all been responsible for 'slum' eradication drives of unprecedented scale (Crentsil & Owusu, 2018; Gilbert, 2007; Hasson, 2013; Huchzermeyer, 2011). While the general sentiment of these authors is understandable, the choice of the word 'unprecedented' indicates a lack of acknowledgment that each documented large-scale forced eviction campaign serves as precedent for the next, thus the use of the word 'unprecedented' may inadvertently distract from the systemic, multi-national scale of these trends. Essentially, the proliferation of urban evictions in the new millennium is a glaring sign that the priorities of post-millennial urban management – steered as it is by the growing urge for sub-Saharan African cities to become more attractive, and by implication more exclusive and economically competitive – is an advance only for the market and a few elites, not for society or humanity (Huchzermeyer, 2011, p. 87).

African governments are generally consistent in their statements on the subject: better planning law is needed to bring order and control to an illegal, informal, untidy, and out of control

[3] Murambatsvina is a combination of two Shona words which roughly translates to "Move the Rubbish." In this case, 'the rubbish' was in reference to the informal settlements that were demolished.

situation; it is needed to modernize the society and to enable governments to exert a stronger influence over spatial patterns (Berrisford, 2011, p. 215). Keeping in mind that the very purpose of planning legislation is to partition land and determine locations for development, and that this process has excluded the urban poor and thus relegating them into informal settlements, a dependence on the current process of planning legislation would be quite detrimental to the urban poor. The dependence on planning legislation also frames the problem of informal settlements as a housing issue while ignoring the other factors associated with urban poverty and informality. Essentially, the necessity for illegal occupation of land and informal dwelling arrangements stems from a deep marginalization and exclusion from formal access to land and development (Huchzermeyer & Karam, 2007, p. 4), and in the absence of state-provisioned and formally regulated housing alternatives, urban Africans find creative ways to deal with the housing shortage and cope with uncertain and insecure living conditions (J. Paller, 2015, p. 32). The former hints at interrelated social issues while the later returns the issue of informality to a lack of affordable housing for the urban poor. If limited housing was solely to blame, then the myriad of social housing campaigns in developing countries should have mitigated the prevalence of informal settlements, but that has not been the case. In fact, to date, approaches that have been developed to address the prevalence of informal settlements have not only fallen short of reducing the problem, they may also have perversely contributed to the perpetuation rather than the reduction of informal settlements (Huchzermeyer & Karam, 2007, p. 3).

An example of a failed approach involves the heavy reliance on bulldozers. "*Bulldozers have been turned into an instrument of governance and it is the ordinary people who are suffering*", Wole Soyinka (BBC, 2005). This quote from the legendary Nigerian playwright,

author, and poet graphically summarizes the scenes playing out in informal settlements across sub-Saharan Africa. When informal settlements are framed as a housing issue, it is very easy to justify policies of demolition and relocation without considering the associated harms of breaking up the critical infrastructure of social networks. For instance, an informal settlement may be the target of a development project initiated by private investors (individuals, associations, cooperatives, developers) who obtain approval from the state for a project on a site already informally occupied and negotiate the 'voluntary departure' of the occupants or their eviction (Durand-Lasserve, 2007, p. 216). However, even when resettlement assistance is provided for displaced or evicted residents, there are many instances where residents have been made homeless, did not receive any notice of the impending demolition, or received no compensation for being evicted from their homes (Durand-Lasserve, 2007; Huchzermeyer et al., 2007).

In the case of Badia East where thousands of residents were displaced for the Lagos Metropolitan Development Project, residents did not receive any compensation, were rendered homeless, and future development remained unaffordable to them (Amnesty International, 2017). Operation *Murambatsvina* (roughly translated to 'Move the Rubbish), the large-scale campaign enacted by the Zimbabwean government to forcibly eradicate informal settlements across the country affected more than 70,000 people. The clearance campaign was followed by a re-housing program which aimed to provide shelter for the displaced victims and improve their living conditions (Amnesty International, 2010). However, the re-housing program was a dismal failure. Few houses were built, most of which were not completed, and most of the displaced victims were driven deeper into poverty by the forced evictions and having to relocate to rural areas (ibid). The research suggests that such policies and practices have been justified as the pursuit of better

housing initiatives by the state to fill a need, but rarely help those most negatively impacted. In summary, it is imperative to begin looking at informal settlements as more than simply a place comprised of poorly constructed houses and unsanitary conditions, but rather a place where the urban poor find innovative ways to survive by depending on each other – perhaps overly so due to a lack of appropriate resources from the state – and to ensure that this reframing finds its way into policies.

2.6 Literature Review Summary

At the most basic level, adequate housing promotes physical health by providing basic protection against the ravages of the environment (Galiani *et al.*, 2013, p. 2). The roofs and walls shelter one from rain and the cold, while access to water, sanitation, and non-dirt floors protect against parasitic infestations and infections (ibid). At the economic and social level, housing is one of the largest expenditures that a family makes, and adequate housing provides a number of benefits, such as contributing substantially to well-being, quality of life, and mental health, while a proper house can induce a sense of dignity and pride (Galiani *et al.*, 2013). These are essential components to having a relatively good quality of life, and yet it is a component that remains unattainable for a vast majority of the urban poor in sub-Saharan Africa.

The reduction of informal settlements into a singular issue of shelter allows for critics to justify clearance policies because they view settlements as chaotic and unsafe (Gilbert, 2007), and generally offers a substandard quality of life due to its lack of sophistication, lack of a coherent masterplan, and lack of dignified architecture (Roy, 2012). Informal settlements, therefore, fails to meet our – people who live outside of these environments – readily acceptable aesthetic values

when compared to the ideal formalized city due to their general lack of everything we value in "civilized" society when it comes to the built environment. However, I contend that a closer examination of informal settlements would reveal a sophisticated system of governance and planning that maximizes the social networks and livelihood activities of the urban poor, or expressive social networks according to Moolenaar and Daly (2012, p. 252).

However, social networks do have negative effects as outlined by Zachary Levenson. The lack of instrumental social networking – that is working towards a common good – in an informal settlement led to its demolishment despite its discrete location. Other more common negative effects are simply social contacts with ill intentions (Crotty et al., 2015, p. 2). These social networks can lead to financial ruin and loss of material possessions (ibid), and thus physically affect the built environment. Acknowledging the cultural phenomenon of social networks – both positive and negative – and its impact on the built environment would allow for sympathetic and informed policies that benefit the people it is intended to help.

Chapter 3 Methodology and Research Design

3.1 Introduction

The overarching goal of this dissertation is to identify a connection between social networks and the built environment of informal settlements across sub-Saharan Africa. This objective is achieved by employing a multi-case study approach to better understand the similarities and nuances of context around instances of prototypical informal settlements across regions. This dissertation makes the claim that understanding a society as how and why people do things together, make and unmake families, join and leave neighborhoods, resist authority and form political parties and factions within those parties, make peace and have fun, rob each other and gas stations (Ragin, 1994, p. 10), and how these activities contribute to their livelihood activities and built environment is critical to creating successful policies around prototypical informal settlements.

This is a mixed-methods dissertation which uses quantitative and qualitative data. The qualitative approach focuses on the process of how social networks are constructed in prototypical informal settlements, and whether this process is interrupted when residents are relocated to formal housing. And more importantly, what is the impact on residents when these processes are disrupted. The methods used to support the qualitative approach in this dissertation are participant observations and an analysis of conversations. The quantitative approach is supported by a survey

(**Appendix A**) with 577 participants, the analysis of which provides objective and quantifiable data to support the narratives and observations.

The design of the study heavily considers the epistemological positions of the research participants. In this regard, while quantitative methods are emphasized, the information is meant to convey empirical data in support of a more qualitative approach to the research design which relies on the successful outcome of the researcher-participant surveys and interviews. The chapter concludes with a summary that honors the authenticity of the research participants to ensure that the findings of my study are trustworthy.

3.2 Johannesburg, South Africa: Setswetla and Far East Bank

The first research sites are located in the country of South Africa which occupies the most southern edge of the African continent. It is surrounded on three sides by the Atlantic Ocean and shares its northern borders (from west to east) with Namibia, Botswana, Zimbabwe, and Mozambique. The sovereign nations of Lesotho and Swaziland are landlocked countries within the geographic boundaries of South Africa. Johannesburg is the largest city in South Africa and is classified as a megacity, and is one of the 100 largest urban areas in the world with an estimated population of 14,167,000 inhabitants (City Population Index, 2023). The city of Johannesburg is the capital of South Africa and is located within the wealthiest province of the country (Bhana, 2018).

While the city of Johannesburg is located within the wealthiest province in South Africa and considered by some to be the wealthiest metropolitan region in all of Africa (Kimcmia, 2010), it has the unfortunate distinction of being home to Alexandra, one of the poorest urban areas in the country (Onatu & Ogra, 2020). Alexandra forms part of the Johannesburg Metropolitan Municipality and is located next to the wealthy suburb of Standton. This location near high-value property and economic activity is relatively unusual for low-income settlements in South Africa (Shapurjee & Charlton, 2013). Proclaimed a "native township" in 1912, it was one of the few urban areas in which Black people could own land (Maphanga, 2020). In its 100-year history, the township has survived many demolishing attempts and its proximity to wealthy white suburbs made it a constant target for eradication (ibid). Alexandra is bounded by Wyberg to the west,

Figure 3.1: Map of Johannesburg showing the locations of Setswetla and the Far East Bank relative to various commercial districts. Map by author.

Marlboro and Kelvin to the north, and Lombardy West and Lombardy East to the south (Nkosi, 2012). Alexandra – informally abbreviated to Alex – is situated on the banks of the *Jukskei* River. In addition to its original and well-built houses, Alex now has a large number of informal dwelling structures estimated at more than 20,000 (Onatu & Ogra, 2020).

Figure 3.2: Aerial view of Setswetla showing homes along the Jukskei River. Image by author.

Setswetla (pronounced "Stu-wet-la") is a densely populated prototypical informal settlement located on the outskirts of Alexandria along the banks of the *Jukskei* River (Maphanga, 2020). Despite being less than 5km (3 miles) away from Standton (**Figure 3.1**) – which is considered by many to be a regional economic hub characterized by opulence and prestige – the people living in Setswetla are plagued with deep poverty and a lack of basic needs and services (Kimcmia, 2010). The apartheid legacy of complex socioeconomic inequalities, rapid urbanization, and urban development in the absence of regulations on urban growth and mobility

have produced additional areas of vulnerability such as Setswetla (Danielak, 2022; Murray, 2009). Setswetla's residents comprise of both rural migrants and immigrants from across the continent of Africa – such as Ethiopia, Somalia, Zimbabwe, Tanzania, and the Republic of the Congo – who have come to settle gradually along the *Jukskei* River in recent years (Danielak, 2022, p. 277).

Residents in Setswetla live in makeshift shacks and ill-constructed small one and two-story brick and mortar houses built on landfill (**Figure 3.2**), which is prone to landslides in case of any sustained heavy rainfall (ibid). Owing to the lack of a sewer system, the city provided communal mobile toilets, but this has become a contentious matter within the community: the toilets, on the one hand are an improvement for the residents, but on the other hand are perceived to be a pull factor – attracting newcomers – and thus making the settlement that much denser (Danielak, 2022, p. 278). Many residents connect informally to the electricity grid and a majority of the houses are built directly beneath the city-erected electricity pylons, both of which are extremely vulnerable to severe fires (Danielak, 2022; Murray, 2009). Unfortunately, in addition to the physical vulnerabilities of structures in Setswetla, residents are also plagued with chronic violence (Personal Interviews, October-November 2022). In Alexandra, since 2008 and as recently as 2015, xenophobically-motivated mob violence has claimed the lives of several immigrants and displaced thousands of residents (Danielak, 2022), which has extended into Setswetla (Tafira, 2011). Alexandra – and by extension Setswetla – exhibits severe overcrowding, infrastructure deficiencies, expanding poverty and a lack of access to income generating activities (Shapurjee & Charlton, 2013, p. 656) which has been a constant recipe for violence and a lack of personal safety that all residents experience on a consistent basis (Mazamane, 2015; Tafira, 2011).

Construction of the Far East Bank in Alexandra started in 2002 and was completed in 2005, consisting of 181 detached Reconstruction Development Program (RDP) units (Shapurjee & Charlton, 2013, p. 656) and has grown since then (**Figure 3.3**). The Reconstruction Development Program (RDP) is the major and ambitious policy initiative taken up by the South African Government in 1994 after the end of apartheid (Cameron, 1996; Corder, 1997). The goal of the RDP was the eradication of the results of apartheid and the building of a democratic, non-racial and non-sexist future (Corder, 1997, p. 184). The RDP attempts to integrate development, reconstruction, redistribution, and reconciliation into a unified program (Cameron, 1996, p. 283). The Far East Bank was constructed as part of the Alexandra Renewal Project (Mazamane, 2015) to accommodate households relocated from shacks in parts of Alexandra such as Setswetla, and placed into one-roomed RDP houses on very small but well organized plots (Shapurjee & Charlton, 2013).

The Alexandra Renewal Project (ARP) was announced by President Thabo Mbeki in December 2001 as a massive state-led intervention to improve the quality of life of residents living in the margins in Alexandra (Harrison et al., 2014) which included Setswetla. The renewal project has seen some 7,000 families relocate from the banks of the polluted river to better settlements (ibid).

Figure 3.3: RDP houses in the Far East Bank with additions to accommodate families. Image by author.

The government of post-apartheid South Africa has focused much of its energy and resources on the delivery of housing and basic services to previously marginalized communities and individuals (Harrison et al., 2014), and the Far East Bank is an example of this focused dedication. There is a perception that on average, residents living in the Far East Bank are much better off than those living in Old Alexandra, especially Setswetla (Harrison et al., 2014).

The control group for this research will be residents living in the prototypical informal settlement at Setswetla, and the treatment group will be residents living in the formal RDP housing development in the Far East Bank.

3.3 Nairobi, Kenya: Silanga and Canaan Estates

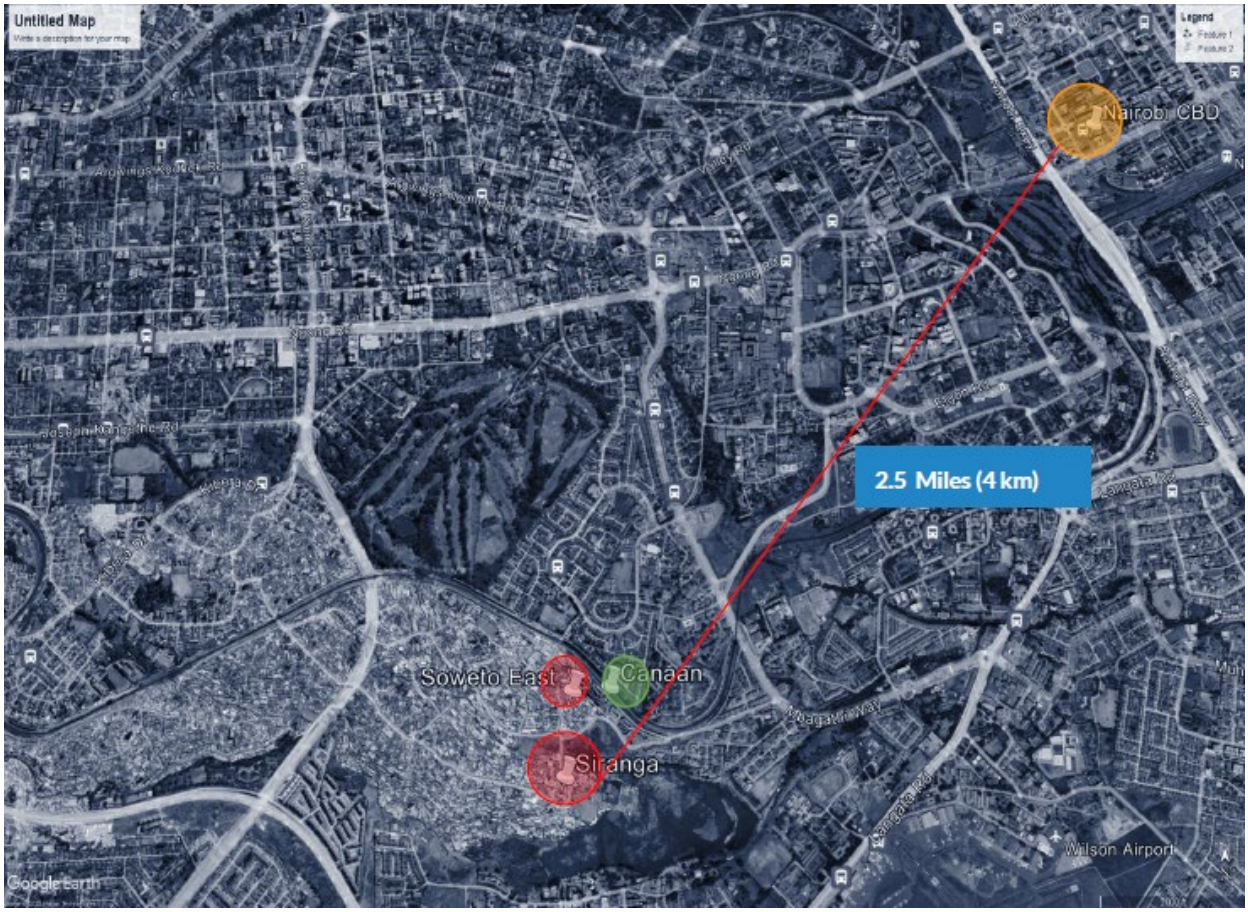


Figure 3.4: Map of Nairobi showing the locations of Silanga and Canaan Estates within Kibera, and their relative distance to the city center. Map by author.

The second research sites are located in Kenya, an East African Country and bordered by Uganda to the west, South Sudan and Ethiopia to the north, Tanzania and Somalia to the south, and the Indian Ocean to the southeast. Nairobi is the capital city of Kenya and has a population of approximately 4.5 million residents (City Population Index, 2023; Muthoni Njeri, 2020). As the capital of Kenya and the hub of business in Eastern Africa, Nairobi is facing rapid population growth which has been accompanied by the expansion of large-scale prototypical informal settlements (Ren et al., 2020). According to Amnesty International (2009), roughly 2 million

people are living in the prototypical informal settlements of Nairobi; they make up nearly half of Nairobi's population, yet they are crammed into only 5% of the city's residential areas and just 1% of all the land in the city.

Kibera is perhaps the most well-known of all the prototypical informal settlements in all of Africa (Bird et al., 2017; Davis, 2004; Huchzermeyer, 2011; Weinstein, 2008), and it is located just a few kilometers from the center of Nairobi's central business district (CBD). The prototypical informal settlement of Kibera is home to more than a quarter of a million people who live in an area smaller than New York's Central Park (Owens & Rubnitz, 2017), and most residents lack affordable access to any core services provided by the city (*KENSUP*, 2013; *The World's Largest Slums*, 2017; Owens & Rubnitz, 2017). The legal ownership of prototypical informal settlements are always being disputed, and Kibera is no exception due to the convoluted claims of property rights and how it is reinforced over time (Bird et al., 2017). The history of Kibera begins at the turn of the 12th Century when the British Colonial government enrolled Sudanese soldiers to serve in the King's Africa Rifles and fight for the British. These Nubian soldiers were granted permission to settle in the land that is now Kibera, and in spite of some pressure for them to leave, they were granted official permission to stay in 1950 (ibid). In addition to the Nubian settlers, other migrants have flooded to Kibera since Kenya's independence in 1964, all settling without official government recognition (Bird et al., 2017, p. 500). The settlement of migrants in Kibera is usually facilitated by a local chief who are government representatives but have no authority to grant land titles (Bird et al., 2017). As a result, decisions today regarding who should be granted land titles, or how to allocate compensation for evicted residents remain a matter of dispute (Bird et al., 2017; Owens & Rubnitz, 2017).

Kibera is composed of 13 villages and most of the residents are renters (Bird et al., 2017; Owens & Rubnitz, 2017). Due to a lack of clear regulations, landlords have little incentive to improve conditions since they collect high rents regardless of the services – or lack of services – being provided (*KENSUP*, 2013; Owens & Rubnitz, 2017). Most areas in Kibera lack proper drainage, clean water supplies, electricity, and comfortable spaces for social gathering (ibid). Without a fully functioning solid waste collection system or permeable green spaces, the neighborhoods are still prone to flooding.

Walking through the village of Silanga, one is exposed to unpaved roads with open gutters filled with garbage and solid waste which emits a rather pungent smell, while families prepare meals steps away from these gutters and dump any remains into the gutter, and children chase after animals to keep themselves entertained while the adults perform other tasks (**Figure 3.5**). It is a vibrant cornucopia of sights and smells framed by poorly constructed shacks made of mud with exposed wooden posts and beams supporting thin metal roofs (**Figure 3.5**).

Figure 3.5: A local road in Kibera in the village of Silanga. Image by author.

In 2000, the government of Kenya partnered with UN-Habitat and the World Bank Cities Alliance to initiate the Kenyan Slum Upgrading Program (KENSUP), focusing on upgrading Kibera, one village at a time, and beginning with the village of Soweto East (The New Humanitarian, 2009). The new development was dubbed "Canaan" (pronounced "Cannon") to describe the exodus from Egypt, or in this case, from Soweto East to the "Promised Land" (Kijilwa, 2018; The New Humanitarian, 2009). Canaan Estates consists of 821 families living in high-rise apartment buildings of solid construction and receiving full government services (Kijilwa, 2018; The New Humanitarian, 2009), separated from the prototypical informal settlement by a low masonry wall and a guarded gate.

Figure 3.6: A typical interior walkway at Canaan Estates. Image by author.

According to UN-Habitat (2009), the objective of KENSUP is to improve the overall livelihoods of people living and working in prototypical informal settlements through targeted interventions to address shelter, infrastructure services, land tenure, and income generating

activities issues. For this program to work, the village of Soweto East was divided into four zones (A-D). In September of 2009, 5,000 residents in Soweto Village Zone-A were relocated to a temporary decanting site in *Lang'ata,* a nearby site (Flores Fernandez & Calas, 2011; MacDonald, 2014). Once construction of Canaan was completed in 2016, 821 families were moved into the newly built apartments (Kijilwa, 2018). Soweto East Zone-B has now been relocated and the area cleared for development. Once construction is completed, more families from the decanting site will be moved to their permanent apartments, and the process will continue until all of Kibera is formalized in theory.

The control group for this research will be residents living in the village of Silanga in the prototypical informal settlement of Kibera*,* and the treatment group will be the relocated residents of Soweto East living in the newly constructed Canaan Estates.

3.4 Accra, Ghana: Agbogbloshie/Old Fadama and Adjen Kotoku

The final research sites are located in Ghana which is country located in West Africa and bordered by Ivory Coast (also known as Côte d'Ivoire) to the west, Burkina Faso to the north, Togo to the east, and the Atlantic Ocean to the South. Accra is the capital and largest city in Ghana, located along the southern coast of the country at the Gulf of Guinea, which is also part of the Atlantic Ocean (Ntiamoah, 2008). Once a small coastal settlement in Ghana (then called Gold Coast), Accra became quite prominent following the relocation of the administrative capital from Cape Coast in 1877 by the British colonial administration (Crentsil & Owusu, 2018, p. 220). The relocation of the capital to Accra, coupled with significant public and private investments in the city's infrastructure and services has served to enhance its appeal in attracting businesses, capital,

and people (ibid). According to the 2021 census, the Greater Accra Region currently has a population of approximately 5.45 million residents (Ghana Statistical Service, 2021).

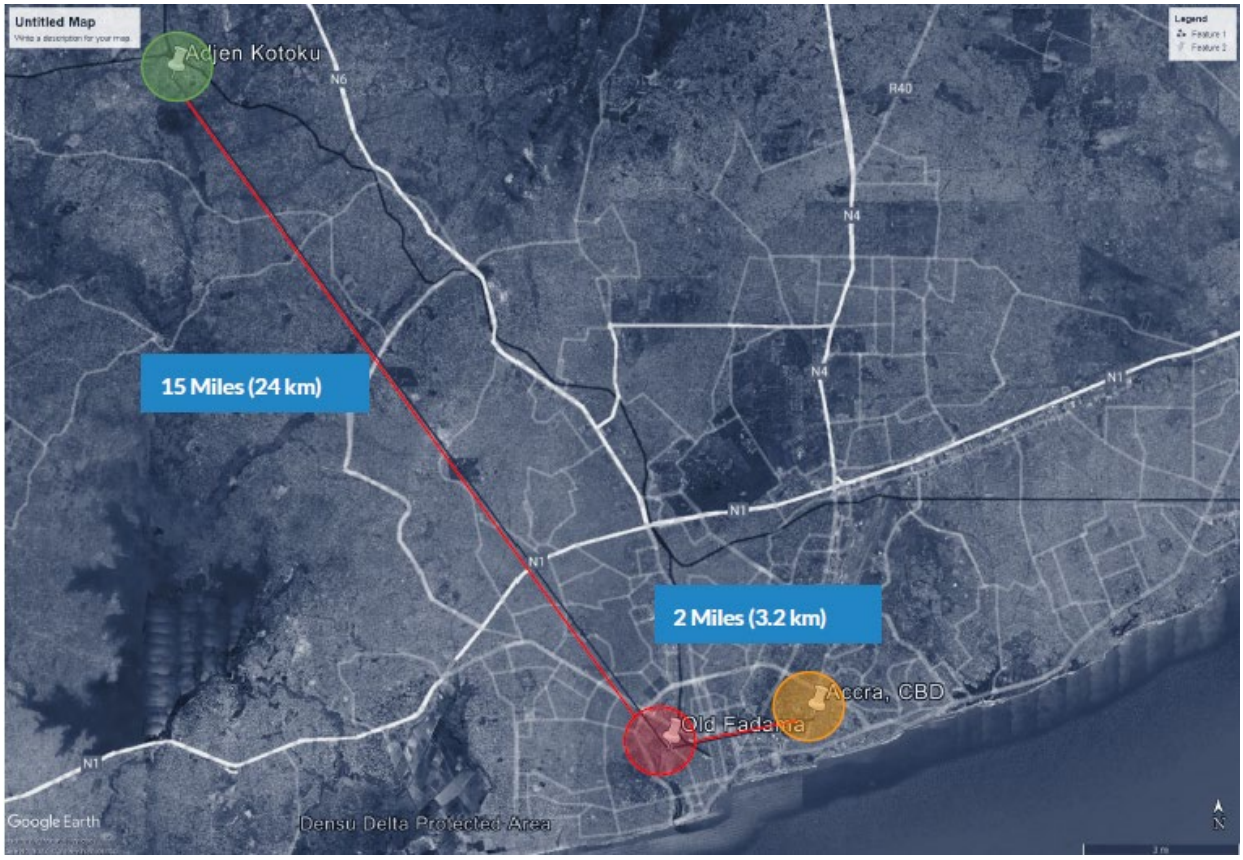


Figure 3.7: Map of Accra Metropolitan Area showing the locations of Agbogbloshie and Adjen Kotoku relative to the city center. Map by author.

The area known as Agbogbloshie is recognized as a formal *Ga* [4] settlement under customary land administration (Afenah, 2012; Boamah & Amoako, 2020), but has gradually degenerated into a prototypical informal settlement community surrounded by several informal residential and commercial developments (Boamah & Amoako, 2020, p. 7). Clashes between formal planning regimes (under both colonial and independent governments) and informal development process and traditional land ownership customs (Boamah & Amoako, 2020) has led

[4] Local name given to the original inhabitants and owners of land in Accra.

to the eventual decline of the community. Agbogbloshie is adjacent to the *Korle* Lagoon (**Figure 3.8**) along its eastern boundary and its western boundary is the *Odaw* River which feeds into the lagoon on the south side. Both sources of water are highly polluted, completely filled with garbage and solid waste to the point where hardly any water is visible (see **Figure 3.8**). However, the land area is still considered valuable waterfront property, and residents have been resistant to all development proposals for fear of eviction and relocation.

Figure 3.8: Aerial view of Agbogbloshie showing the Korle Lagoon. Image by author.

In 1961, the Government of Ghana acquired about 360 acres of land from Agbogbloshie along the *Odaw* River and *Korle* lagoon for what it claimed to be the "Korle Lagoon Development" project (Boamah & Amoako, 2020). Over decades and various political and economic upheavals, the failure of the *Korle* project to be fully implemented meant that the Government of Ghana never found an appropriate use for the land, which eventually gave way to the rise of Old Fadama, a

prototypical informal settlement (ibid). From afar, Agbogbloshie and Old Fadama appear to be a single prototypical informal settlement community, but in reality, one is considered a legal settlement (Agbogbloshie) while the other is viewed as an illegal spill over which started in the 1980s (Boamah & Amoako, 2020). As such, while it is erroneous to refer to Agbogbloshie as a part of Old Fadama, the reality is that these two communities are difficult to distinguish from each other, and both residents and researchers use the names interchangeably.

The exact population of Agbogbloshie/Old Fadama varies depending on the source. According to Adusei *et al.* (2020) and World Population Review (2022), the area known as Agbogbloshie and Old Fadama serves as a home to some 40,000 people who are among the poorest urban populations in the world. Meanwhile, Paul Stacey (2019) and Afia Afena (2012) estimate the population of Agbogbloshie/Old Fadama at 80,000 residents. Regardless of the exact population, the area is located in the heart of Accra, just northwest of the city's Central Business District (CBD) and most of the 40,000 – 80,000 residents do not hold official legal titles to the land they have built their dwellings on (Afenah, 2012; Boamah & Amoako, 2020).The neighborhood is not just home to thousands of informal sector workers and site for e-waste recycling, but it is also noted for the popular Agbogbloshie Market (**Figure 3.9**) where all major food products from farm produce are sold (Adusei et al., 2020; Afenah, 2012; Boamah & Amoako, 2020). These activities draw thousands of additional people to the area. Present-day Agbogbloshie/Old Fadama remains a high-density area primarily made up of self-constructed wood, mud, and metal kiosks and shacks that lack adequate water and sanitation facilities (Afenah, 2012, p. 530). Due to its location between the *Korle* Lagoon and the banks of the *Odaw* River, the area is prone to frequent flooding which creates a precarious and dangerous living condition for

the residents (ibid). Residents have been facing the threat of forced eviction by local authorities since 2002 under the guise of decongestion policies and environmental concerns (Afenah, 2012; Crentsil & Owusu, 2018; Daily Graphic, 2012).

Figure 3.9: Agbogbloshie Market. Image by author.

Decongestion policy may be defined as the removal of what city authorities perceive to be 'unwanted' activities and areas within a city, or simply, the removal of prototypical informal settlements and street traders from public spaces (Crentsil & Owusu, 2018). In the case of Agbogbloshie/Old Fadama, a decision was made to decongest the site and relocate a segment of the residents to Adjen Kotoku. The chosen site of Adjen Kotoku (**Figure 3.10**) is relatively underpopulated and located about 35km (21.7 miles) – or about a 1 hour 30 minute drive – from the current location of Agbogbloshie (**Figure 3.9**). The objective was to relocate the Agbogbloshie market, along with the residents whose major livelihood activities revolved around the market, in

an effort to decongest the CBD. The site was formally designed to include finished roads, well-constructed sheds and masonry storage facilities, sewer infrastructure, and areas to sell goods (City of Accra, 2012; Daily Graphic, 2012; Stacey et al., 2021). Construction for the new market site was completed in 2012 without housing accommodations for the newly displaced residents. According to the municipal planning agency, housing construction plans are underway.

In May of 2021, the local government in Accra issued a 7-week ultimatum to onion traders to relocate from Agbogbloshie to Adjen Kotoku in a bid to decongest the CBD (Boakye & Boakye, 2021). The newly constructed Adjen Kotoku market had remained abandoned since its completion in 2012 due to the remote location and the differing agendas of incoming and outgoing political administrations at the national and local levels (Boakye & Boakye, 2021; Crentsil & Owusu, 2018). Through government engagement, about 80% of the onion traders agreed to relocation (Boakye & Boakye, 2021) although personal interviews revealed that it was not much of a choice. On July 1, 2021, a combined security force invaded the market and ensured that every single one of the traders left. The government had disbursed 500,000 Ghana Cedis ($40,160 conversion rate in 2023) as a stipend for the transportation of their goods (Boakye & Boakye, 2021). However, personal interviews dispute this claim. The residents I interviewed recalled a chaotic event of bullhorns and bulldozers ordering evacuation at an ungodly early hour, and all the residents having to pack up what they could, secure their own transportation services, and get themselves to the new market site. Internal leadership allowed residents to self-organize and adjust to their new location.

Figure 3.10: Adjen Kotoku market. Image by author.

The government of Accra Metropolitan Area (AMA) sees the new Adjen Kotoku market (**Figure 3.10**) as a gradual development project while the current occupants remain pessimistic due to a general distrust and a lack of transparency in the decision-making and implementation process.

For the purposes of this research, the prototypical informal settlement at Agbogbloshie/Old Fadama will serve as the control group while the newly constructed market at Adjen Kotoku will be the treatment group.

3.5 Participant Selection and Recruitment

Utilizing a framework established by Charles Ragin (1994, p. 10) on conducting social research through "telling about society", the intention of this study is to understand how people living in prototypical informal settlements self-organize themselves into communities, and their daily interactions with each other in a variety of ways which constitutes their social networks. The same intention would also apply to the residents who have been relocated to formal housing. The aim is to gain some insight into the relationships residents form, and the impact of those relationships on their built environment, livelihood activities, and general well-being. As such, this study is not overly quantitative or trying to establish a causality but rather, it is a small-scale study, replicated across six sites of observation, designed to explore the narratives of lived experiences in prototypical informal settlements and the impacts of relocation on former residents of prototypical informal settlements.

To remain consistent across the six sites of observation, I chose to use a random sampling method where participants would be selected in random intervals along recognizable streets within each settlement. All six sites have a "main entrance" which is usually where the settlement access road joins a main road, or a location at the edge of the settlement which serves as the main transportation hub. From this access point, every other household is selected for participation. In cases where a household was not available or a structure without participants such as a waste or storage facility, the next available household was selected. Due to the improbability of being able to obtain a sample frame from large populations spread out over wide geographical areas, I made the strategic decision to only sample from a small geographic segment at each site of observation. In this regard, the random sampling of household surveys was deployed in clustered areas at each

site of observation. Additionally, a maximum of fifteen participants at each site of observation were identified to participate in a focus group discussion (FGD). Finally, key informant interviews (KIIs) were conducted with municipal officials and planners in each city.

Participants were recruited for the study primarily through community engagement. Each site of observation – both formal and informal – has community leaders who act as gatekeepers. These gatekeepers were my point of contact in each community. In their company, we walked through each community to familiarize ourselves to residents and the geographic context. Residents were made aware of my presence, the reason for my visit, and the various ways in which they can participate. Dates were then decided upon to conduct the household surveys and focus group discussions. While the methods used were identical at all six sites of observation, the process leading up to data collection was slightly different based on the context.

- **Johannesburg: Partnership with the University of the Witwatersrand**

Permission from the Department of Human Settlements (Appendix B) is required to conduct informal settlement research in the city of Johannesburg. The Department of Human Settlements have Ward Counsellors who oversee each informal settlement. I also have a partnership with faculty members in the planning department at the University of the Witwatersrand (WITS), who gave me access to graduate planning students with prior qualitative research experience in informal settlements. The student research assistants and I met with the Ward Counselors who organized guides to walk us through the settlements to conduct household surveys and interviews. Through faculty contacts at WITS, I connected with municipal officials willing to be interviewed as key informants.

- **Nairobi: Partnership with Kenyatta University**

Research in Nairobi requires approval from the National Commission for Science, Technology, & Innovation (NACOSTI). Approval for the research permit requires partnership from a local organization or academic institution. My partnership with a faculty member at Kenyatta University in the Environmental Planning and Management Program allowed me to acquire the research permit and also gave me access to students with previous research experience in Kibera. My faculty contact connected me with the community leaders and gatekeepers for Kibera, who ensured that the students and I would be able to conduct the household surveys in relative safety. The community leaders also recruited residents for the focus group discussions and my faculty contact connected me with key informants to interview.

- **Accra: Partnership with Synchronized Research**

The ideal was to partner with a university in Ghana, and with the assistance of planning professors and students, work on data collection. However, the best planning school in the country, Kwame Nkrumah University of Science and Technology (KNUST) is located in Kumasi, a major city located 251km (156 miles) northwest of Accra. As such, partners at KNUST did not have the resources in Accra to assist with my research. However, a recent graduate of the planning program at KNUST had established a research consultancy in Accra and was willing to assist my research efforts. The research assistants from Synchronized Research worked on household surveys in Agbogbloshie and Adjen Kotoku, while I focused on conducting the focus group discussions and key informant interviews.

- **Compensation**

Student assistants at all research sites received a daily stipend to cover travel and food expenses. Focus group discussion participants also received a small stipend for their time instead of having snacks or meals prepared. This approach was deemed to be more convenient and also preferred by the participants. While the surveys averaged between 25 – 35 minutes per respondent, no one was compensated in any form. The surveys were purely voluntary.

3.6 Participant Demographics

The study consisted of 577 survey respondents, 97 participants in focus group discussions, and 13 key informant interviews across all six sites of observation (**Table 3.1**). Information was gathered from a range of participants in terms of gender, age, time spent in the settlement/housing development, nationality, and livelihood activity. For the purposes of this study, no one under the age of 18-years old was included in this research. The overall strategy was to demonstrate the variation of voices in each settlement and across geographies to demonstrate the authenticity and credibility of the findings.

Table 3.1: Research activities conducted between October 2021 - March 2023 by author.

City	Settlement	Research Activity Sample Size		
		No. of Surveys Conducted	Focus Group Discussion (No. of Participants/Site)	Key Informant Interview (No. of Individual Interviews)
Johannesburg	Setswetla	77	10	
	Far East Bank	81	12	5
Nairobi	Silanga	94	15	
	Canaan Estates	102	15	4
Accra	Agbogbloshie	109	15	
	Old Fadama	114	30	4
Total Across Research Sites		**577**	**97**	**13**

3.7 Research Design

The research is designed to capture the authentic narratives of the participants and the impact of their social networks – defined as familial, friendships, political alliances, livelihood activities – on their built environment and its influence on their daily lives. Therefore, an in-person survey coupled with semi-structured interviews and open-ended questions in focus group discussions were selected to be the most appropriate research methods (Thomas & Campbell, 2020). A network map was built into the in-person survey as an essential element of the research study to determine the impact of social networks on daily activities. **Figure 3.11** shows the stages of data collection and the methods used to gather the narratives of the participants around their social networks.

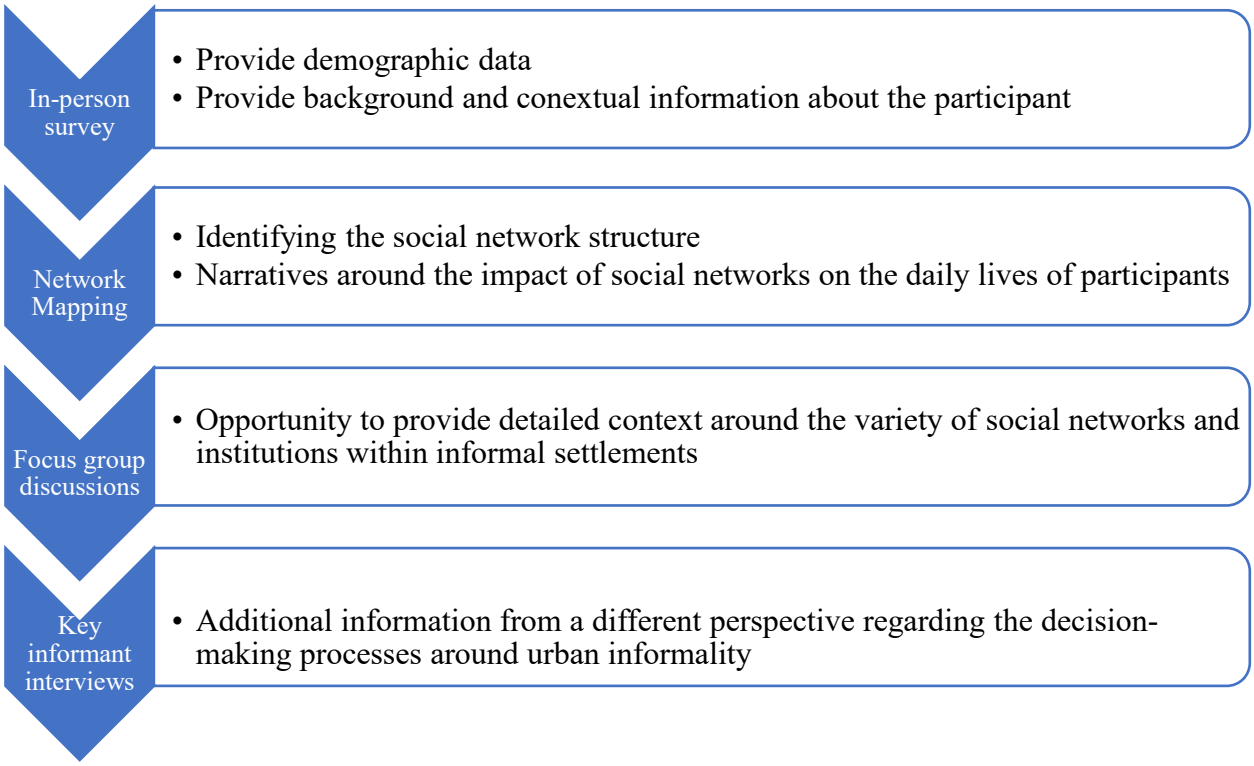


Figure 3.11 Stages and methods used for data collection in this research.

A pilot survey was first conducted among the control group in Nairobi with the assistance of academic colleagues to ensure that the questions were appropriate, easily understood, were addressing the intent of the research, and that the survey tool would be effective. Following the pilot survey, I was advised to translate the survey into the respective local language(s) of each city in order to ensure consistency. I used open-sourced translation software and assistance from local experts in each city to translate the survey into *Twi/Akan* for Accra, *Swahili* for Nairobi, and *IsiZulu* for Johannesburg. These were identified as the major languages spoken in the respective settlements although residents may also speak other languages including English.

3.7.1 Surveys and Interviews

This research study is geared towards gathering the authentic narratives of residents living in prototypical informal settlements and those who have been relocated into formal housing to determine to what extent social networks impact and/or influence their daily lives. Surveys and interviews are the most prominent and efficient method of data collection to capture participant narratives (Reed, 2021; Thomas & Campbell, 2020). This is because interviews allow participants to provide detailed context and background information to support the data gathered through surveys. Therefore, it is essential to ask participants questions that allows for their answers to demonstrate the rich context of their meanings (Reed, 2021, p. 111). The interviews allow for participants to be flexible and varied in their responses while remaining aligned with the intentions of the study (ibid). This research uses an egocentric social network framework to understand the relationship between residents living in prototypical informal settlements and the influence their relationships have on their built environment and livelihood activities. In this regard, the survey questions were developed to address three key areas that would be used to generate the variables needed for the quantitative analysis (**Figure 3.12**).

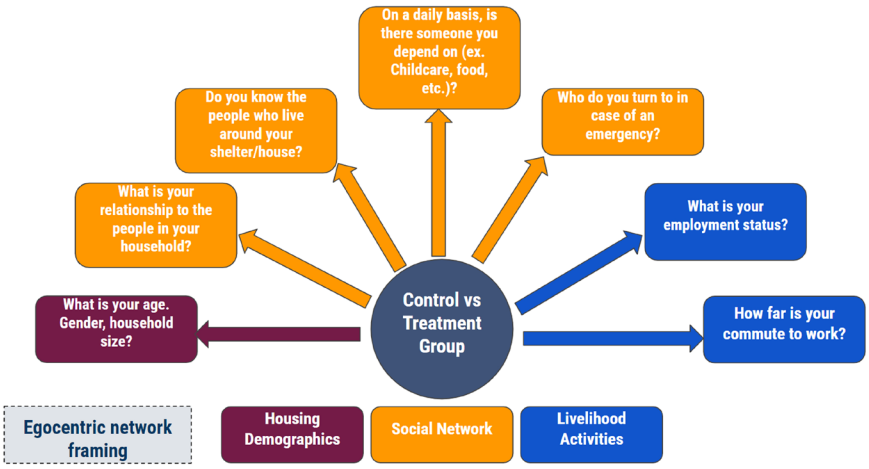


Figure 3.12: Illustration of the egocentric social network framework model for this research. Illustration by author.

The first key area addressed by the survey is demographic information and its possible influence on egocentric social networks. Examples of these questions are as follows:

- Age
- Gender
- How long have you lived in this settlement?
- How long have you lived in this house/shelter location?
- How many people live with you under the same roof?
- How old were you when you moved here?

The second key area addressed by the survey is the strength of the egocentric social network of survey respondents [5]. Examples of these questions are as follows:

- Where did you move from?
- What reasons caused you to move to his settlement?
- How did you find this property/shelter?
- What is your relationship with the people you live with?
- Do you own or rent? If you rent, do you pay rent or provide a service in exchange for rent?
- Did you build your own shelter? If yes, where did you find the materials and who helped you to build it?
- Do you know the people living in the houses around yours? If yes, what is your relationship with them?
- Do you have access to an income generating activity? If you answer yes, how did you find your current income generating activity?
- Do you depend on anyone on a daily basis?
- If you experience an emergency, who would you turn to for help?

[5] Detailed descriptive statistics are provided in Appendix E – J. Responses to those questions determined how the strength of each person's social ties were derived.

The third area key area addressed by the survey is whether the built environment of the research sites have an impact on the livelihood activities of the residents. Examples of these questions are as follows:

- If you have access to income generating activities, how do you commute to your places of income generating activities?
- How long is the commute to your place of income generating activity?
- Do you have a single or multiple income generating activities?
- If you have multiple income generating activities, how do you commute to your primary and secondary income generating activities?
- If you depend on someone on a daily basis, how far does this person live from you?
- If you have to turn to someone for help in an emergency, how far does this person live from you?

The complete list of survey questions and answer selections are included at the end of the dissertation in **Appendix A**, complete with pre-interview questions and consent information.

3.7.2 Social Network Mapping

The role of social networks – defined as familial, friendship, political, and livelihood activities in the context of this study – and its impact on the daily lives of residents in prototypical informal settlements and formal housing is at the heart of this research. Therefore, questions addressing social networks were incorporated into the in-person survey to begin to address the various institutions that exist within urban informality. The social network map exists as a visual story-telling tool which other researchers have used for different purposes (Reed, 2021). In my research, each participant is at the center of their social network map (egocentric social network framework), and they determine who is included in their network. Through the interview process, the participants expand on the people in their network and how their lives as impacted due to their

daily interactions. Depending on the location, we are able to walk while participants make visual references to their social networks, thus allowing for additional context that would not be revealed through an in-person survey.

3.8 Fieldwork

Data collection occurred between September 2022 to March 2023 with prior trips in 2021 to the respective cities to determine the ideal research sites and build partnerships and connections with potential site administrators. Once the sites were selected and partnerships had been solidified, we worked to identify and train research assistants on the research methods and survey tools. The research assistants were advanced planning students with backgrounds in qualitative research methods which proved to be very valuable. I met with the research assistants virtually for training and research logistics before making any trips in-person. We reached out to settlement leaders to facilitate the research assistants during the household survey data collection, and to also assist with gathering residents and providing venues for the focus group discussions.

Data collection centered around three major variables: rural-urban social networks, informal settlement social networks, and livelihood activities. Understanding these various institutions within the control and treatment groups established the framework for the research study.

3.9 Approach to Data Analysis

This research uses a combination of narrative and thematic analyses. Quantitative analysis is only used in cases where I refer to a percentage to indicate the difference between respondents. The decision for using this approach is to focus on the stories told by the residents and to explore the various themes within these stories while maintaining the authenticity of the narratives.

The survey data was collected using KoboToolbox, an open source program that can be used in areas without internet access, which made it the ideal tool for collecting data in informal settlements. All interviews, including additional information from survey participants, focus group discussions, and key informant interviews were digitally recorded to ensure that I would not miss any critical information while taking manual notes.

The research questions in chapter 1 and literature review in chapter 2 established the framework for data analysis. I had a broad conceptual framework at the beginning of this research which was based on the research questions, and the data analysis led to identifying how participants in the control group(s) compared to participants in the treatment group(s), and also across geographies. Due to the qualitative nature of the research, selective coding was used to group related sets of information according to emergent themes. The data emergent themes from the surveys and interviews were then used to build a case and provide an explanation for the similarities, but more importantly the differences, between the control and treatment groups. The narratives provide detailed examples of the research findings.

Chapter 4 South Africa – Results, Analysis, and Selected Narratives

4.1 Introduction

The central argument of this research posits that the spatial organization of informal settlements and formal housing designed for people living in extreme poverty are intricately linked to the strength of their social networks which in turn impacts the livelihood activities residents. This argument challenges the null hypothesis that spatial organization plays no effect on the social networks and livelihood activities on urban residents living in informal settlements or those that have been relocated to formal housing. This chapter provides the results and analyses of the primary data collected for this study in South Africa.

Table 4.1: Descriptive statistics of residents at research sites in Johannesburg, South Africa.

	Total number of observations	Females	Males	Renters	Owners	Income generating activity	No Income generating activity
Setswetla (Control Group)	77	68%	32%	19%	81%	62%	38%
Far East Bank (Treatment Group)	81	51%	49%	33%	67%	55%	45%

Between October 2021 and November 2022, I made multiple trips to Johannesburg for primary data collection related to this research (**Table 4.1**). A complete and comprehensive descriptive statistic of all the research sites is included at the end of the dissertation in **Appendix D**. The result of the field research activities was a survey of 77 residents in the control group

(Setswetla) and 81 residents in the treatment group (Far East Bank) (**Table 4.2**). The survey consisted of 40 questions in total (**Appendix A**). Survey results were refined into nominal and categorical variables where appropriate to be analyzed quantitatively to address the egocentric social network. The surveys were followed by focus group discussions with residents in both control and treatment groups to provide additional context for the surveys. Finally, key informants consisting of government officials and settlement area managers were interviewed to provide additional perspective.

Table 4.2: Research activities in Johannesburg, South Africa by author.

Settlement	Group	Research Activity Sample Size		
		No. of Surveys Conducted	Focus Group Discussion (No. of Participants/Site)	Key Informant Interview (No. of Individual Interviews)
Setswetla	Control Group	77	10	
Far East Bank	Treatment Group	81	12	5
Total Across Research Sites		158	22	5

My primary municipal contact was Mr. Molapane "Sello" Mothotoana, the CEO for the Johannesburg Social Housing Company (JOSCHO). Sello facilitated multiple introductions to other key informants within the Johannesburg housing department for my key informant interviews. Sello was also responsible for introducing me to Mrs. Nkele Moerane, the area manager for the informal settlement Setswetla (control group) and parts of the Far East Bank (treatment group), a state-sponsored formal housing development. Area managers act as municipal gatekeepers for townships and informal settlements in South Africa, and their permission is required for all research activities within their jurisdiction. With the permission and support of Mrs. Moerane, we contacted local community leaders within the research sites who served as

guides for the in-person survey activities and helped to organize residents and help with facilitating the focus group discussions. The focus group discussions served as a platform to listen to the experiences of residents living in urban informality (control group) and those relocated to formal housing (treatment group), while the key informant interviews provided insight into the decision-making process.

The chapter is organized according to the research questions raised in Chapter 1, section 1.5. Each research question is addressed by analyzing the quantitative data which is immediately followed with a qualitative analysis for context. The quantitative findings are based on the results from the survey (**Appendix A**). The qualitative findings focus on the narratives of the residents from the focus group discussions (**Appendix B**) and the interviews with municipal officials (**Appendix C**). The qualitative findings serve to provide context for the quantitative findings, and together with the key informant interviews, triangulate the research results for credibility.

4.2 Results for Research Question 1

The first research question asks about the influence of social networks on the spatial organization of informal settlements. Section 2.2 of the dissertation describes social networks using an egocentric model. The egocentric model refers to every individual as the central node of their social network, and their connection to other people within the group are referred to as 'ties' (see **Figure 2.1**). The control group, Setswetla, is a self-organized informal settlement while the treatment group, Far East Bank, is a formalized and government-regulated residential development. The hypothesis is that because the control group is largely self-organized while the formal housing is state-regulated zoning, the strength of social networks may play a larger role in

where people choose to settle within the control group, and therefore have some influence on the spatial organization of the informal settlement.

4.2.1 Quantitative Analysis: Social Networks and Spatial Organization

To test the theory of how social networks might influence the spatial organization of a settlement, I first explored the demographic differences between the control and treatment groups with a hypothesis that there would be no significant differences between them using a logistic regression model. The following independent variables were selected for the logistic regression model: gender, household size, and city of origin. These variables represent the close-ended questions on the survey (**Appendix A**) designed to gather general demographic information. As the research question is to determine the difference between the control and treatment groups, settlement location was selected as the dependent variable.

Table 4.3: Logistic regression model - Demographic differences between control and treatment groups in South Africa based on settlement location.

	Dependent variable:
	Settlement
Gender_male	0.508
	(0.339)
Household size	0.966***
	(0.082)
Origin_Same city	0.600***
	(0.337)
Constant	1.831***
	(0.428)
Observations	154
Log-Likelihood	-103.315
Akaike Inf. Crt.	214.630

Note: *p<0.1; **p<0.05; ***p<0.01

The test results in **Table 4.3** indicate that among the people surveyed, males were 49.2% less likely to live in Setswetla than females, holding other demographic variables constant. Household size was a statistically significant finding in the sense that for each additional household member, the likelihood of that household preferring to live in Setswetla decreased by 3.4%. This finding of larger households preferring not to live in Setswetla could be linked to issues regarding the lack of privacy. The control group residents in the focus group discussion expressed this view which is outlined in section 4.4.2.

Lastly, the logistic regression model in **Table 4.3** explores the relationship between each settlement (dependent variable) and the residents' place of origin (independent variable). Respondents from the 'same city' were 40% less likely to prefer living in Setswetla. In summary, household size and city of origin are significant predictors of the preference for living in one settlement over another which supports the alternative hypothesis. Larger households and residents who are originally from Johannesburg are less likely to live prefer living in Setswetla.

Taking a closer look at the results of the relationship between the dependent variable (settlement location) and the independent variable (origin_same city), the logistic regression model in **Table 4.3** indicates that the longer a person has to travel from a point of origin to Johannesburg, the more likely it is that they are going to end up in an informal settlement, in this case, Setswetla. Meanwhile, local residents with established networks appear to prefer living in the Far East Bank according to the logistic regression model. The Far East Bank is state-provided formal housing for South African citizens and legal residents. Living in the Far East Bank, therefore, allows for South

African citizens and legal residents to live among themselves and away from "the immigrants" – people who have traveled long distances from neighboring countries and other states within South Africa – to live in Setswetla, which is an issue addressed in section 4.3. This statistically significant difference supports the hypothesis.

Another important aspect of understanding how social networks influence the choice of settlement is to explore how residents find accommodation. To test this hypothesis, a multinomial logistic regression was used to explore if there is a statistically significant relationship between how residents found housing and their demographic characteristics. In this instance, survey participants were asked how they found their current place of residence. The responses were placed into the following three categories; found the location through a friendship network, through government placement, or by themselves with no assistance. Secondly, using the demographic characteristics from **Table 4.3**, a multinomial logistic regression was used to explore the relationship between these demographic characteristics and how respondents found their place of residence. A multinomial regression was preferable because the dependent variable(s) had more than two unique values.

Table 4.4: Multinomial logistic regression - Demographic characteristics and housing location between control and treatment groups in South Africa.

	Dependent variable:		
	Friend	Government	Self
	(1)	(2)	(3)
Gender_Male	0.989	0.291	1.159*
	(0.629)	(0.760)	(0.617)
Setswetla	0.319	0.000	0.208
	(0.770)	(75.184)	(0.752)
Household size	1.596***	2.664***	1.866***
	(0.221)	(0.254)	(0.218)

Origin_Same city	0.939	2.518***	1.209**
	(0.594)	(0.744)	(0.583)
Constant	1.120	0.974	0.958
	(0.986)	(1.040)	(0.967)
Akaike Inf. Crit.	312.985	312.985	312.985

Note: *p<0.1; **p<0.05; ***p<0.01

The first findings according to the multinomial regression in **Table 4.4** reveal that the odds of males finding housing through friends as opposed to family was almost equal to females. Therefore, there are no significant differences between genders when it comes to how residents find accommodations in this regard. However, males are more likely to find housing by themselves relative to females in comparison to the other methods of finding a place to live.

Secondly, residents are more likely to find a place to live in Setswetla through family than any other method, according to **Table 4.4**, supporting the argument that strong social networks, such as familial ties, can positively impact how people find housing. However, larger households have an increase in odds for finding housing through friends, government, or by themselves than through family. For example, for each additional household member, the odds of finding housing through friends are about 59.6% higher, 166.4% higher through government assistance, and 86.6% higher by themselves. It is worth noting that the government never sends anyone to live in Setswetla, according to **Table 4.4**, resident narratives, and key informant interviews in section 4.2. Larger households relying on government for housing at the high rate of 166.4% as the regression model indicates, supports the findings in **Table 4.3** in section 4.2.1. According to the regression model in **Table 4.3**, larger households have a higher preference for the Far East Bank. Considering the findings of these two regression models, the indication is that the state-provided formal housing

in the Far East Bank (treatment group) is the desired location for most families with larger households.

Lastly, residents who are originally from the same city (Johannesburg) are not significantly more likely than those from different cities to find housing through friends. However, they are significantly – about 151.9% – more likely to find housing through government assistance, and somewhat – 20.9% – more likely to find housing by themselves. The logistic regression model in **Table 4.3** supports these findings by establishing a positive relationship between residents who are originally from Johannesburg who settle in the Far East Bank (control group) at higher rates. These findings are statistically significant.

In summary, the multinomial regression model indicates that household size is a strong predictor across all methods of finding housing. Gender and city of origin also play significant roles but vary depending on the method of finding a place to live. Males are less likely to find housing through government assistance and more likely to find a place to live by themselves. Also, those from the same city as the settlement are more likely to find housing through government assistance and by themselves.

These findings are important to dissect and understand its implications as it relates to the built environment of settlements. How people choose to live, where they choose to live, and the resources available to make a home, are critical to settlement formation and the built environment, and these findings indicate that there is a statistically significant relationship between some demographic characteristics and where people choose to settle and call home.

4.2.2 Qualitative Analysis: Social Networks and Spatial Organization

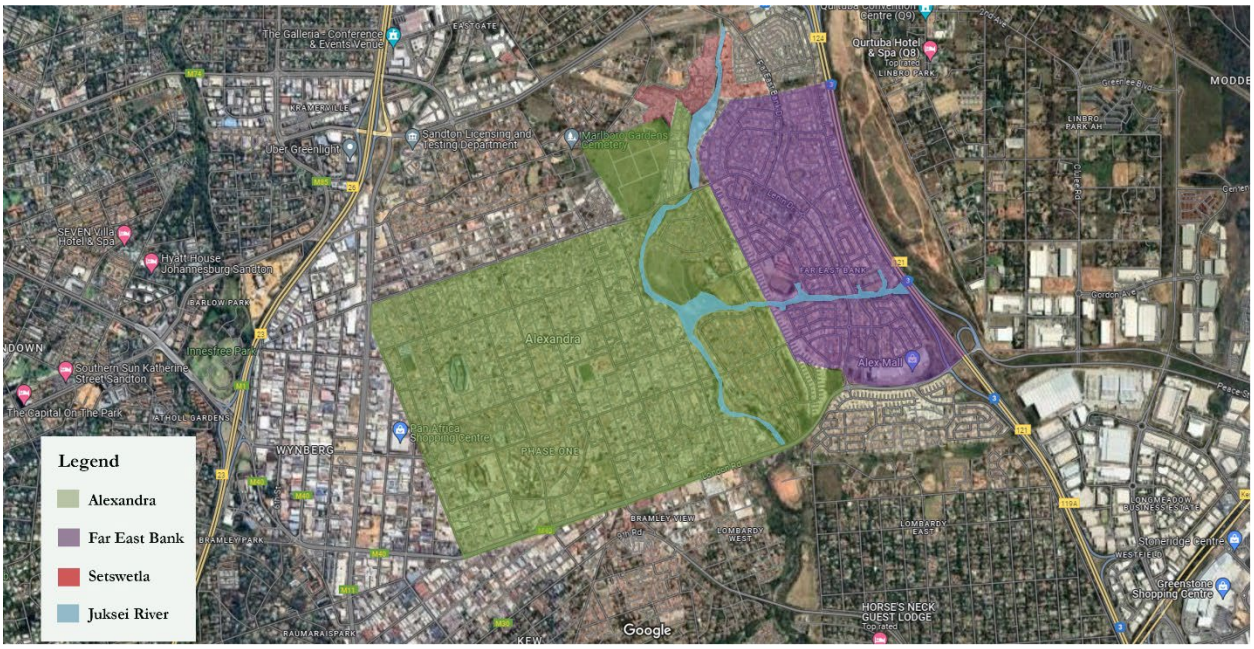


Figure 4.1: Site map showing the locations of Setswetla (control) and Far East Bank (treatment). Map by author using Google.

The first research question explores how informal settlements are formed, and whether social networks play a role in their spatial organization. As such, the focus group participants in the control group were asked to provide a brief history of the settlement and how they ended up in their current location. Most of the residents in the control group with any knowledge of the settlement's history acknowledged that Setswetla begun as an occupation of land due to overpopulation in nearby Alexandra Township. The land adjacent to the *Juksei* River in the northeastern section of Alexandra (**Figure 4.1**) was the only available space to build any shelter. The site was ideal because of its proximity to Alexandra where the early occupiers already had established social networks and livelihood activities. According to the residents in the focus group discussions, the built form and spatial organization of Setswetla, control group research site, developed out of a multitude of reasons.

First, the initial occupants built shacks out of necessity while claiming land for themselves. According to the focus group, those initial occupants subdivided the land and built illegal shacks on their newly acquired property. Then a few started building additional dwelling units within the boundaries of their property to rent. People who occupied the rental dwellings could be extended family, friends, or people who were referred to the shack owners through mutual connections – social networks. This narrative provides context for the findings of the logistic regression models in **Table 4.3** and **Table 4.4**, that established a relationship between demographics and where people settle, and the methods by which residents find accommodations.

However, the focus group discussion also revealed alternative paths for how others arrive in the informal settlement of Setswetla. Sibongile, a 56-year-old woman in the focus group came to the Setswetla informal settlement through a different mechanism. As the informal settlement grew, NGOs carved out a niche for themselves to provide adequate housing for people in need. Sibongile was one of the lucky recipients who was assigned a house built by the 'Gift of the Givers', a local NGO, in 2004. An interesting dynamic came out of this system. Residents living in NGO provided housing view themselves as legal owners and regard people in shacks as illegal occupants. As residents cement their social networks, the result is neighborhoods built around NGO provided housing and neighborhoods with self-built houses, and these two neighborhoods tend to have an antagonistic relationship according to the residents I interviewed.

According to Mrs. Nkele Moerane, the area manager for Setswetla (control group), the informal settlement residents come from all over the country and parts of eastern Africa and tend

to settle in small groups that know each other, a statement that provides some context for the logistic regression model in **Table 4.3**. Danielak (2022, p. 277) also writes that Setswetla's residents comprise of both rural migrants and immigrants from across the continent of Africa – such as Ethiopia, Somalia, Zimbabwe, Tanzania, and the Republic of the Congo – who have come to settle gradually along the *Jukskei* River in recent years. Local urban residents have also moved into the informal settlement. Susan, a 37-year-old woman in the focus group mentioned that she and her husband used to live in Alexandra Township, but when things like rent and the cost of food became too expensive, they simply came to Setswetla and found a place to build a shack. They did not really know anyone but felt comfortable doing so because they had friends close by in Alexandra, which provides some context to the logistic regression model in **Table 4.3**. Lungelo, a 57-year-old woman in the focus group offered a different account of how she came to Setswetla.

Lungelo and her family – a husband and four children – decided to leave Durban for Johannesburg in 2005. Durban is a coastal city in South Africa located approximately 353 miles (568 km) southeast of Johannesburg. Although they are South African citizens, the family decided to leave Durban due to bad experiences with xenophobia and a lack of job opportunities. Formal income generating activities were impossible for them because, according to Lungelo, "*Good jobs in Durban go to people with lighter skin*." They learned from friends in Johannesburg that while xenophobia is undoubtedly also present, so are job opportunities. Lungelo and her family moved to Johannesburg and joined their friends in Setswetla. 11 people lived in a 3-room shack. The friend managed to help Lungelo's husband, Isaac, find a job at a local petrol (gas) station, a relatively good and secure job in Johannesburg. Lungelo and her family eventually moved out of their friend's shack and rented a shack of their own in Setswetla, where they have lived ever since.

All the children (ages 13, 17, 18, and 23) are still in the same shack. Housing is difficult to find, especially without a decent salary, and Lungelo hopes their oldest, a girl, will get married and leave the house for a better living situation in Johannesburg.

A few of the focus group participants who were not from Johannesburg echoed Lungelo's account of how she came to live in the informal settlement of Setswetla. These accounts also provide context for the quantitative findings of the logistic regression models in **Table 4.3** and **Table 4.4**. According to the quantitative findings in **Table 5**, the longer a person has to travel from a point of origin to settle in Johannesburg, the more likely it is that they will end up in an informal settlement such as Setswetla, and **Table 4.4** reveals the kinds of social network connections that draw people to places like Setswetla. Meanwhile, the proximity of Alexandra Township to Setswetla (**Figure 4.1**) makes it easy for local residents to relocate from Alexandra without strong social networks within Setswetla, a narrative that is also supported by the quantitative findings of **Table 4.3** and **Table 4.4**.

After listening to multiple stories of focus group participants who traveled long distances to settle in Setswetla (the control group for this research), I created a sample social network map based on one of those experiences. **Figure 4.2** shows the egocentric social network map for Lungelo and her husband, Isaac. Their friendship network impacted their decision to relocate from Durban to Johannesburg. Their friendship ties allowed them to secure shelter and for Isaac to find a job. A job that eventually led to the family being able to get their shack within a familiar community. Their familiarity with the community allowed Lungelo and Isaac to maintain social

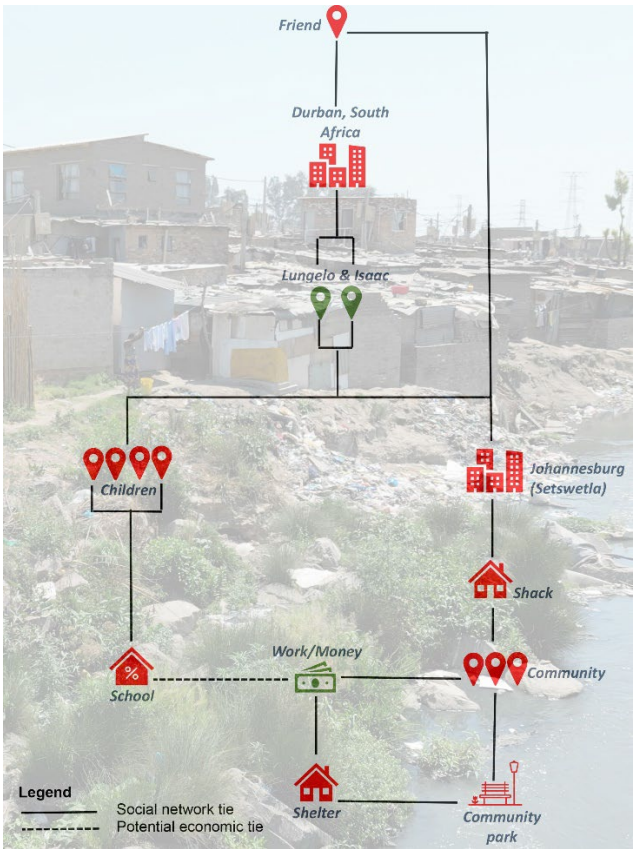


Figure 4.2: Egocentric social network map for Lungelo and Isaac.

ties after leaving their first shack. With a dependable salary from Isaac's work at the petrol station, the family also has the option to secure a better education for their children. The government subsidizes education for children of poor citizens, but according to Lungelo, the school options could be better. Lungelo and Isaac would have to pay if they wanted their children to get a better education from one of the better schools in Alexandra. At least that option is now available thanks to the steady income, which is a direct result of their social networks.

While many informal settlements initially seem haphazardly laid out and composed of a chaotic assortment of dwelling types, the reality is a complex physical form closely aligned to social networks and livelihood activities (W. Smit, 2007, p. 109). Social networks, according to all the municipal officials I interviewed, play a significant role in the built environment of informal settlements. Specifically, better organized neighbors get better neighborhoods. Emmanual "Manny" Sotomi, a Program Support Manager for the City of Johannesburg Department of Human Settlements outlined the following example. Residents of informal settlements are a highly organized group who orchestrate land occupation at opportune times, claim unauthorized

ownership of the land, and then demand public services from the city such as potable water, electricity, trash and sewer disposal, and decent road infrastructure. According to Manny:

> *"Land invasions take place with military precision, and the response from law enforcement is inadequate. As many as 5,000 people can plan and take over a piece of land and law enforcement will have ten officers to manage the situation. These people cannot be removed unless formal housing is provided. And those who remain demand public services."*

The places within the settlement that receive some of these services are the neighborhoods with stronger social and political organization. These neighbors get together and hold protests at strategic locations to get attention, and the city often placates them by providing some services. This is very similar to how Levenson (2022) describes land occupation and the impact of social networks on whether an informal settlement is demolished or gets to remain.

Working to gain a better understanding of the built environment and spatial organization of the Setswetla, the informal settlement, I participated in several walks with members of the community. During these walks, I noticed that most of the shacks are remarkably similar in materials and construction, and that the more robust masonry buildings also have similar massing and architectural details (**Figure 4.3**). There is also a consistency of street hierarchy, with some wide and paved roads having more commercial activities and the extremely narrow streets and alleyways being dominated by residential buildings.

Figure 4.3: Aerial view of Setswetla showing examples of similar construction materials and architectural details. Image by author.

With this in mind, the focus group participants were asked if there were any unspoken rules among the residents that they needed to know in order to live in their respective settlements. Examples can be how homes are constructed, what kinds of livelihood activities residents can have in their homes, or how different public spaces can be utilized. Residents in both the control and treatment group were unanimous in their response and emphatically stated that there are no rules.

"*Everyone does as they please if they have enough people to back them*," Jakes Mkhabela, 67-year-old male, Far East Bank.

"*The key to living here is knowing people. When you have that, you can basically do anything you want and get away with it*," Miracle Chauke, 44-year-old male, Far East Bank.

"*Unfortunately, living here [Setswetla] has many difficulties, such as lack of water, electricity, and sanitation. People take matters into their own hands here. They gather friends and neighbors and either make things happen or force the government to make things happen. Those are the rules of living here*," Kaizer Mkhwebane, 60-year-old male, Setswetla.

"*The conditions here are very poor. We do what we can to make it through the day, and our friends help us with that. We are good people, but we do what we must to make it day-by-day. We make our own rules every day to make it to the next day*," Suzan Lebea, 37-year-old female, Setswetla.

As Appadurai (2002, p. 28) states, "*No one knows more about how to survive poverty than the poor themselves*." This statement is exemplified by how these residents rely on their social networks on a daily basis, and how these networks influence their built environment in profound ways, such as finding a place to live, making repairs or additions to their places of residence, neighborhood projects and improvements, and getting the attention of decision-makers for state provided services. One focus group participant shared an example of a friend's shack which started tilting towards the *Jukskei* River a few months ago due to gradual soil erosion. Neighbors banded together and went to another part of the settlement to dig up buckets of dirt, carried the buckets of soil on their heads back to the tilting shack, and used the dirt to reinforce the shack. Using dirt as a shoreline foundation is a temporary solution. However, they will keep doing it as needed until the shack owner finds a more permanent solution or relocates to a more secure location. These examples, according to the residents, are the tangible ways in which they have to rely on their social networks, and how it impacts their built environment.

4.3 Results for Research Question 2

The second research question explores how the spatial organization of settlements – both formal and informal – impacts the livelihood activities of their residents. To better understand how the built environment influences livelihoods, residents at both research sites were surveyed about their income generating activities status (**Table 4.5**).

Table 4.5: Income Generating Activities of Survey Respondents at Research Sites in Johannesburg, South Africa.

Research Site	No. of Residents Engaged in Income Generating Activities	No. of Residents Not Engaged in Income Generating Activities	Total
Setswetla (Control Group)	45	31	76
Far East Bank (Treatment Group)	39	41	80
Total	84	72	156

The hypothesis is that if the spatial organization of a settlement location does not impact the livelihood activities of its residents, then there should be no significant difference of income generating activities status between the control and treatment groups. Alternatively, a statistically significant difference would indicate that the spatial organization of a settlement does have some impact on the livelihood activities of its residents.

4.3.1 Quantitative Analysis: Spatial Organization and Livelihood Activities

The hypothesis acknowledges that income generating activities can be influenced by various factors. To ensure that the various relationships were captured in the logistic regression model, the survey asked participants questions about the strength of their social networks and how

long they had been living at their current place of residence. The rationale for selecting these questions stems from the belief that residents may have better income generating prospects based on their social connections or the length of time they have lived in a specific area. To measure the strength of social networks, residents were asked how well they know their neighbors, if they have people they can depend on within the neighborhood on a daily basis, and how long they have been living in their current place of residence. The responses were categorized and used as independent variables for the logistic regression model in **Table 4.6**.

Table 4.6: Logistic regression model reflecting variables that influence income generating activities status at research sites in Johannesburg, South Africa.

	Dependent variable:
	Have_a_job
Know your neighbors	0.476
	(0.402)
Length of stay	1.028***
	(0.030)
Depend on	0.394
	(0.477)
Settlement_Setswetla	1.025***
	(0.358)
Constant	3.852***
	(0.581)
Observations	154
Log Likelihood	-99.165
Akaike Inf. Crit.	208.329

Note: *p<0.1; **p<0.05; ***p<0.01

According to the logistic regression model in **Table 4.6**, the odds ratio of 'knowing your neighbor' is less than 1, suggesting that knowing your neighbor is negatively associated with the likelihood of having a job. On the other hand, the logistic regression model in **Table 4.6** shows that the longer a person lives in their place of residence, their odds of having an income generating

activity (having a job) increase. For every additional year, their odds of having a job increase by about 2.8%, and this finding is statistically significant. Survey respondents were also asked if they depend on anyone on a daily basis in order to be productive, which is expressed in the variable 'depend on.' According to the model, there is a negative association between the variable 'depend on' and 'having a job', meaning that the odds of an income generating activity decrease by about 60.6% for individuals who depend on others on a daily basis.

Lastly, the logistic regression results in **Table 4.6** revealed that a person's social network and how long they have stayed in the settlement influence their income generating opportunities. A person's social network, which includes their connections with their neighbors and the people they depend on, decreases their odds of finding a job. More specifically, the odds of a resident finding a job when they know their neighbors decreases by 52.4%, while the odds of a resident finding a job when they have people to depend on decreases by 60.4%. Regarding the influence of length of stay, the results reveal that for every additional year a person stays in a settlement, their odds of finding a job increase by 2.8%.

Another objective of this research is to understand whether commuting distances vary between the control and treatment groups, and if these differences have an impact on income generating activities status using a logistic regression model. In this regard, survey respondents were asked about the length of their daily commute to places of income generating activities.

Table 4.7: Logistic regression model reflecting the influence of commuting time on the income generating activities of residents at the research sites in Johannesburg, South Africa.

	Dependent variable:
	Income generating activity
Commute time	1.215***
	(0.042)
Settlement – Setswetla	0.876**
	(0.440)
Constant	0.456
	(0.290)
Observations	155
Log Likelihood	-65.457
Akaike Inf. Crit.	136.914

Note: *p<0.1; **p<0.05; ***p<0.01

The logistic regression model in **Table 4.7** shows a positive association between commuting time and having an income generating activity. This means that, for every additional unit increase in commuting time, the odds of having a job increase by a factor of 1.215, which is a statistically significant finding. Essentially, longer commutes are associated with a higher probability of having an income generating activity than shorter commutes.

Secondly, **Table 4.7** suggests that residents in the control group – Setswetla – have a negative association with having a job by a factor of 0.876, when commute time is factored in. Essentially, residents in the treatment group (Far East Bank) have longer commutes, a statistically significant finding which supports the hypothesis that commuting time has a significant impact on job status, with longer commuting times increasing the likelihood of having an income generating activity. Additionally, the location of each settlement – control and treatment groups – has an effect on job status when commuting time is factored in. Residents who are relocated from the informal control group (Setswetla) to the formal treatment group (Far East Bank) have to be prepared for longer commutes according to the logistic regression model in **Table 4.7**.

4.3.2 Qualitative Analysis: Spatial Organization and Livelihood Activities

The second research question explores how the spatial organization of settlements for both the control and treatment groups impact the livelihood activities of residents. According to the focus group participants in the control group, you do not have to travel very far to find work in Setswetla, the informal settlement. "*If you are looking for work and motivated, you can find something to do very quickly. There is much to do around here. Everywhere you look, there is work*," Sibongile Khumalo, 56-year-old female, Setswetla. Many of the focus group participants agreed with this sentiment, providing context for the findings in **Table 4.7**. Sibongile and others in the focus group highlight the fact that you can find a *shebeen* (unlicensed alcohol selling establishment) on almost every street and a *spaza* shop (a small informal store usually run from a private home) in front of most homes on main streets in Setswetla (see **Figure 4.4**). With the 'right connections,' these places are very easy to open for anyone with an entrepreneurial spirit, according to the residents. They also employ people, and although the pay is sporadic, it is a decent way to make a living.

Figure 4.4: Examples of a *shebeen* and *spaza* shops in Setswetla. Image by author.

Shebeen and *spaza* shops are convenient because residents can open these in their shacks or build an addition to their shack for the shop (Figure 18). The viability of these shops, according to the focus group participants, depends on two important factors: (1) the

location, and (2) how well you know your neighbors. Being along a main road is important, but there are some shops in back alleys that are great hang-out places because of the comradery.

These narratives support the quantitative findings in section 4.3.1. The logistic regression model in **Table 4.6** infers that long-standing residents have a higher probability of having an income generating activity. The relationship between cemented social networks and income generation activities is why a small *spaza* shop on a back alley street inside an informal settlement is able to survive for decades. To explain the negative association between having people to depend on and income generating activities, the focus group participants said that the more people you know, the less dependent you become on needing to generate consistent income. According to Lungelo, "*People take care of each other here [in Setswetla].*"

However, not to minimize the experiences of individuals like Lungelo and her family, but my conversations with non-South African residents [6] in the same focus group revealed a contrasting viewpoint. According to these individuals, a lingering racial hierarchy persists within South Africa, placing non-citizen Black Africans at the bottom. This racial hierarchy suggests that while Lungelo might face hardships in Setswetla, her family could still access certain privileges designated for citizens. Two Mozambican citizens residing in Setswetla shared their unpleasant perspectives with me during the focus group discussion. The men highlighted the limitations non-citizens face, such as the inability to secure stable income generating activities. The challenges these residents encounter in Setswetla stem from a culmination of scarce job opportunities

[6] The names of non-South Africa residents are withheld in the research to preserve anonymity. Pseudonyms were also excluded to prevent any confusion and possible adverse actions taken against a person with that name.

(according to them), an enduring lack of trust, and unkind neighbors. One of the men rents a room in a shared dwelling primarily inhabited by Black South Africans. His grievances include consistent harassment by fellow young men, disruptive nocturnal commotion near his room, and deliberately smoking in front of his doorway to create discomfort. He avoids confrontations, as his current lodging is the only feasible option, and engaging in an argument could result in eviction due to his outnumbered status. Most of the immigrants in the focus group were quite familiar – although not personally – with the racially motivated violence that erupted in Alexandra and spilled into Setswetla over a three-day period in May 2008. These racial and xenophobic attacks can begin with a minor confrontation and conclude with casualties (Maisela, 2023; Sinwell, 2011; Tafira, 2011). To avoid any such violent confrontations, these young men nurture aspirations of saving enough to break free from Setswetla's confines or even become eligible for government-sponsored housing [7].

The government-sponsored housing that the two Mozambican men were referring to is the Reconstruction and Development Program, popularly known as RDP housing throughout South Africa. The government of post-apartheid South Africa has focused much of its energy and resources on the delivery of housing and basic services to previously marginalized communities and individuals (Flores Fernandez & Calas, 2011; Harrison et al., 2014; *KENSUP*, 2013; Kijilwa, 2018). The issues, however, are the implementation of the legislation and the pace of implementation. After the end of apartheid in South Africa, the new government structured a

[7] Government-sponsored housing is reserved for South African citizens and legal residents. Having to wait to become eligible means that these young men were not yet legal residents in the country, which is why their names are omitted from the research.

constitution that recognized access to housing as a critical part of the Bill of Rights (RSA Constitution, 1996 Ch.2). It states that:

> *"1. Everyone has the right to have access to adequate housing. 2. The state must take reasonable legislative and other measures, within its available resources, to achieve the progressive realization of this right. And 3. No one may be evicted from their home, or have their home demolished, without an order of court made after considering all the relevant circumstances. No legislation may permit arbitrary evictions."* (RSA Bill of Rights, Chapter 2, Amendment 26).

Following this constitutional amendment, the newly formed South African government instituted its Reconstruction and Development Program (RDP), a socio-economic policy to provide its citizens with housing, clean running water, sanitation, and electricity (Bhana, 2018). The Department of Human Settlements (DHS) is the government agency mandated to facilitate the sustainable housing development process in South Africa in collaboration with provinces and municipalities. Mr. Emanuel "Manny" Sotomi, DHS Program Support Manager, and Mr. Molapane "Sello" Mothotoana, CEO of the Johannesburg Social Housing Company (JOSCHO) outlined the details of the RDP program. According to both men, access to RDP housing is free for all South African citizens who earn less than R3500 ($192) per month per household. Every municipality has a registry where citizens can provide required documentation and be placed on the registry on a first-come-first-served basis. Then, once an RDP house becomes available, citizens are given those homes according to the names on the registry.

Unfortunately, this highly logical system has been co-opted by the proliferation of informal settlements in precarious locations. Every municipal official I spoke with referred to this as "queue jumping." Queue jumping is the deliberate action of a South African citizen or legal resident to build a shack in an environmentally compromised area. Then, when the inevitable happens, such as floods that cause erosion and destroys shacks or a fire that can wipe out a large segment of the settlement, these citizens get to leapfrog the names on the registry and get immediate access to RDP housing based on their emergency status. As such, according to Sello and Manny and other officials I spoke with, there are names on the registry from 1996 who are yet to receive RDP housing due to the constant queue jumpers. Thus, from the perspective of municipal officials, anyone living in urban informality is seen as a potential queue jumper, which is the exact opposite of how these residents see themselves.

The Far East Bank is a result of the Reconstruction and Development Program (RDP). Some of the focus group participants in the treatment group from the Far East Bank were former residents in Setswetla who had been relocated. Among the many benefits of being relocated from the control to the treatment group, the residents cited good streets, access to municipal services, proximity to jobs in Alexandra, and especially safer access to electricity.

However, the most difficult aspect of living in the Far East Bank has been access to income generating activities, and the distance one has to travel to access income generating activities which is supported by the findings of the logistic regression model in **Table 4.7**. While Alexandra is relatively close (see **Figure 4.1**), being income generating activity in Alexandra while living in the Far East Bank is not as convenient as living and working in Setswetla, the informal settlement,

according to the focus group participants. The relationship between commuting and income generating activities is captured by the logistic regression model in **Table 4.7** which shows that residents in Setswetla, the informal settlement (control group) have a shorter commute time and that those who are relocated to the Far East Bank (the treatment group) have to be prepared for longer commutes. Therefore, when the work and pay are relatively the same, the added expense of commuting (and paying for municipal services) makes life in the Far East Bank more expensive. As per Miracle Chauke, a 44-year-old male and Far East Bank resident:

> "*Everything has gone well for me since I moved here [to the Far East Bank]. It's not too quiet or isolated. People are friendly and considerate, and there is a sense of belonging and community. But the expense has been unexpected, and I have to work longer so that I can enjoy these better living standards."*

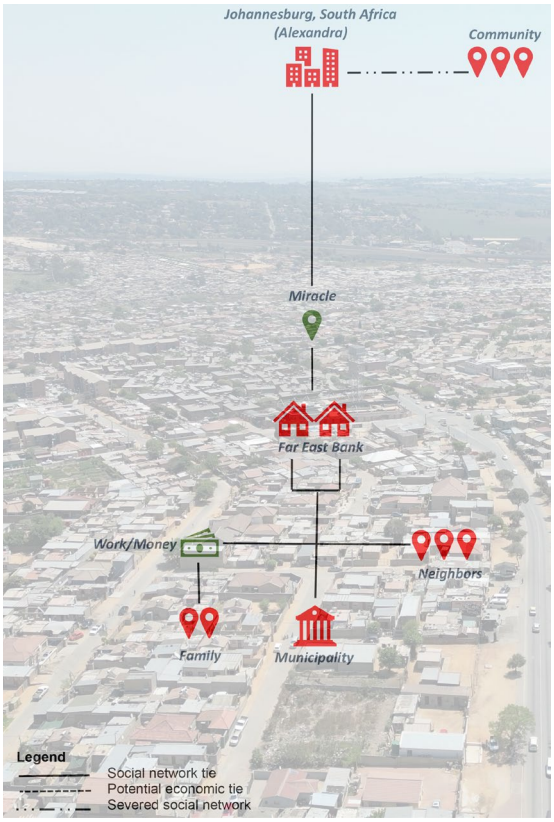


Figure 4.5: Egocentric social network map for Miracle.

The focus group participants from the Far East Bank mostly agreed with Mircale and all had similar stories. Despite the proximity of Alexandra to the Far East Bank, many of the focus group participants lamented the fact that their social ties to Alexandra have been weakened. With longer commutes, they did not have time to make their way to Alexandra to hang out with friends. Using Miracle as an example, he works as a security guard at a bank in the center of town in the Hillbrow section of Johannesburg. His daily commute to work averages

one hour each way for a total of two hours a day. Prior to living in the Far East Bank, Miracle lived in Alexadra and worked at a fuel station minutes away from his house. Being a security guard at the bank pays a bit more than his previous job, but the commute has changed his routine. In Alexandra, he had time to hang out with his neighbors and friends at lunch and after work. Now, he leaves early in the morning, usually has lunch in his chair outside the bank, and is too tired at the end of the day for anything except be at home with his family (see **Figure 4.5**). Miracle is no longer close to all the friends he had in Alexandra and has not yet become good enough friends with his current neighbors, although they are all very nice people. Miracle – and other focus group participants – added that in some respect, the municipality has taken over the role of their former community in Alexandra and Setswetla. In the Far East Bank, when you need something done such as electrical work or physical alterations to your home, you go to your local municipal office. In Alexandra and Setswetla, you call a friend.

Overall, it appears that spatial organization does have an influence on livelihood activities according to the residents I spoke with. The organic nature of being able to build what you need where you need it in the informal settlement provides more flexibility when it comes to setting up businesses and finding income generating activities. The formal and residential Far East Bank has a more restrictive built environment in this regard, which necessitates extended commutes for residents. To compensate for the added expenses, some residents have resorted to constructing backyard shacks on their RDP provided residential lots to make additional income. These backyard shacks can also be seen as impacting the built environment of the Far East Bank and influencing the livelihood activities of those particular residents.

4.4 Results for Research Question 3

The final research question seeks to understand how social networks and livelihood activities are impacted by the relocation of informal settlement residents (control group) to formal housing (treatment group). The initial inquiry asked survey respondents at both research sites about the strength of their social network ties. The hypothesis is that relocation might disrupt existing social networks and livelihood activities for residents who are relocated from Setswetla (control group) to the Far East Bank (treatment group).

4.4.1 Quantitative Analysis: Impact of Relocation on Social Networks and Livelihoods

The survey responses to the question regarding the social network ties of residents living in Setswetla (control group) and the Far East Bank (treatment group) were coded into '0' (weak social network ties) and '1' (strong social network ties). The logistic regression model in **Table 4.8** uses 'social network' as the dependent variable and controls for the confounding variable 'length of stay.' The confounding variable was selected because it is highly likely that residents may have stronger social network connections based on how long they have been living in a location.

Table 4.8: Logistic regression model reflecting the impact of relocation on the social networks of residents at the research sites in Johannesburg, South Africa.

	Dependent variable:
	Social network
Settlement_Far East Bank	1.171***
	(0.359)
Length of stay	1.074***
	(0.031)
Constant	1.136***
	(0.370)
Observations	154
Log Likelihood	-91.000
Akaike Inf. Crit.	188.001

Note: *p<0.1; **p<0.05; ***p<0.01

After controlling for 'length of stay', the logistic regression model in **Table 4.8** indicates that residents who have been relocated to formal RDP housing in the Far East Bank (the treatment group) have a statistically significant higher odds (by a factor of 1.171) in having a strong social network compared to residents who remain in the control group (Setswetla informal settlement). The effect of 'length of stay' on social network formation is also favorable for residents in the treatment group (Far East Bank). For every additional year of living in the same location, residents in the treatment group have increased odds (by a factor of 1.074) of having a strong social network when compared to residents who remain in the control group.

The second aspect of relocation is its impact on the livelihood activities of residents. In this research, the livelihood activities were determined by how residents responded to questions related to job status, the strength of social networks, and whether they had people they depend on daily to be productive. These activities are the dependent variables, and the location (control and treatment group) is the independent variable.

Table 4.9: Logistic regression model reflecting the impact of relocation on the livelihood activities of residents at the research sites in Johannesburg, South Africa.

	Dependent Variable:		
	Job	Social Network	Depend On
Relocated	0.724**	1.071***	6.435***
	(0.327)	(0.350)	(0.462)
Constant	1.643***	2.217***	1.643***
	(0.240)	(0.251)	(0.240)
Observations	155	155	155
Log Likelihood	-104.924	-95.058	-72.910
Akaike Inf. Crit.	213.847	194.169	149.820

Note: *p<0.1; **p<0.05; ***p<0.01

With job status as the dependent variable, the logistic regression model in **Table 4.9** suggests that residents in the treatment group (Far East Bank) faced about a 27.6% decrease in odds of income generating activities compared to residents who remain in the control group (*Setswetla*). Additionally, relocated residents in the treatment group were 7.1% more likely to have a strong social network in comparison to the residents in the control group. Finally, relocated residents in the treatment group were 543% more likely to have people they depend on daily in order to be productive compared to residents in the control group.

In summary, relocated residents (those living in the Far East Bank) have statistically significant relationships with all three outcomes, but the direction and magnitude of these relationships vary. According to **Table 4.9**, the likelihood of income generating activities decreases while the formation of social networks increases slightly. The most significant increase is how much relocated residents depend on other people on a daily basis in order to be productive.

4.4.2 Qualitative Analysis: Impact of Relocation on Social Networks and Livelihoods

The final research question seeks to understand how social networks and livelihood activities are impacted by the relocation of informal settlement residents to formal housing. Exploration of this research question began with survey participants responding to their level of satisfaction in their current location and living conditions (**Table 4.10**). There is a perception that on average, residents living in the Far East Bank are much better off than those living in Old Alexandra, especially Setswetla (Harrison et al., 2014). As such, the rationale is that with all things being equal there should be no significant difference between the two groups regarding their level of satisfaction. However, if the relocation has been a positive experience, the level of satisfaction from the control group should exceed the level of satisfaction among the treatment group. Conversely, if relocation has had a negative impact, then the level of satisfaction among the control group should exceed the level of satisfaction from the treatment group. According to the results in **Table 4.10**, a larger percentage of relocated residents (treatment group) are less satisfied with their current living conditions. Conversely, a slightly larger percentage of residents living in the informal settlement (control group) are more satisfied with their current living conditions (**Table 4.10**). While the percentages indicate that relocation may have had a negative impact overall, the raw counts in **Table 4.10** show that the difference is very marginal but cannot be overlooked.

Table 4.10: Level of satisfaction with current living conditions between the control and treatment group in Johannesburg, South Africa.

Location	Satisfied with current living conditions	Not Satisfied with current living conditions
Setswetla (Control Group)	19 (25%)	56 (75%)
Far East Bank (Treatment Group)	13 (16%)	68 (84%)

Note: Numbers represent raw counts of survey participants. Percentages are represented in brackets.

To understand the context of these findings, the focus group participants in both control and treatment groups were asked to expand on the benefits of living in the current location, and also to discuss the challenges. Beginning with the benefits, residents in the informal settlement control group cited their ability to band together and access public services like water, electricity, and sanitation as a great benefit. Others mentioned the proximity and convenience of income generating activities opportunities as another benefit which is supported by the quantitative findings in **Table 4.9**.

Figure 4.6: Image of Sibongile's salon which sits on a prominent street in Setswetla. Image by author.

The built environment of the informal settlement (Setswetla) is relatively dense. The settlement is bordered on three sides (north, west, and south) by major roads, and the *Juksei* River on the east (see **Figure 4.7**). These boundaries confine the settlement, and according to residents, this means that they now have to build up in order to accommodate population increases (see **Figure 4.3**). The increased density and lack of any zoning laws allows residents to build what they need where they need, resulting in proximity and convenience of income generating activities opportunities. One of the focus group discussion participants, Sibongile, a 56-year-old woman provided an example of how she built an addition to her house to accommodate her new hair salon business (**Figure 4.6**).

Figure 4.7: Aerial view of Setswetla showing its natural and man-made boundaries. Image from Google.

As per Sibongile, her shack is on a main road, and over the course of a year, she, and her husband, with the help of neighbors, slowly renovated her shack from wood and sheet metal construction to a masonry building. To make ends meet, she started braiding hair in one of the small rooms in her renovated house. She built up a large enough customer base and decided to build an extension to their house for her shop (**Figure 4.6**). Sibongile opened her hair salon almost 15 years ago and is able to rent out a couple of seats in the shop to other hairdressers. Having a commercial location along such a road always provides more business, according to the residents in the focus group discussion.

Another benefit of living in the settlement according to the residents in the focus group discussion is the local knowledge within the settlement to get things done. Kaizer, a 60-year-old male participant mentioned that because of the slope of the settlement and very narrow streets, flooding was a usual occurrence. For context, the entire site slopes from southwest to northeast, with the lowest points being the residences along the *Juksei* River (**Figure 4.7**). To ensure safety

within the settlement, residents got together and used local materials and labor to construct relatively decent drainage systems in some of the neighborhoods (**Figure 4.8**).

Figure 4.8: Examples of drainage systems constructed by residents using local knowledge and labor. Images by author.

Focus group participants from the Far East Bank (treatment group) also mentioned the benefits of living in formal housing. Having access to municipal services and nice streets were the major benefits cited. Lydia, a 55-year-old female participant mentioned that being relocated to the Far East Bank brought her closer to job opportunities and major transportation hubs. *"There are some transport services that will not take you to the shacks [Setswetla] because it is dangerous, but they will pick you up and drop you off here [Far East Bank], and that has been a great benefit."* The most significant benefit, based on insights from participants, was having an actual house with safe access to electricity, which was not the case in the informal settlement. The perceived benefits of living in the Far East Bank are why most of the municipal officials I spoke with alluded to "queue jumping."

While the informal settlement residents in Setswetla (control group) do not see themselves as queue jumpers and are quick to point out the benefits of living in their current location, they also admit that they face considerable challenges. The most pressing challenge of living in the informal settlement (control group), according to the focus group discussion participants, is the lack of access to basic services such as water, electricity, and sanitation. It is because of the lack of municipal services that residents often band together to and use their local knowledge, resources, and sweat equity to maintain their neighborhoods. As Jeffrey Paller (2015, p. 32) alludes to, in the absence of state-provided services, urban Africans are finding creative ways to deal and cope with uncertain and insecure living conditions. Which is why strong social networks tend to manifest in better neighborhoods within Setswetla, according to the focus group. Due to the shacks along the *Juksei* River being at the lowest elevation within the settlement, they tend to be the ones that are easily flooded and face the potential of being washed away during severe storms (**Figure 4.9**).

Another challenge that the residents living in Setswetla (control group) mentioned is the general lack of privacy. From the residents' perspective, the shacks they build typically do not have discrete rooms for different activities. Meaning, a single room has multiple functions such as the living room being used as a bedroom. Having a private space in a shack is a rarity. Parents often share bedrooms with younger children, and older children sleep together in the living room, or build additions to the shack for more space. The lack of privacy is why some larger families wish they could be relocated to RDP housing, where some privacy may be assured, which was alluded to in **Table 4.4**.

Figure 4.9: Informal settlement shacks along the Juksei River in Setswetla. Image by author.

Residents relocated to the Far East Bank face a different challenge. According to the residents in the focus group discussion, their dissatisfaction with their current living conditions has to do with personal safety. *"My only concern, and that of my family, is our safety. We are constantly afraid because there are many criminal activities in this area [Far East Bank],"* Jakes Mkhabela, 67-year-old male. Michael Bono, a 41-year-old male participant chimed in, *"The challenge we face in this area is increased criminal activity and a lack of access to infrastructure services such as paved roads, electricity, and water."*

As per the residents, the increase in criminal activity can be attributed to the immigrants that moving into the area and renting backyard shacks. These backyard shacks have been a great way for residents to create additional income, but according to the residents in the focus group discussion, the result has been an increase in crime. The perception of 'outsiders' bringing in has

become the root cause of much animosity and xenophobic behavior between different ethnic groups and nationalities within the Far East Bank and Setswetla to some extent.

Figure 4.10: Aerial view of the Far East Bank (RDP) housing showing the prevalence of backyard shacks. Image from Google.

Figure 4.10 shows typical blocks in the Far East Bank. The Reconstruction Development Program (RDP) houses have red (dark colored) tile roofs. All structures with light-colored roofs, usually constructed from sheet metal, are backyard shacks. These structures have fundamentally changed the built environment of the Far East Bank, and according to some of the residents, also changed the social structure of their neighborhoods by introducing an element of crime.

An interesting development has been the increased number of residents who have decided to leave the Far East Bank for two reasons: 1. Due to safety concerns, some residents have returned to Setswetla to be closer to their social network where they felt safer and more comfortable, and 2. The cost of living in the Far East Bank became overwhelming, and some residents returned to Setswetla and rented their RDP house to anyone who could afford it. These developments, according to the municipal officials I interviewed, create a system that is difficult to overcome and

has made urban informality a revolving door of sorts. According to Nkele, the area manager for Setswetla:

> *"Unfortunately, people make it difficult for the government to do their job. The people keep flocking to South Africa and Johannesburg, and there are not enough houses that all those people can afford, so they flock to the settlements because they see it as a fast way to be relocated to formal housing (queue jumping), which is free, as long as they qualify. Then these same people bring in more people to their backyard shacks, or they leave back to the settlement and sell or rent to others. Then the cycle repeats itself."*

These sentiments were echoed by Emmanuel "Manny" Sotomi, the Program Support Manager for the Department of Human Settlements for the city of Johannesburg:

> *"We are fighting a losing battle. When it comes to relocation, some people just say no. The shack is better. For a person with a large family, the formal housing is inadequate, when they can easily build a 5-room shack. These are some of the people that move back to the shack even after they have been given formal housing. These are some of the issues we have to contend with."*

4.5 South Africa – Summary of Findings

From these findings, it is evident that the residents of Setswetla, an informal settlement in Johannesburg, are heavily reliant on their informal networks, and that when these residents are relocated to state-sponsored formal housing in the Far East Bank, their social networks become

even more critical. The quantitative findings show that the choices residents of Setswetla make regarding where to move and where to rent or build a shack are greatly influenced by their social networks. According to **Table 4.3** in section 4.2.1, people who travel long distances to Johannesburg have a high likelihood of ending up in an informal settlement like Setswetla. This is supported by the narratives in the focus group discussion where I focus on the story of Lungelo and Isaac, residents of Setswetla who came from Durban to Johannesburg, a very long distance, because of their social network ties. This narrative is further strengthened by the story of the two Mozambicans who immigrated to Johannesburg and settled in Setswetla with very weak social network ties. **Table 4.4** in section 4.2.1 details the relationship between social networks and how residents find shelter. Once again, the results support a strong relationship between social networks and how residents find shelter. It is important to note that larger households do rely on government assistance to find shelter. However, as detailed in the focus group discussions and key informant interviews in section 4.4.2, these larger households are the ones most likely to return to informal housing due to the inadequacy of state provided housing.

The findings also support a strong relationship between the spatial organization of settlements and livelihood activities. **Table 4.6** in section 4.3.1 shows the strong relationship between where a person decides to settle and the likelihood of having an income generating activity. According to **Table 4.6**, when people settle in proximity to their social networks, they become less reliant on consistent income generation because they have people that they depend on to get them through the day. This relationship is strongest in the context of the control group who live in the informal settlement of Setswetla. When residents are relocated to the Far East Bank (treatment group), they become more reliant on having an income generating activity. Relocated

residents in the Far East Bank (treatment group) also have to travel further to places of income generating activities. The quantitative evidence is supported by narratives of residents in the focus group discussion at the control site who talked about the convenience of being able to build what you need where you need it due to a lack of rules in the informal settlement. Conversely, the formal and residential Far East Bank (treatment group) has a more restrictive built environment in this regard, which necessitates extended commutes for residents which is outlined in section 4.3.2.

Lastly, the findings indicate a strong relationship between relocation and its impact on social networks and livelihood activities. **Table 4.8** in section 4.4.1 indicates that relocated residents from the control to the treatment group have statistically significant higher odds of having a strong social network. While **Table 4.8** attributes this finding to how long a person has lived in a location, the residents in the focus group discussions in section 4.4.2 attribute these findings to place of origin. A majority of the residents in the Far East Bank (treatment group) are South African citizens and legal residents, and thus feel a sense of trust among each other and view everyone else as an outsider. Meanwhile, residents in Setswetla (control group) are from more diverse backgrounds, and as such, trust is much more difficult to build in large numbers across ethnic groups. However, the longer a person stays in the same place, the more likely it is that they will overcome their xenophobia and strengthen their social network ties. On the other hand, it is also likely that the longer a person stays in the same place, they can become entrenched in their xenophobia and things can get worse, which appears to be the case according to the focus group participants in the treatment research site at the Far East Bank.

Overall, the findings indicate that while some aspects of life are improved for residents who are relocated to formal housing, the state – and in particular the City of Johannesburg Department of Human Settlements – has much work to do to improve the current conditions and level of satisfaction as indicated in **Table 4.10** in section 4.4.2. The municipal officials I spoke with view relocation as the eradication of informal settlements to be replaced by the provision of formal housing. Government officials are often more concerned about the visible presence of informal settlements in their cities than they are about addressing the wellbeing of the settlement residents themselves (Huchzermeyer et al., 2007, p. 20). In other words, when I asked the government officials in Johannesburg what metrics they use to indicate a successful project, they all cited the number of housing units provided, working infrastructure such as paved roads and stable electricity, and removing residents from informal shacks to formal housing. What they do not for account in their policies and transformative initiatives is the importance of social networks and livelihood activities of the residents currently living in informal settlements and being relocated to formal housing. According to **Table 4.10**, a reason why the level of satisfaction is so low among relocated residents is the increased commute time because of how their new environment is constructed and the distance to places of income generating activities. In addition to the disruption of livelihood activities, there is an increased cost of living in formal housing, which they try to make up for by building backyard shacks for rental income. This income model is essentially bringing the built environment of urban informality to formal housing. The findings in South Africa suggest that while the government is dedicated to and making strides to provide formal housing for its citizens and legal residents, a holistic approach is needed to make relocation a sustainable development model. A holistic approach should include a consideration of the social networks and livelihood activities of informal settlement residents, which would then negate the

necessity of backyard shacks in formal settlements and residents returning to informal settlements, and hopefully breaking the cycle of urban informality in South Africa.

Chapter 5 Kenya – Results, Analysis, and Selected Narratives

5.1 Introduction

The central argument of this research posits that the spatial organization of informal settlements and formal housing designed for people living in extreme poverty are intricately linked to the strength of their social networks which in turn impacts the livelihood activities residents. This argument challenges the null hypothesis that spatial organization plays no effect on the social networks and livelihood activities on urban residents living in informal settlements or those that have been relocated to formal housing. This chapter provides the results and analyses of the primary data collected for this study in Kenya.

Table 5.1: Descriptive statistics of residents at research sites in Nairobi, Kenya.

	Total number of observations	Females	Males	Renters	Owners	Income generating activity	No Income generating activity
Silanga (Control Group)	94	57%	43%	85%	15%	88%	12%
Canaan Estates (Treatment Group)	102	55%	45%	48%	52%	92%	8%

Between September 2022 and November 2022, I visited Nairobi, Kenya for primary data collection related to this research (**Table 5.1**). A complete and comprehensive descriptive statistic of all the research sites is included at the end of the dissertation in **Appendix D**. The result of the field research activities was a survey of 94 residents in the control group (Silanga) and 102

residents in the treatment group (Canaan Estates) (**Table 5.2**). The survey consisted of 40 questions in total (**Appendix A**). Survey results were refined into nominal and categorical variables where appropriate to be analyzed quantitatively to address the egocentric social network. The surveys were followed by focus group discussions with residents in both control and treatment groups to provide additional context for the surveys. Finally, key informants consisting of government officials and settlement area managers were interviewed to provide additional perspective.

Table 5.2: Research activities in Nairobi, Kenya, by author.

Settlement	Group	Research Activity Sample Size		
		No. of Surveys Conducted	Focus Group Discussion (No. of Participants/Site)	Key Informant Interview (No. of Individual Interviews)
Silanga	Control Group	94	15	
Canaan Estates	Treatment Group	102	15	4
Total Across Research Sites		196	30	4

My primary contact prior to arriving in Kenya was Dr. Purity Njeri, a lecturer in the Department of Environmental Planning and Management at Kenyatta University in Nairobi. Dr. Njeri introduced me to government officials who were willing to be interviewed for the study. I was introduced to the Honorable Alice Wahome, the Cabinet Secretary for the Ministry of Lands, Public Works, Housing, and Urban Development. With her enthusiastic support, she made her entire staff available for interviews for my research which made it possible for me to valuable information from decision-makers responsible for national slum upgrading and prevention policies in Kenya. Dr. Njeri also introduced me to a man I only know as Mr. Walter. Mr. Walter was my local guide and expert on the history of Kibera and Canaan Estates. Mr. Walter is one of those men

who seems to know everyone and is known by everyone in Kibera and Canaan Estates. With Mr. Walter's assistance, we administered the in-person surveys, and organized and facilitated focus group discussions at both research sites. The focus group discussions served as a platform to listen to the experiences of residents living in urban informality (control group) and those relocated to formal housing (treatment group), while the key informants provided insight into the decision-making process.

The chapter is organized according to the research questions raised in Chapter 1, Section 1.5. Each research question is addressed by analyzing the quantitative data which is immediately followed with a qualitative analysis for context. The quantitative findings are based on the results from the survey (**Appendix A**). The qualitative findings focus on the narratives of the residents from the focus group discussions (**Appendix B**) and the interviews with municipal officials (**Appendix C**). The qualitative findings serve to provide context for the quantitative findings, and together with the key informant interviews, triangulate the research results for credibility.

5.2 Results for Research Question 1

The first research question addresses the influence of social networks on the spatial organization of informal settlements. Section 2.2 of the dissertation describes social networks through the framework of an egocentric model. The egocentric social network model refers to every individual as the central node of their own social network. Connections to other people within their social network are referred to as 'ties' (see **Figure 2.1**).

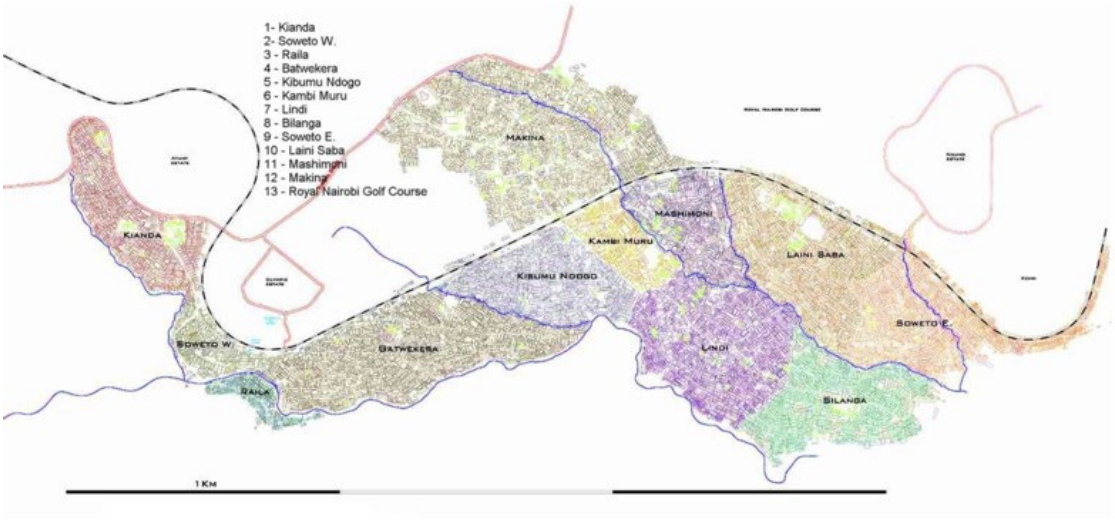


Figure 5.1: Map of the 13 villages that comprise of Kibera in Nairobi, Kenya. Image from WordPress.com.

The control group living in Silanga – one of the 13 villages contained within Kibera (**Figure 5.1**) – is a self-organized informal settlement. Meanwhile, the treatment group lives in Canaan Estates, a state-sponsored formal housing development. The hypothesis is that because the control group is largely self-organized while the formal housing is state-regulated zoning, the strength of social networks may play a larger role in where people choose to settle within the control group, and therefore have some influence on the spatial organization of the informal settlement.

5.2.1 Quantitative Analysis: Social Networks and Spatial Organization

To test the theory of how social networks might influence the spatial organization of a settlement, I first explored the demographic differences between the control and treatment groups. A logistic regression model is used to test the null hypothesis which is that there should be no significant differences between the two groups. The following independent variables were selected for the logistic regression model: gender, household size, and city of origin. These variables

represent the close-ended questions on the survey (**Appendix A**) designed to gather general demographic information. As the research question is to determine the difference between the control and treatment groups, settlement location was selected as the dependent variable.

Table 5.3: Logistic regression model - Demographic differences between control and treatment groups in Nairobi based on settlement location.

	Dependent variable:
	Settlement
Gender_male	2.268***
	(0.320)
Household size	1.255***
	(0.080)
Origin_Same city	0.285
	(0.320)
Constant	0.496
	(0.449)
Observations	196
Log Likelihood	-121.100
Akaike Inf. Crit.	250.199

Note: *p<0.1; **p<0.05; ***p<0.01

The test results in **Table 5.3** indicates that among the residents surveyed, men were 126.8% more likely to live in Silanga (control group) compared to females, holding other demographic characteristics constant. Also, there is a statistically significant relationship between large households and Silanga (the control group). For every additional household member, the likelihood of a respondent living in Silanga (the control group) compared to Canaan (the treatment group) increased by 25.5%. The logistic regression model in **Table 5.3** also explores the relationship between each settlement (dependent variable) and the residents' place of origin (independent variable). Respondents from the same city (Nairobi) were 71.5% less likely to prefer living in Silanga, which is the informal settlement and control group for this study.

A closer look at the results of **Table 5.3** regarding the relationship between the dependent variable (settlement location) and the independent variable (origin_same city) suggests that the longer a person travels from a place of origin to Nairobi, they are more likely to end up in Silanga, the informal settlement. Meanwhile, local residents with established networks appear to prefer living in Canaan Estates according to **Table 5.3**. Canaan Estates is a state-provided formal housing for Kenyan citizens and legal residents.

Another important aspect of understanding how social networks might influence where a person decides to live within a settlement is exploring how residents find their accommodations. To test this hypothesis, a multinomial logistic regression was used to explore if there is a statistically significant relationship between how residents found their housing and their demographic characteristics. In this instance, survey participants were asked how they found their current place of residence. The responses were placed into the following three categories; found the location through a friendship network, through government placement, or by themselves with no assistance. Secondly, using the demographic characteristics from **Table 5.3**, a multinomial logistic regression was used to explore the relationship between these demographic characteristics and how respondents found their place of residence. A multinomial regression was preferable because the dependent variable(s) had more than two unique values.

Table 5.4: Multinomial logistic regression - Demographic characteristics and housing location between control and treatment groups in Nairobi, Kenya.

	Dependent variable:		
	Friend	Government	Self
	(1)	(2)	(3)
Gender_Male	0.681	0.682	0.486
	(0.590)	(0.724)	(0.656)
Silanga	0.415	0.000	85,694.320***
	(0.746)	(80.494)	(105.731)
Household size	0.924***	1.798***	0.935***
	(0.142)	(0.210)	(0.154)
Origin_Same city	0.982*	0.709	0.658
	(0.570)	(0.751)	(0.637)
Constant	15.254***	4.591***	0.0001
	(0.947)	(1.096)	(105.733)
Akaike Inf. Crit.	339.687	339.687	339.687

Note: *p<0.1; **p<0.05; ***p<0.01

According to the multinomial regression model in **Table 5.4**, the first findings reveal that males were less likely to find housing through friends, government assistance, and by themselves when compared to females. While these findings are not statistically significant, they do suggest that there is a difference between genders regarding how residents find accommodations within a settlement, which would support the hypothesis that social networks may have an influence on where residents decide to live, thus impacting the built environment.

The logistic regression model in **Table 5.4** also reveals that for each additional increase in household size, the likelihood of finding housing through a friend or by themselves decreases by about 7%. In contrast, the likelihood of finding housing through government assistance for each additional household member increases by 79.8%. This statistically significant finding indicates that larger households (with 5 or more people) are seeking government assistance for formal housing at a higher rate than smaller households.

Table 5.4 also reveals that people from the same city (Nairobi) are less likely to find housing through friends, government assistance, or by themselves compared to residents who originate from other cities outside of Nairobi. Specifically, residents from Nairobi are 1.8% less likely to find housing through friends, 21.9% less likely to find housing through government assistance, and 34.2% less likely to find housing by themselves. It is worth noting that the government never sends anyone to live in Silanga, which is supported by **Table 5.4**.

To summarize the findings of the two logistic regression models, larger households are a statistically significant predictor of where residents decide to live (**Table 5.3**) and how residents find accommodation (**Table 5.4**). Also, while the regression model in **Table 5.3** indicates that larger households are more likely to live in Silanga which is the informal settlement and control group for this study, the regression model in **Table 5.4** appears to suggest that these large families are seeking government assistance to relocate to formal housing at a higher rate. These findings are important to dissect and understand its implications as it relates to the built environment of settlements. How people choose to live, where they choose to live, and the resources available to make a home, are critical to settlement formation and the built environment, and these findings indicate that there is a statistically significant relationship between some demographic characteristics and where people choose to settle and call home.

5.2.2 Qualitative Analysis: Social Networks and Spatial Organization

The first research question explores how informal settlements are formed, and whether social networks play a role in their spatial organization. As such, the focus group participants in

the control group were asked to provide a brief history of the settlement and how they ended up in their current location. The origins of Kibera dates back to the 1950s, when the British colonial government enrolled Sudanese soldiers to serve in the King's Africa Rifles and fight for the British (Bird et al., 2017). These Nubian soldiers, as they were called, were granted permission to stay and settle on the land that is now Kibera (ibid). According to the residents in the focus group discussion, the legal original settlers created a governance system of local chiefs across the settlement, and they are responsible for granting permission for future settlers. While these chiefs facilitate land acquisition and the building of shacks, they are not formally recognized by any government authority, and in fact have no legal authority to grant land titles (Bird et al., 2017). All members of the focus group in both research sites agreed that the convenient location of Kibera within Nairobi makes it an excellent location for people experiencing poverty to find a place to live in proximity to places of income generating activities.

Silanga is one of the 13 villages contained within Kibera (see **Figure 5.1**). My focus group discussion in Silanga was held in a building that functioned as a church and meeting hall. It was relatively well constructed out of thick dried mud with wood-framed reinforcements and a sturdy metal roof. During the conversation, the residents kept referring to where they lived as 'little Siaya.' Toward the end of the discussion, one of my research assistants asked the person speaking where they were originally from within Kenya. The resident responded that he was from Siaya, a small village in the north. And then he smiled and said, "We are all from Siaya." This is a typical practice within Kibera. People from the same region move to Kibera, settle in the same neighborhood, and give that neighborhood the same or a similar name, indicating which part of the country most residents migrated from. In this case, Siaya is a small village about 252 miles (407 km) northwest

of Nairobi, and 'little Siaya' is where these residents now lived within Silanga. The advantage of this practice is that whenever anyone migrates to Kibera without any prior social networks, it is relatively easy to find people with a shared connection and begin to build a social network, and that is one of the ways in which social networks impacts the built environment of the informal settlement (control group) in this study. The narrative of how residents from Siaya, a small village in the northern part of Kenya, travel to Nairobi and choose to settle amongst each other in Silanga provides qualitative context to the logistic regression models in **Table 5.3** and **Table 5.4**. As per the regression models, people whose city of origin is outside of Nairobi have a high likelihood of settling in Silanga, the informal settlement and control group for this study. According to the residents in the focus group discussion from the control group (Silanga), the advantage of the small enclaves such as 'Little Siaya' allows for new arrivals to find people with a shared connection and begin building a social network.

In the opinions of the residents, life in the informal settlement is challenging, but their social networks are critical to making it through the day. *"You must know someone before you can settle in any neighborhood in Kibera,"* Frederick, 42-year-old male. Frederick is a pastor and the owner of the meeting hall. Frederick said it took him three tries to build a shack when he first arrived in Silanga with his family. Word travels to Siaya, the small village, via residents who return briefly, or from people in the village with relatives in Nairobi. The general message is that while life is challenging, there are more economic opportunities in the city than the village, and this is the major pull factor that motivates most people to migrate. Like most of the residents in the focus group, Frederick heard similar messages and decided to migrate from Siaya to Kibera. When he arrived and asked around, people directed him to Silanga – and to 'little Siaya' – where many from

his village had come to settle. Frederick and his wife (and young son) rented a room in a shack from a new acquaintance while he scouted the area for land to build his own shelter. However, Frederick was unaware that before anyone constructs a structure in the informal settlement, prior approval is required from the self-appointed neighborhood master, a tradition dating back to the governance structure established by the first settlers in Kibera. The chieftain system has been coopted to a degree such that any 'strongman' with a following can carve out a section of the settlement as their dominion. In some cases, these 'strongmen' are controlled by forces outside of the informal settlement, according to the residents.

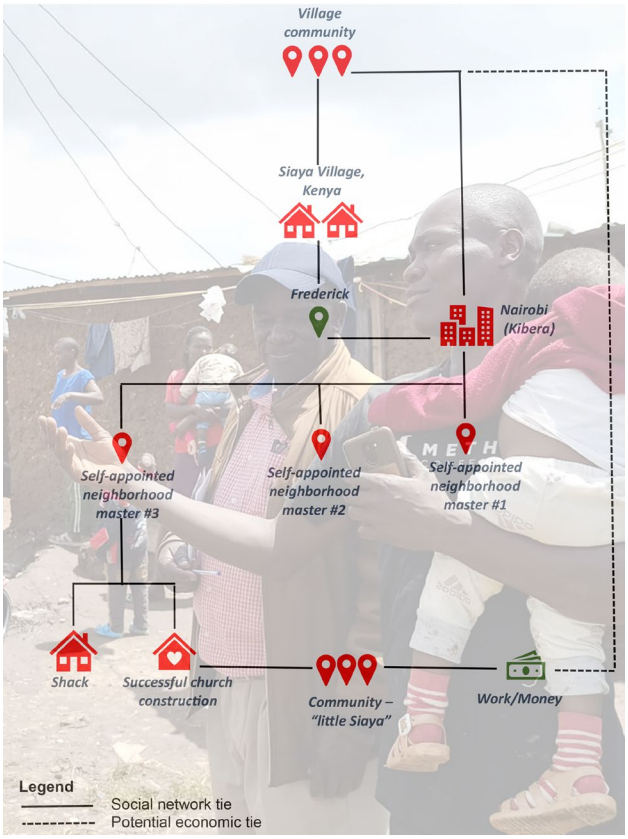


Figure 5.2: Egocentric social network map for Frederick.

In the case of Frederick, when he started to build his shack on land that he assumed was available, the local 'strongman' sent his men to demolish the structure. Realizing his mistake, Frederick went to the local 'strongman' to apologize and pay a fee for the land. However, when he started to re-build his shack, a different 'strongman' had his men come to demolish the structure. Apparently, the practice of land disputes is quite common in informal settlements, according to the residents. The solution, as Frederick discovered, was to seek out the neighborhood leaders, who then advocate for Frederick with the various 'strongmen', until an agreement is

reached, and everyone has been financially compensated. That was when Frederick finally received approval to build his shack. After years of working, gaining trust within the community, and establishing himself as a spiritual leader, Frederick was permitted to build his church, which also functions as a meeting hall for the neighborhood. In a full-circle moment, the men who demolished his shacks were the very same who helped him build the church, which now serves as a focal meeting place in 'little Siaya'. Using an egocentric network model with Frederick as the focal point of his social network, the strength of his ties to the community is what allowed him to be able to build his church (**Figure 5.2**). The strength of Frederick's social network ties took time to build, cement, and expand throughout 'little Siaya', and eventually his relatives in Siaya get to benefit as well (**Figure 5.2**).

From the perspectives of a few municipal officials I interviewed, it is these cemented networks and governance system within the informal settlements that makes any initiative challenging. Mrs. Irene Ikera is an Assistant Director in the Ministry of Land, Housing, and Urban Development in Kenya, and she is also an architect and charged with slum upgrading. Mrs. Ikera noted that residents in Kibera often do not want to move because of the life they have built for themselves. It gets complicated to the point where most upgrading initiatives eventually end up in litigation. Mrs. Ikera elaborates further by saying, *"I mean these people [informal settlement residents] are very organized. We have to do a lot of community engagement with them, and their strength is in the community. Together, they can get what they want."* Zachary Levenson (2022, pp. 96–115) makes this very point regarding the effectiveness of community collaboration or a 'politics of fusion, which is when residents in a community band together based on mutual interests and trust and work to support each other.

Mr. Walter, my local guide, and expert on Kibera took me on several walking tours through the informal settlements (Silanga – control site) and formal housing development (Canaan Estates – treatment site), so that I could see how residents lived. Walking along a dirt path with wooden planks acting as small bridges to cross the garbage-filled gutter that runs in the middle of the path (**Figure 5.3**), Mr. Walter pointed to the only masonry structure on the street and said the following:

> *"That is the only sanitary public bathroom in this section of Kibera. The residents here in Silanga worked with an NGO to get this built. When it was finished, the health ministry showed up with cameras and a ribbon to cut for publicity, but they had nothing to do with the project. It was the people. The community. That is the only way to get things done around here."*

Figure 5.3: Community-built public bathroom in Silanga. Images by author.

Mr. Francis Omondi is another gentleman I was introduced to with an office just at the edge of Kibera. Officially, he is the liaison between the municipality and the residents in Kibera and Canaan Estates, but he sees himself as a resident and not a municipal official. Mr. Omondi accompanied Mr. Walter and me on one of our walks between Canaan Estates and Silanga, and he motioned over to a school building. The community built that school. Similarly, on the day the school opened, the Minister of Education showed up with cameras to take credit, but according to

Mr. Walter, Mr. Omondi, and the community members I interviewed, it was a collaboration between the community and an NGO with no state involvement. *"That is how things are around here. The community builds itself,"* said Mr. Omondi.

Figure 5.4: Residents working on church/meeting hall building. Image by author.

Walking by Federick's house, a couple of his church members were re-touching the mud walls to the meeting hall. Behind the meeting hall, a previous storm had washed away much of the soil and the building was in danger of toppling over in the next big storm. A large truck showed up filled with dirt from a different part of the settlement. A crew comprised of Silanga residents, and specifically from 'little Siaya', were assembled to work on making the foundation of the church building more secure. As per Mr. Walter, this is how the residents live. They help each other, and together, they build and shape their environment.

5.3 Results for Research Question 2

The second research question explores how the spatial organization of settlements – both formal and informal – impacts the livelihood activities of their residents. To better understand how

the built environment influences livelihoods, residents at both research sites in Nairobi were surveyed about their income generating activities (**Table 5.5**).

Table 5.5: Income generating activities of survey respondents at the research sites in Nairobi, Kenya.

Research Site	No. of Residents Engaged in Income Generating Activities	No. of Residents Not Engaged in Income Generating Activities	Total
Silanga (Control Group)	83	11	94
Canaan Estates (Treatment group)	95	7	102
Total	178	18	196

The hypothesis is that if the spatial organization of a settlement location does not impact the livelihood activities of its residents, then there should be no significant difference of income generating activities between the control and treatment groups. Alternatively, a statistically significant difference would indicate that the spatial organization of a settlement does have some impact on the livelihood activities of its residents.

5.3.1 Quantitative Analysis: Spatial Organization and Livelihood Activities

The hypothesis acknowledges that the status of a person's income generating activities can be influenced by a variety of factors. To ensure that these various factors are captured in a logistic regression model, survey participants were asked about the strength of their social networks and how long they have been living in their current residence. The rationale for selecting these questions stems from the belief that residents may have better income generating activities prospects based on their social connections or the length of time they have lived in a specific area. To measure the strength of social networks, residents were asked how well they know their

neighbors, if they have people they can depend on within the neighborhood on a daily basis, and how long they have been living in their current place of residence. The responses were categorized and used as independent variables for the logistic regression model in **Table 5.6**.

Table 5.6: Logistic regression model reflecting variables that influence income generating activities at research sites in Nairobi, Kenya.

	Dependent variable:
	Have_a_job
Know your neighbors	0.745
	(1.179)
Length of stay	1.027***
	(0.037)
Depend on	8.461***
	(0.880)
Settlement_Silanga	0.759
	(0.553)
Constant	1.408
	(1.373)
Observations	196
Log Likelihood	-59.270
Akaike Inf. Crit.	128.541

Note: *p<0.1; **p<0.05; ***p<0.01

According to the logistic regression model in **Table 5.6**, the odds ratio of 'knowing your neighbor' is less than 1, suggesting that knowing your neighbor is negatively associated with the likelihood of having a job. On the other hand, the logistic regression model in **Table 5.6** also shows that the longer a person lives in their place of residence (length of stay), the higher their odds of income generating activities become. Specifically, for every additional year, their odds of having a job increase by about 2.7%, and this finding is statistically significant. Survey respondents were also asked if they depend on anyone on a daily basis in order to be productive, which is expressed in the variable 'depend on.' As per the model in **Table 5.6**, there is a positive relationship between

having someone to depend on and being income generating activity. Residents with someone to depend on were 746% more likely to be income generating activity. Lastly, the regression model in **Table 5.6** reveals that residents in Silanga, which is the informal settlement and control group for this study, are 24.1% less likely to be income generating activity compared to residents living in Canaan, the state-sponsored formal housing development and treatment group for this study.

Another objective of this research is to understand whether commuting distances vary between the control and treatment groups, and if these differences have an impact on income generating activities using a logistic regression model. In this regard, survey respondents were asked about the length of their daily commute to places of income generating activities.

Table 5.7: Logistic regression model reflecting the influence of commuting time on the income generating activities of residents at the research sites in Nairobi, Kenya.

	Dependent variable:
	Job
Commute time	16.769
	(344.765)
Settlement – Silanga	0.145
	(0.903)
Constant	1.250***
	(0.474)
Observations	196
Log Likelihood	-17.947
Akaike Inf. Crit.	41.893

Note: *p<0.1; **p<0.05; ***p<0.01

The logistic regression model in **Table 5.7** shows a positive association between commuting time and having a job. Meaning, for every additional minute of commuting time, the respondent was 1600% more likely to have a job. The large estimate is likely due to the fact that respondents with zero commuting time tended to not have any income generating activities, so the

regression model overfitted respondents with commuting times. Essentially, longer commutes are associated with a higher probability of being engaged in an income generating activity than shorter commutes.

Secondly, **Table 5.7** suggests that residents in the control group – Silanga – have a negative association with having an income generating activity. According to the regression model, residents in the control group are 85.5% less likely have an income generating activity compared to residents in the treatment group living in Canaan Estates. Essentially, residents in the treatment group (Canaan Estates) have longer commutes, which supports the hypothesis that commuting time has a significant impact on job status, with longer commuting times increasing the likelihood of having an income generating activity. Additionally, the location of each settlement – control and treatment groups – has an effect on job status when commuting time is factored in. Residents who are relocated from the informal control group (*Silanga*) to the formal treatment group (Canaan Estates) have to be prepared for longer commutes according to the logistic regression model in **Table 5.7**.

5.3.2 Qualitative Analysis: Spatial Organization and Livelihood Activities

The second research question explores how the spatial organization of settlements for both the control and treatment groups impact the livelihood activities of residents. A number of authors have discussed how residents of urban informality live in strategically located settlements that helps that to establish and maintain social networks and livelihood activities (Goodfellow, 2020; Huchzermeyer, 2018; S. Smit et al., 2017; Wang, 2022). The focus group participants in Silanga alluded to the same phenomenon as well. "*The place where we are located [in Silanga] allows us*

to live very close to where we can work and make a living to support our families," Gladys, 28-year-old female. Most of the focus group participants nodded in agreement with this statement.

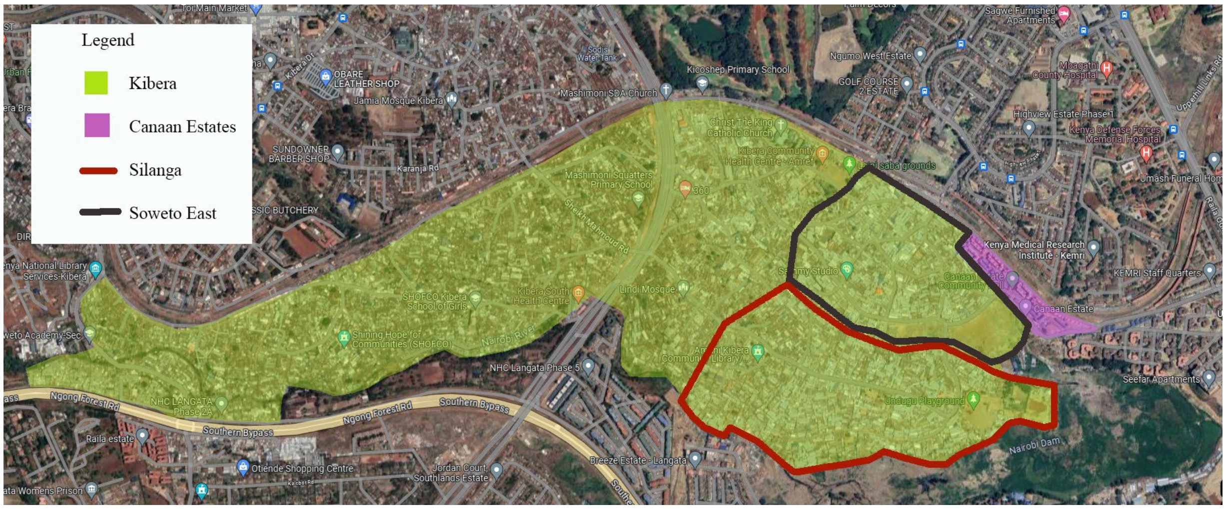


Figure 5.5: Site map showing the locations of Silanga (control) and Canaan Estates (treatment) within Kibera. Map by author using Google.

The focus group participants in the control group were then asked to talk about some of the benefits associated with living in Silanga, an informal settlement. The response that received unanimous agreement was the fact that residents could perform just about any livelihood they wanted to because their environment would allow it and make it possible for them to do so. Mr. Francis Omondi, who was acting as my interpreter for portions of the focus group discussion, summarized the points made by the participants as follows:

> *"What we are saying is that Silanga has its advantages. Food is cheaper here than in formal housing because we have a large farm*[8] *right here. You see people tending to sheep, cows, and chickens right here. All those things are not allowed in*

[8] Directly southeast of Kibera is the former Nairobi dam. The dam is no longer in use and has become a large urban farm used by the residents living in Kibera.

the formal housing. Because all those things are here, we pay less for them. And sometimes, when you do not have the money to pay, we know each other and can support each other until we can pay."

Figure 5.6: Image of Kevin in his bakery in Kibera. Image by author.

In addition to being able to provide for each other, residents within Silanga (and Kibera as a whole) can also take advantage of their location by providing services that benefit the formal economy. While the service roads leading into Kibera are pretty rough and filled with potholes that require excellent driving skills to maneuver while avoiding the pedestrians and the open gutters on either side of the road, the paving becomes relatively even once you enter the settlement itself. An organic network of narrow paved roads runs through the settlement. However, once you get off this network, the rest of the roads are incredibly narrow, unpaved, and somewhat difficult to navigate without a local expert. My local expert was Mr. Walter. On one of my many walks with Walter through Silanga along one of the paved roads lined with storefronts, he took me behind the shops to reveal a narrow stone-paved alleyway filled with more shops. Along this alleyway is where Walter introduced me to Kevin and Ibrahim, two young men in their mid-twenties and very entrepreneurial.

Kevin owns a bakery (**Figure 5.6**) and, according to him, caters to a couple of the hotels at the edge of the settlement and the restaurant at the golf course [9] that borders Kibera (see **Figure 5.5**). Ibrahim owns and operates a custom furniture store. His work is primarily bedframes and dressers. Ibrahim said he sells his work to individuals and sometimes to shop owners who then mark up the prices and sell them in the many high-end malls in Nairobi. People who shop at these high-end malls would never set foot inside Kibera, so this is an arrangement that Ibrahim has to be okay with.

Unfortunately, Ibrahim cannot see himself being successful enough to afford to own a store in a high-end mall, and Kevin cannot envision his bakery existing outside of Kibera. Both young men were from smaller villages in Kenya with high unincome generating activities. People they met always talked about work opportunities in Nairobi, which brought them to Kibera and eventually to Silanga. While it is easy to think of Silanga as a steppingstone for these entrepreneurs to join the formal economy, they have no such ambitions. They are content with how they live, and their only wish is for the government to be more accommodating and efficient with service provision and financial breaks for people like them. According to Walter, there are stories identical to Kevin's and Ibrahim's all along this stone-paved alleyway, and this specific alleyway – and many more like it throughout Kibera – are the physical embodiment of how the spatial organization of an informal settlement can positively impact the livelihood activities of its residents.

The focus group in Silanga, the control group for this study, made a strong case for how the spatial organization of the informal settlement impacts their livelihood activities. As per the

[9] Directly north of Kibera – separated by a road – is the Royal Nairobi Golf Club, a high-end destination of tourists and members of the elite social class in Nairobi.

logistic regression models in **Table 5.6** and **Table 5.7**, spatial organization impacts the livelihood activities of the treatment group in Canaan Estates differently than the control group living in Silanga, despite their proximity to each other (see **Figure 5.5**). The Canaan Estates are the result of a partnership between the government of Kenya, UN-Habitat, and the World Bank Cities Alliance (The New Humanitarian, 2009). The name Canaan (locally pronounced Cannon) is biblically derived and symbolizes the exodus from difficult conditions to a "Promised Land," or in this instance, from the shacks of Kibera to the formal and stone-built apartment complex. A 46-year-old resident and one of the first to occupy an apartment in Canaan is quoted in a local newspaper (Kijilwa, 2018) saying the following, *"I cannot believe I have left Kibera for good! My new home is so clean. We have a toilet inside the house; it is a dream come true,"* Pius Okello.

The sentiments of the focus group participants at Canaan Estates, the treatment group for this study, were very similar to Pius Okello's elated praise regarding his new home. The residents in the focus group at Canaan Estates had nothing but nice things to say about the change from living in shacks to "stone built houses with working amenities and infrastructure." When the group was asked about the benefits of living in formal housing, most of the residents mentioned that the transition from living in precarious shacks to permanent homes is a great benefit. Others mentioned that for the first time, they now lived in a house with privacy, allowing parents to sleep in different rooms than their children. The question was then re-phrased to capture the objective of the second research question. The focus group was asked about any impacts on their livelihoods since being relocated to Canaan Estates. Unfortunately, according to many in the focus group, livelihood activities since the relocation have been rather challenging.

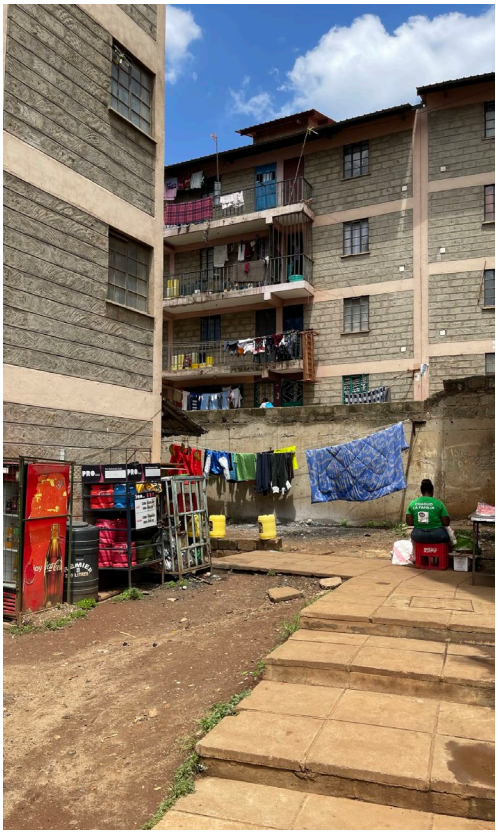


Figure 5.7: One of the few commercial activities inside of Canaan Estates. Image by author.

Canaan Estates is a high-rise apartment complex that sits behind a six-foot stone wall and a transparent metal gate with security guards to separate the formal housing from the informal settlement. Upon entering the complex, there is a parking lot proceeded by a maze of narrow walkways surrounded by 6 to 8-story buildings. It is entirely residential with no commercial activities. Some women set up small tables selling watermelon and other food items (**Figure 5.7**). There is a single ground-floor apartment in the entire complex with a storefront shop but no customers. Any commercial enterprise in Canaan is limited to the 821 households within the gated residential community, unlike Kibera which is a mixed-use, vibrant urban environment. In addition to the gated community environment, specific livelihoods are not allowed in Canaan. Those who own livestock, such as goats and cows, will not have a place to keep or feed these animals within the walls of Canaan Estates. Those who owned small shops where people could eat and listen to music during the day have no place inside Canaan. People with livelihoods not designed into the newly built environment must find alternative livelihoods, and those able to maintain their livelihoods must find new locations outside the residential enclave.

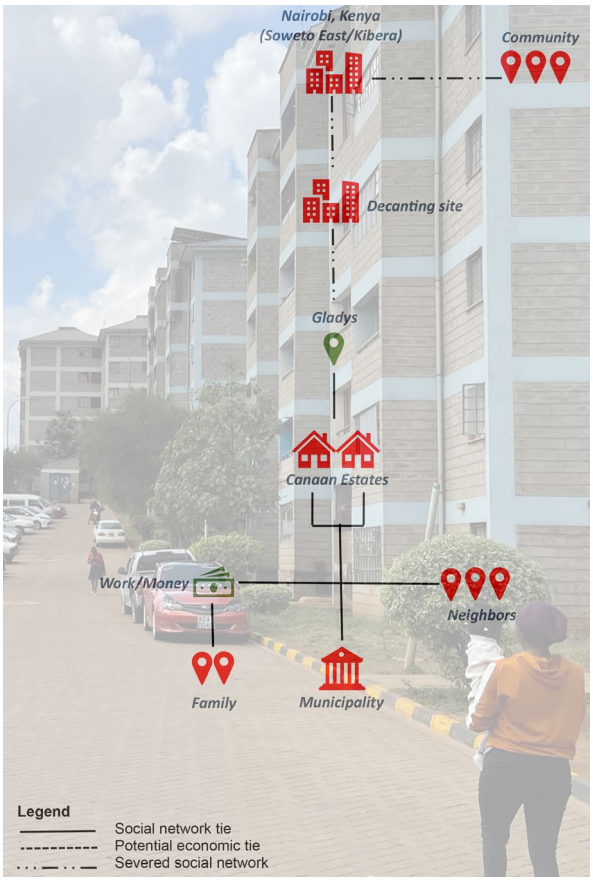


Figure 5.8: Egocentric social network map for Gladys.

Due to the restrictions placed on livelihoods, Canaan residents have to travel further for income generating activities, according to the focus group participants. This narrative supports the logistic regression model in **Table 5.7**: Logistic regression model reflecting the influence of commuting time on the income generating activities status of residents at the research sites in Nairobi, Kenya. which has similar quantitative findings. An example of how livelihoods have been altered due to being relocated into an environment with a different spatial organization is Gladys Omaiko, a 48-year-old resident of Canaan Estates and part of the focus group. Prior to relocation, Gladys was a beautician in the informal settlement. She used a small space inside her shack to braid and weave hair for local women in her neighborhood. As her popularity grew, other women from different sections of the informal settlement would use her services. According to Gladys, being a beautician in the informal settlement was less complicated. She had an electrician friend who could illegally connect her to a power grid when needed. As such, Gladys could use all of her electrical hair appliances without worrying about incurring any fees. Since moving to Canaan, anything she plugs into the electrical wall outlet increases her utility bill to the point where she was no longer making a profit. Her clientele had also decreased because of her new location. Gladys has now changed professions. She goes to an outlet mall and buys t-

shirts and other small trinkets. She then stands in the middle of a road to sell what she can carry to Nairobi's famously congested traffic drivers and passengers. Her new profession requires longer hours and long commutes to find desirable places to sell her products, a narrative that provides context to the quantitative findings in the previous section. The transition from the informal settlement to the formal state-sponsored built environment, which is within walking distance of her previous home, has completely changed the structure of her social network (see **Figure 5.8**).

This dynamic of not being able to work close to home has made life in Canaan appear to be more expensive. In the opinion of the residents, living expenses in Silanga (control group) are similar to Canaan (treatment group), or perhaps more expensive in informal settlement in some cases, such as access to potable water. However, the change in the built environment has affected livelihoods and social network dynamics, and making a living has become more strenuous. Various authors argue that due to the focus on the physical rather than the social, policies often focus on eradicating the symptoms which are the visible and unattractive structures which ironically ends up hurting the very people they intend to help (Boamah & Amoako, 2020; de Boeck, 2011; Huchzermeyer et al., 2007; W. Smit, 2007). After six years of living in the 'Promised Land,' interviewing Canaan residents in 2023 compared to their initial sentiments right after moving into their new formal homes reveals that well-intentioned policies, in some cases, can still adversely affect the very people those policies are meant to assist.

5.4 Results for Research Question 3

The final research question seeks to understand how social networks and livelihood activities are impacted by the relocation of informal settlement residents (control group) to formal

housing (treatment group). The initial inquiry asked survey respondents at both research sites about the strength of their social network ties. The hypothesis is that relocation might disrupt existing social networks and livelihood activities for residents who are relocated from Silanga (control group) to Canaan Estates (treatment group).

5.4.1 Quantitative Analysis: Impact of Relocation on Social Networks and Livelihoods

The survey responses to the question regarding the social network ties of residents living in Silanga (control group) and Canaan Estates (treatment group) were coded into '0' (weak social network ties) and '1' (strong social network ties). The logistic regression model in **Table 5.8** uses 'social network' as the dependent variable and controls for the confounding variable 'length of stay.' The confounding variable was selected because it is highly likely that residents may have stronger social network connections based on how long they have been living in a location.

Table 5.8: Logistic regression model reflecting the impact of relocation on the social networks of residents at the research sites in Nairobi, Kenya.

	Dependent variable:
	Social network
Settlement – Canaan Estates	0.339
	(0.837)
Length of stay	1.062***
	(0.048)
Constant	20.127***
	(0.934)
Observations	196
Log Likelihood	-36.900
Akaike Inf. Crit.	79.799

Note: *p<0.1; **p<0.05; ***p<0.01

After controlling for 'length of stay', the logistic regression model in **Table 5.8** indicates that the residents who have been relocated to formal housing in Canaan Estates (the treatment group) are approximately 66.1% less likely to have a strong social network. However, this particular finding is not statistically significant according to **Table 5.8**. Length of stay, on the other hand, has a statistically significant relationship with the strength of social network formation. Specifically, for each additional year of living in Canaan, a resident is 6.2% more likely to form a strong social network compared to residents who remain in Silanga, the control group.

The second aspect of relocation is its impact on the livelihoods of residents. In this research, livelihood activities were determined by how residents responded to questions related to income generating activities status, the strength of social networks, and whether they have people they depend on daily to be productive. These activities are the dependent variables, and the settlement location (control and treatment group) is the independent variable.

Table 5.9: Logistic regression model reflecting the impact of relocation on the livelihood activities of residents at the research sites in Nairobi, Kenya.

	Dependent variable:		
	Job	Social Network	Depend On
	(1)	(2)	(3)
Relocated	1.557***	0.255	68,755,725.000***
	(0.488)	(0.804)	(1,755.568)
Constant	7.545***	46.000***	12.429***
	(0.321)	(0.715)	((0.393)
Observations	196	196	196
Log Likelihood	-61.971	-37.721	-24.914
Akaike Inf. Crit.	127.942	79.442	53.829

Note: *p<0.1; **p<0.05; ***p<0.01

With job (income generating activities status) as the dependent variable, the logistic regression model in **Table 5.9** indicates that residents in the treatment group (Canaan Estates) are

55.7% more likely to be income generating activity compared to the residents who remain in the control group (Silanga). However, **Table 5.9** also suggests that relocated residents living in Canaan Estates (the control group) are 74.5% less likely to have a social network. The findings from **Table 5.9** regarding the impact of relocation on social networks are supported by the findings from **Table 5.8**. It appears that residents in both locations rely significantly on other people on a daily basis, making the logistic regression model overfit and producing a rather large coefficient.

In summary, relocated residents living in Canaan Estates have significant relationships with income generating activities status and depending on others, and a negative association with social networks, although that finding is not statistically significant.

5.4.2 Qualitative Analysis: Impact of Relocation on Social Networks and Livelihoods

The final research question seeks to understand how social networks and livelihood activities are impacted by the relocation of informal settlement residents to formal housing. Exploration of this question began with survey participants responding to their level of satisfaction in their current living conditions (**Table 5.10**). The Kenyan Slum Upgrading Program (KENSUP) is aimed at improving the lives of people living and working in informal settlements (*KENSUP*, 2013). As such, the rationale is that with all things being equal there should be no significant difference between the two groups regarding their level of satisfaction. However, if the relocation has been a positive experience, the level of satisfaction from the control group should exceed the level of satisfaction among the treatment group. Conversely, if relocation has had a negative impact, then the level of satisfaction among the control group should exceed the level of satisfaction from the treatment group.

According to the survey results in **Table 5.10**, a larger percentage of relocated residents (treatment group) are less satisfied with their current living conditions. In contrast, residents living in Silanga, the informal settlement (control group) are almost evenly split when it comes to their level of satisfaction with current living conditions (**Table 5.10**). The survey suggests that overall, relocated residents are less satisfied with their living conditions.

Table 5.10: Level of satisfaction with current living conditions between the control and treatment group in Nairobi, Kenya.

Location	Satisfied with current living conditions	Not satisfied with current living conditions
Silanga (Control Group)	48 (51%)	46 (49%)
Canaan Estates (Treatment Group)	66 (65%)	36 (35%)

Note: Numbers represent raw counts of survey participants. Percentages represented in brackets.

To understand the context of these findings, the focus group participants in both control and treatment groups were asked to expand on the benefits of living in the current location, and also to discuss the challenges. Beginning with the benefits, residents in the informal settlement control group cited their proximity to daily necessities and the affordability of essential goods. Others mentioned the proximity and convenience of income generating activities opportunities as another benefit which is supported by the quantitative findings in **Table 5.6**.

Kibera is an incredibly dense place with about a quarter of a million people living in an area smaller than Central Park in New York City (Owens & Rubnitz, 2017). Informal settlements like Kibera are not fixed entities with stable boundaries and clearly defined landmarks. Instead, they are evolving places with expanding parameters (Murray, 2009), and a place where people experiencing poverty create the built environment that they need in order to survive (Deuskar,

2020; W. Smit, 2007). Most residents in Kibera lack affordable access to core city services. Reliable electricity, potable water, effective sanitation and waste management systems, and healthcare are similarly out of reach for many residents living in Kibera (Owens & Rubnitz, 2017). A few residents in the focus group discussion mentioned that if you want clean water, you must get it from the cartels, which makes it very expensive. Those who cannot afford to purchase water from the cartels depend on the goodwill of neighbors to share their sparse water supply, a gesture that will be reciprocated in kind or substituted for a different favor. Essentially, the ability to lean on, and depend on each other, according to the focus group, is one of the critical benefits of living in an informal settlement.

Figure 5.9: Local neighborhood adjudicators seated by the side of the road in Silanga. Image by author.

Another benefit of living in an informal settlement like Silanga (in Kibera) according to the residents in the focus group discussion is the immediacy in which any issues can be resolved. Walking along one of the main roads in the settlement with Mr. Walter, he pointed and waived at two well-dressed older women sitting next to a shack (**Figure 5.9**). Those women, Mr. Walter said, are the people designated to resolve any issues that come up within this particular neighborhood. If people are having an argument, they can come here to get it resolved. If someone has an emergency, they can bring the matter to their attention. According to Mr. Francis Omondi, when he experienced the death of one of his family members in the village, he brought the matter

to the attention of the women. They women organized the neighborhood to raise funds for Mr. Omondi to travel to his village for the funeral and cook meals for his children while he was away.

Figure 5.10: Image of Boniface behind the register in his convenience store in Kibera. Image by author.

If any issues need to be escalated, it goes to Boniface (**Figure 5.10**), a jovial looking young man who owns a convenience store on the same street. Boniface helps with more pressing issues such as land disputes, assistance with disaster mitigation such as a shack in danger of falling over due to soil erosion (an unfortunately common occurrence), and acts as an intermediary to the 'strongmen' in the area. Boniface is the person who helped Frederick resolve his issues with the local 'strongmen'. According to the residents, the combination of local neighborhood adjudicators (**Figure 5.9**) and intermediaries (**Figure 5.10**) to major authority figures allows any issues to be resolved immediately and makes life in the informal settlement a bit easier to deal with.

Focus group participants living in Canaan Estates (the treatment group) mentioned the benefits of living in formal housing, or in their words, "stone-built houses."

> *"Once you enter the gates, it is like a different world. The road and pathways are paved, and there is a proper system for drainage. Then I walk up to my door and enter my own home. Everything works. The lights, the water, the electricity, toilets, everything. Then I have my own private room to sleep. My new home is a blessing,"*
>
> Vincent Wandera, 62-year-old male.

Other residents cited similar benefits. A significant benefit for Mike Kroko, a 57-year-old Canaan resident is the safe and reliable electricity. Years ago, while living in Soweto East, another village in Kibera, a neighbor's shack had caught on fire and burned down several of the surrounding shacks, including his. It had taken him months to find new accommodation. While the cause of the fire was never confirmed, it was largely believed to have been because of an illegal and unsafe electrical connection which created a spark and ignited part of the flammable section of the shack. Again, another unfortunate but frequent occurrence in places like Kibera. Both focus groups were also very quick to point out the challenges of their current living conditions.

In the opinions of the control group, life in Silanga is not without its challenges. The most pressing challenges of living in the informal settlement (control group), according to the focus group participants, is the insecurity, lack of water, and poorly constructed shacks. The insecurity stems from the fact that a majority of the residents are renters. Many of the shack owners – which includes wealthy individuals, some politicians, and even churches – do not live in the settlement, but collect monthly rent from tenants and use the funds to develop housing in other areas of Nairobi (Flores Fernandez & Calas, 2011, p. 2). According to the focus group participants, these outside forces do not always understand the hardships of urban informality and will readily evict people because there is always someone else waiting to rent. Quite frankly, the residents are more fearful of being evicted by 'strongmen' than the state. With the state, residents can band together and litigate until a settlement of sorts is reached. With the 'strongmen', there is no reasoning, just violence.

The other challenges are the general lack of clean water and poorly constructed shacks. Despite the fact that a majority of the residents are renters, they are still responsible for maintaining their shacks. Neighbors help each other with local expertise. Walking through Silanga, it became a common site to see a few people working to patch up a shack. Residents also work with NGOs to provide more stable structures for civic purposes and large tanks for clean water. NGOs have largely replaced the role of the state in Kibera. As alluded to in section 5.2.2, NGOs have been responsible for most of the public projects in Silanga, in partnership with the residents. Regardless of the challenges, it appears that residents in Silanga are fairly satisfied with their living conditions according to **Table 5.10**.

Meanwhile, the relocated residents living in Canaan Estates face different challenges. The first challenge raised by the focus group in Canaan is the time it takes for issues to be resolved. They talked about how issues were usually resolved when they lived in the informal settlement, and it was just as the focus group in Silanga outlined. In Canaan, any issue a resident has is first addressed by the complex manager, if you can find him. For example, Nahashon Ochiengo, a 22-year-old man and one of the youngest participants in the focus group, talked about an instance when their kitchen stove was not working. His mother sent him to find the complex manager. It took about three days to finally locate him and get him to look at the problem. Because the problem was outside his scope of expertise, the complex manager had to then tell the family to schedule a repair man. As this was not a building issue, any fees would have to be paid by the family. Essentially, it took over a month to get the issue fixed. According to the focus group in Canaan (treatment group), a similar issue in the informal settlement (control group) would have been fixed in less than a day.

This scenario raised an interesting question. The formal housing apartment, Canaan Estates, is literally separated from the informal settlement of Kibera by a six-foot masonry wall and a transparent metal gate. Could the residents in Canaan not walk out of the gate into their old neighborhoods and find assistance from old friends or through their social networks? This question was met with curious glances and what can only be described as sarcastic smirks. "*What friends*?" One of the participants asked rhetorically. "*We have no friends on the other side*," another chimed in. That was the second challenge which was alluded to in the logistic regression models in **Table 5.3** and **Table 5.4**. Since moving into their apartments in Canaan Estates, the residents claim that hooligans from the informal settlement climb over the walls and come into Canaan to rob them. When they bring this to the attention of the neighborhood leaders in the informal settlement, they ignore them. As such, former social networks have been strained and tension exists between the two groups. The residents in Canaan admit that life would be easier if those social networks had remained intact, but there is nothing they can do to placate the jealousy of outsiders.

However, the jealousy and mistrust we discussed was not exclusive to outsiders but also exists between neighbors in Canaan. The current residents in Canaan Estates are people who lived together in Soweto East who were then relocated to the decanting [10] site before purchasing an apartment in the newly built and formal Canaan Estates. Because of the multiple moves and different apartment unit locations, former neighbors were no longer neighbors. Also, living in Canaan comes with stringent legal restrictions. While the residents own the apartments, the units

[10] The temporary location for the informal settlement residents living in the Kibera village of Soweto East, Section A. Their shacks were then demolished, and the formal apartment housing complexes were built on the former site of Soweto East, Section A. Residents of Soweto East, Section B have now been relocated to the decanting site and the process repeats.

cannot be modified in any way, or else the resident can be fined or even face eviction by the state. For example, when a resident brought in some plywood to create a partition inside his apartment to create a separate space that he could rent to someone else, the government official was informed, and this resident had to take it down. In other instances, some apartments have balconies, which one resident decided to turn into another bedroom for his expanding family by using plywood and sheet metal to block the railings and fill in the gaps of the balcony. Again, a government official was informed, the resident was fined, and the renovations had to be taken down. It turns out that neighbors were reporting on one another. One interview participant said, "*Neighbors are jealous of each other here. If you do anything to advance your life, your neighbor will report you to the authorities*."

Based on the insights of government officials I interviewed, neighbors have no incentive to report on each other, but that seems to be the culture at Canaan Estates. After residents moved into their apartments and discovered that life in the "Promised Land" would not be as easy, they started to turn on each other. The silver lining for authorities is that they do not need to send auditors to the apartments as often as initially planned. However, my research also showed that 49% of the survey participants in Canaan were renters, which would be illegal under the purchase agreement. A resident of Canaan is allowed to rent out their unit once the mortgage has been paid off or the resident has lived in the apartment for at least ten years, whichever comes first (Flores Fernandez & Calas, 2011). Thus, anyone who rents in Canaan is not the original owner of the unit, and this should not be the case as the building is less than ten years old. To the knowledge of the government officials, no one in Canaan has yet to pay off their mortgage. Whether a resident is an owner or renter appears to be a non-issue with Canaan residents. However, a resident crosses

the line when trying to take any personal or financial advantage of living in Canaan. That is when friends become spies.

The final challenge associated with living in Canaan Estates, according to the focus group, is the added expense. In order for residents to qualify for housing in Canaan, they had to show proof of being able to afford the mortgage of 5,000 – 6,500 Kenyan Shillings per month ($37 - $48). This is in addition to typical maintenance fees such as Ksh300 ($3) for electricity and Ksh200 ($1.50) for water (Flores Fernandez & Calas, 2011; Kijilwa, 2018). The most significant hurdle for mortgage qualification was that residents had to have at least a 10% downpayment for the unit before being given keys to the apartment. The rates were Ksh600,000 ($4,474) for a studio, Ksh1 million ($7,456) for a one-bedroom, and Ksh1.35 million ($10,065) for a two-bedroom (Kijilwa, 2018). 10% of these units is a lot of money for people experiencing poverty. Meanwhile, rental arrangements in Silanga (and Kibera as a whole) differ depending on the arrangements made. Some residents rent a room, while others rent entire shacks and different kinds of shacks. Thus, a person could pay as little as Ksh500 ($4) monthly rent. By relocating to Canaan Estates, their cost of housing has increased six-fold. Which is why the logistic regression models in **Table 5.6** and **Table 5.7** reflect positive relationships between living in Canaan and being income generating activity, and at the same time having longer commutes to places of income generating activities. According to the residents in the focus group, you need to have a job to live in Canaan (the treatment group), whereas you could get by without having a job and still have a decent life in Silanga (the control group). The challenge is more acute when one's work does not yield consistent income – like Gladys who sells t-shirts and trinkets by the highway – which impacts their lives on

a daily basis. However, despite these challenges, it appears that a majority of residents living in Canaan Estates are satisfied with their current living conditions (see **Table 5.10**).

5.5 Summary of Findings in Kenya

From these findings, it is evident that the residents of Silanga, an informal settlement and part of Kibera in Nairobi, are heavily reliant on their social networks, and that when these residents are relocated to state-sponsored formal housing in Canaan Estates, they become more reliant on income generating activities than on social networks. The quantitative findings show that the choices residents of Silanga – the control group in this study – make regarding where to move and where to build or rent a shack are greatly influenced by their social networks. According to **Table 5.3** in section 5.2.1, people who come from long distances to Nairobi have a high likelihood of ending up in an informal settlement like Kibera, and based on their social networks, are very likely to end up in a specific neighborhood within one of the 13 villages of Kibera. This is supported by the narratives in the focus group discussion in Silanga where the residents refer to their neighborhood as 'Little Siaya,' a reference to their village. Frederick's story is isolated and used as an example to show how social networks influence the built environment and further strengthen the argument. **Table 5.4** in section 5.2.1 details the relationship between social networks and how residents find shelter. In this regard, it is important to note that larger households are more likely to live in the informal settlement, and as such, rely on the government for assistance at a higher rate than smaller households and individuals.

The findings also support a strong relationship between the spatial organization of settlements and livelihood activities. **Table 5.6** in section 5.3.1 reveals the strong relationship

between where a person lives and the likelihood of being income generating activity. According to **Table 5.6**, when people settle in proximity to their social networks, they become less reliant on income generating activities because they have people that they depend on to get them through the day. This relationship is strongest in the context of the control group who live in the informal settlement of Silanga. When residents are relocated to Canaan Estates (treatment group), they become more reliant on income generating activities, although the data shows that these residents also have people they depend on. In addition, relocated residents living in Canaan (the treatment group) have to travel further to places of income generating activities, despite its proximity to the control group whose built environment supports their livelihood activities. The narratives of Kevin and Gladys in section 5.3.2 provide excellent context to these findings. Kevin lives in the informal settlement and runs a bakery from additions to his shack and is able to contribute to the formal economy. Gladys, prior to relocation, ran a shop in her shack working on women's hair. After relocation, she now sells t-shirts and trinkets by the highway, a direct result of her newly built environment and its restrictions.

Finally, the findings indicate a strong relationship between relocation and its impact on social networks and livelihood activities. **Table 5.8** in section 5.4.1 suggests that relocated residents from the control to the treatment group have lower odds of having a strong social network. Section 5.4.2 attributes the social network decline to two factors; (1) The wall separating the two groups has become more than a physical barrier and become a symbol of social status creating a division between the formal and informal which has resulted in a contentious relationship between the two, and (2) Relocated residents are wary of each other and will quickly report a neighbor to the authorities if they perceive the neighbor to be 'illegally' taking advantage

of their new living accommodation. However, **Table 5.8** in section 5.4.1 does indicate that the longer residents live in Canaan Estates (the treatment group), the more likely they are to begin forming stronger social networks. As one of the focus group participants in Canaan said, "*For some of us, we have lived together and known each other for over 20 years. We have to remember that and not let the stone walls change us*."

Overall, the findings indicate that some aspects of life have improved for residents who are relocated to formal housing, and that the housing department and policymakers done admirable work to improve the lives of people experiencing extreme poverty indicated in **Table 5.10**. However, according to the residents in the treatment group that participated in the focus group discussion, they are facing numerous challenges which stem from a misalignment with how the state views urban informality and people living in settlements. In other words, when I asked the government officials in Nairobi what metrics they use to indicate a successful project, they all cited the number of housing units provided, working infrastructure such as paved roads and stable electricity, and removing residents from informal shacks to formal housing. However, when I asked this same question to the focus groups, a successful project to them would be having formal housing without any interruption to their livelihood activities and no adverse effects on their previously cemented social networks. For relocated residents, the disruption to their livelihoods and severed social networks has greatly impacted their lives which is reflected in the results of **Table 5.10**, where 35% of residents are not satisfied with Canaan, but according to all the officials I spoke with, Canaan Estates represents a successful project with similar iterations yet to come. The findings do suggest that the Kenyan government with its Slum Upgrading initiatives, remain dedicated and motivated to make positive strides towards improving the lives of their citizens

experiencing extreme poverty. However, a holistic approach that accounts for how social networks and livelihood activities are impacted by development initiatives would be worthwhile, and hopefully result in a more satisfied constituency, although the current results are very promising.

Chapter 6 Ghana – Results, Analysis, and Selected Narratives

6.1 Introduction

The central argument of this research posits that the spatial organization of informal settlements and formal housing designed for people living in extreme poverty are intricately linked to the strength of their social networks which in turn impacts the livelihood activities residents. This argument challenges the null hypothesis that spatial organization plays no effect on the social networks and livelihood activities on urban residents living in informal settlements or those that have been relocated to formal housing. This chapter provides the results and analyses of primary data collected for this study in Accra, Ghana.

Table 6.1: Descriptive statistics of residents at research sites in Accra, Ghana.

	Total number of observations	Females	Males	Renters	Owners	Income generating activity	No Income generating activity
Agbogbloshie (Control)	109	82%	18%	63%	37%	100%	0%
Adjen Kotoku (Treatment)	114	59%	41%	63%	37%	100%	0%

Between December 2021 and February 2023, I made multiple trips to Accra for primary data collection related to this research study (**Table 6.1**). The result was a survey of 109 residents from the control group (Agbogbloshie/Old Fadama) and 114 residents from the treatment group (Adjen Kotoku) (**Table 6.2**). The survey consisted of 40 questions in total (**Appendix A**). Survey results were refined into nominal and categorical variables where appropriate to be analyzed

quantitatively to address the egocentric network of residents. The surveys were followed by focus group discussions with residents in both control and treatment groups to provide additional context for the surveys. Finally, key informants consisting of government officials and settlement area managers were interviewed to provide additional perspective.

Table 6.2: Research Activities in Accra, Ghana, by author.

Settlement	Group	Research Activity Sample Size		
		No. of Surveys Conducted	Focus Group Discussion (No. of Participants/Site)	Key Informant Interviews (No. of Individual Interviews)
Agbogbloshie/Old Fadama	Control Group	109	15	
Adjen Kotoku	Treatment Group	114	30	4
Total Across Research Sites		223	45	4

My primary contact in Accra was Ms. Sylvia Nyarko, a graduate of Urban Planning from Kwame Nkrumah University of Science and Technology (KNUST). Because of KNUST's rich history of graduating excellent planners, their alumni hold key positions in municipalities across the city of Accra, and Ms. Nyarko was able to use the alumni network to facilitate introductions for key informant interviews. Through this network of planners, we were able to identify and contact local community leaders within the research sites to assist with in-person survey activities and help with organizing and facilitating focus group discussions. Due to the majority Muslim population at Adjen Kotoku, the treatment group for this study, we organized two focus groups separated by gender. The focus group discussions served as a platform to listen to the experiences of residents living in urban informality (control group) and those relocated to formal housing (treatment group), while the key informant interviews provided insight into the decision-making process.

The chapter is organized according to the research questions raised in Chapter 1, section 1.5. Each research question is addressed by analyzing the quantitative data which is immediately followed with a qualitative analysis for context. The quantitative findings are based on the results from the survey (**Appendix A**). The qualitative findings focus on the narratives of the residents from the focus group discussions (**Appendix B**) and the interviews with municipal officials (**Appendix C**). The qualitative findings serve to provide context for the quantitative findings, and together with the key informant interviews, triangulate the research results for credibility.

6.2 Results for Research Question 1

Figure 6.1: Map showing the area occupied by Agbogbloshie/Old Fadama in Accra, Ghana. Image by author using Google.

The first research question asks about the influence of social networks on the spatial organization of informal settlements. Section 2.2 of the dissertation describes social networks using an egocentric model. The egocentric social network model refers to every individual as the

central node of their own social network. Connections to other people within their social network are referred to as 'ties' (see **Figure 2.1**).

Figure 6.2: Map showing the area occupied by Adjen Kotoku within the residential neighborhood in Accra, Ghana. Image by author using Google.

The control group living in Agbogbloshie/Old Fadama (**Figure 6.1**) is a self-organized informal settlement. Meanwhile, the treatment group lives in Adjen Kotoku (**Figure 6.2**), a state-built formal market in a suburban residential neighborhood. The hypothesis is that because the control group is largely self-organized while the formal housing is state-regulated zoning, the strength of social networks may play a larger role in where people choose to settle and their livelihood activities within the control group, and therefore have some influence on the spatial organization of the informal settlement.

6.2.1 Quantitative Analysis: Social Networks and Spatial Organization

To test the theory of how social networks might influence the spatial organization of a settlement, I first explored the demographic differences between the control and treatment groups

with a hypothesis that there would be no significant differences between them using a logistic regression model. The following independent variables were selected for the logistic regression model: gender, household size, and city of origin. These variables represent the close-ended questions on the survey (**Appendix A**) designed to gather general demographic information. As the research question is to determine the difference between the control and treatment groups, settlement location was selected as the dependent variable.

Table 6.3: Logistic regression model - Demographic differences between control and treatment groups in Accra based on settlement location.

	Dependent variable:
	Settlement
Gender_male	0.340
	(0.322)
Household size	1.051***
	(0.057)
Origin_Same city	0.387
	(0.313)
Constant	1.409***
	(0.330)
Observations	220
Log Likelihood	-141.014
Akaike Inf. Crit.	290.029

Note: *p<0.1; **p<0.05; ***p<0.01

The logistic regression model in **Table 6.3** explores the relationship between demographic characteristics and settlements. The regression results indicate that males are 66% less likely to live in Agbogbloshie compared to females. A statistically significant revelation is that larger households are more likely to live in Agbogbloshie, which is the informal settlement, than Adjen Kotoku. According to the regression model in **Table 6.3**, for each additional household member, families are 5.1% more likely to live in Agbogbloshie compared to Adjen Kotoku. The regression

model in **Table 6.3** also explores the relationship between each settlement (dependent variable) and the residents' place of origin (independent variable). Respondents from the 'same city' were 61.3% less likely to live in Agbogbloshie compared to respondents who migrated from a different city or country. While the relationship between settlement and place of origin suggests a preference for where different demographics prefer to live. In summary, **Table 6.3** indicates that household size is a significant predictor of the preference to live in informal settlement or state-provided accommodation which supports the alternative hypothesis. The model also suggests that residents who are originally from Accra would also prefer to live in state-provided housing.

Looking closely at the results from **Table 6.3**, the relationship between the dependent variable (settlement location) and the independent variable (origin_same city) suggests that the longer a person experiencing extreme poverty migrates from a place of origin to Accra, the more likely they are to end up in an informal settlement, which in this case is Agbogbloshie. Meanwhile, local residents with possibly established networks appear to prefer living in Adjen Kotoku, which is a state-provided formal market nestled within a suburban residential neighborhood (**Figure 6.2**).

Another important aspect of understanding how social networks might influence where a person decides to live within a settlement is exploring how residents find their accommodations. To test this hypothesis, a multinomial logistic regression was used to explore if there is a statistically significant relationship between how residents found their housing and their demographic characteristics. In this instance, survey participants were asked how they found their current place of residence. The responses were placed into the following three categories; found the location through a friendship network, through government placement, or by themselves with

no assistance. Secondly, using the demographic characteristics from **Table 6.3**, a multinomial logistic regression was used to explore the relationship between these demographic characteristics and how respondents found their place of residence. A multinomial regression was preferable because the dependent variable(s) had more than two unique values.

Table 6.4: Multinomial logistic regression - Demographic characteristics and housing location between control and treatment groups in Accra, Ghana.

	Dependent variable:		
	Friend	Government	Self
	(1)	(2)	(3)
Gender_Male	1.556***	0.726	0.817***
	(0.462)	(0.700)	(0.414)
Agbogbloshie	1.120***	0.000	0.633***
	(0.401)	(120.120)	(0.372)
Household size	1.030***	0.872***	0.948***
	(0.073)	(1.120)	(0.072)
Origin_Same city	0.719*	16.372***	0.258
	(0.402)	(1.091)	(0.416)
Constant	0.849	0.154	3.912***
	(0.535)	(1.172)	(0.479)
Akaike Inf. Crit.	511.534	511.534	511.534

Note: *p<0.1; **p<0.05; ***p<0.01

According to the multinomial regression model in **Table 6.4**, males are 55.6% more likely to find housing through a friend than through a family member but are 19.3% less likely to find housing by themselves. These findings are statistically significant and suggest that there is a difference between genders regarding how residents find accommodations within a settlement, and thus supports the hypothesis that social networks may have an influence on where residents decide to live, which would in turn impact the built environment.

The regression model in **Table 6.4** also reveals that people living in Agbogbloshie, the informal settlement and control group for this study, are 12% more likely to find housing through friends than through family members. In contrast, Agbogbloshie residents are 26.4% less likely to find housing by themselves than through family, which strongly supports the alternative hypothesis on the influence of social networks as a determinant for where people decide to live in urban informality. It is important to note that the government does not support nor send anyone to live in Agbogbloshie, which is reflected in the regression model.

Table 6.4 also reveals that household size is a significant indicator of how people find housing. The regression results reveal that for each additional household member, respondents are 3.0% more likely to find housing through a friend than through family, and 12.2% less likely to find housing through government than through family, and almost as likely to find housing by themselves as they would through family. These findings are statistically significant according to the regression model and indicate that for larger households (with 5 or more people), social networks – friends and other family members – are critical to finding a place to live.

Lastly, **Table 6.4** indicates that people from the same city (Accra) are 16 times more likely to find housing through the government than those originating from a different city. In contrast, respondents from the same city (Accra) are 29.1% less likely to find housing through friends compared to respondents who come from cities outside of Accra. These findings support the regression model in **Table 6.4** which suggests that residents who originate from cities outside of Accra have a higher likelihood of settling in an informal settlement while people from Accra have a higher likelihood of settling in Adjen Kotoku with government assistance.

In summary, the findings of the regression models in **Table 6.3** and **Table 6.4** indicate that larger households are a statistically significant predictor of where residents decide to live, while **Table 6.4** reveals how these households find accommodation. Just as important is how demographics play a role in where and how residents decide to settle. Overall, these findings are important to dissect and understand their implications as it relates to the built environment of settlements. How people choose to live, where they choose to live, and the resources available to make a home, are critical to settlement formation and the built environment, and these findings indicate that there is a statistically significant relationship between some demographic characteristics and where people choose to settle and call home.

6.2.2 Qualitative Analysis: Social Networks and Spatial Organization

The first research question explores how informal settlements are formed, and whether social networks play a role in their spatial organization. As such, the focus group participants in the control group were asked to provide a brief history of the settlement and how they ended up in their current location. While Agbogbloshie began as a formal Ga settlement, it has gradually degenerated into an informal settlement surrounded by several informal residential and commercial developments (Boamah & Amoako, 2020, p. 7). The neighborhood is not just home to thousands of informal sector workers and site for e-waste recycling, but it is also noted for the popular *Agbogbloshie* Market where all major food products from farm produce are sold (Adusei et al., 2020; Afenah, 2012; Boamah & Amoako, 2020). One of the focus group participants in Agbogbloshie offered the following statement:

"There are many places like this [Agbogbloshie] in Accra. These are the places where poor people with nowhere to go end up. What makes this place different is that we have the market, which provides lots of opportunities for poor people. That is why many more people decide to come and live in Agbogbloshie."

One of the focus group participants in Agbogbloshie was a young man named Ben who is originally from a small village a few hours north of Accra. Ben mentioned how his cousin returned after a few years living in Agbogbloshie and told him about all the opportunities available in the big city for people "*willing to hustle*." Ben described life in the village as bleak because of the lack of work. The primary source of work in the villages was farming or tending to animals. There was also work in the diamond mines, but the conditions were dangerous, poorly compensated, and prone to gang violence over disputed territory. Ben, a young man in his mid-twenties with a background as a self-taught electrician, worked as a manual laborer for hire and barely scraped enough money to get by while helping to take care of his family in the village. When his cousin told him of the opportunities in Accra, he decided to save up enough money for the bus ticket to the big city to start an electrician business almost three years ago. While life in Agbogbloshie has been much more challenging than anticipated, Ben makes enough money as an electrician for many local businesses and homes in Agbogbloshie. He does whatever is needed to ensure that his clients have access to the electrical grid, even if somewhat illegally obtained. He has enough to eat and daily savings to pay his weekly rent for a room he shares with about five to seven other young men. The landlord's wife owns a small beauty shop in Agbogbloshie and employs a few women in her shop. Ben mentioned that there have been times when he uses his services to help out the landlord's wife instead of paying rent, especially on weeks when work is challenging to come by.

During my interview with Mr. Eden Gbeckor-Kove, the director of the physical planning department in Accra, he mentioned that stories like Ben's reflect poor urban and rural policy. Mr. Kove provided the example of the abandoned railroad in Accra, which Mr. Nii Teiko Tagoe supported in a separate interview. Mr. Tagoe is the executive director of the Ga Mashie Development Agency (GAMADA), a quasi-local government agency in Ghana responsible for the day-to-day implementation of approved development plans. Both men cited the lack of regional transportation policies as part of the reason for the proliferation of urban informality in Accra. The British colonial government implemented a regional train system in Ghana, with the tracks beginning in Accra and heading north towards Kumasi, another significant city north of Accra. Between 1910 and the 1950s, the regional train was used regularly by market traders who could leave the villages with their market wares, be in the city in an hour, work all day, and head back home in the evening. However, the train system was eventually abandoned due to declining

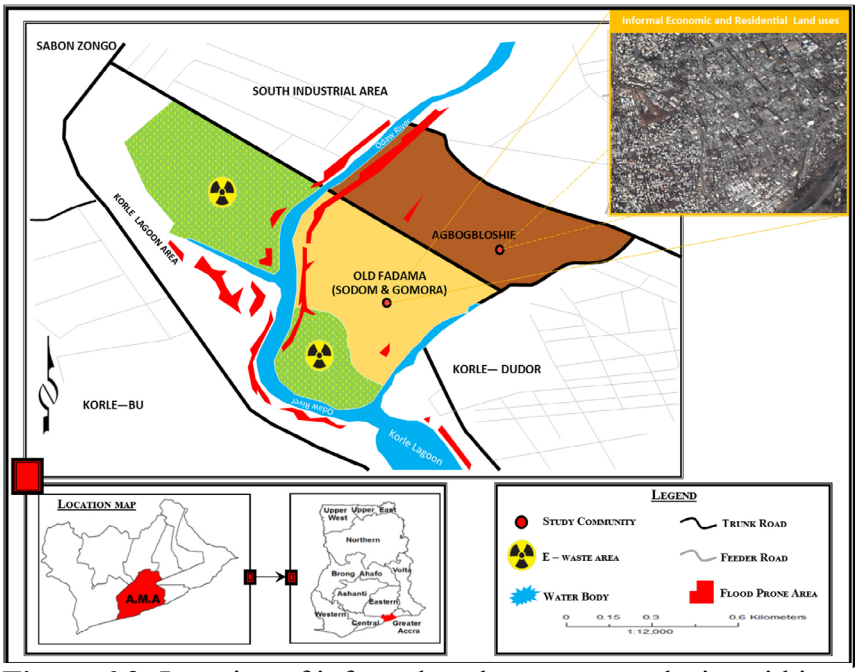


Figure 6.3: Location of informal settlement research site within Accra. Image from Amoako (2016, p.9)

maintenance after Ghana's independence in 1957 (Akwetteh et al., 2021; Andoh, 2018; I. M. Awal et al., 2021; Obeng et al., 2022).

As per some of the focus group participants at Agbogbloshie, a 1-hour journey into the city by train became a 4-hour adventure via inadequate road systems. As such, workers who would have been commuters decided to set up shacks in the city center and, when possible, return home to the villages on weekends, which was entirely dependent on earnings. Over time, these traders became permanent, and the settlements grew as more citizens made similar choices. According to Mr. Eden Gbeckor-Kove, if there was a reliable regional train system, workers like Ben would make a daily commute into the city for work and return home at the end of the day, and thus not have to live in urban informality. The compounded effect would be fewer people living in places like *Agbogbloshie*. According to both Mr. Gbeckor Kove and Mr. Tagoe, there have been discussions about restoring the regional train system. However, the argument against it has been twofold: (1) it is not an immediate area of concern, and (2) it would encourage more villagers to move to the city due to the ease of access via the train. However, few decision-makers see the restoration of the regional train as part of the solution for reducing urban informality, so the regional train system remains abandoned.

From an outsiders perspective, Agbogbloshie might appear to be a homogenous concentration of people experiencing extreme poverty, but further examination reveals very distinct ethnic clusters within the settlement (Agyei-Mensah & Owusu, 2012; Amoako, 2016). From the perspectives of the residents in the focus group, the settlement is unofficially organized by ethnic groups. In broad terms, the Ghana Statistical Service (GSS) following the Bureau of

Ghanaian Languages' ethnic classification categorizes the population of Ghana into four ethnic groups, namely Akan, Mole-Dagbani, Ewe and Ga-Dangme (Agyei-Mensah & Owusu, 2012, p. 141). Nationally, as of 2000, the Akans dominate and constituted about 49% of the total population, followed by Mole-Dagbon (16.5%), Ewe (12.7%), Ga-Dangme (8%) and the minority ethnic groups (13.7%) (ibid). The Akans can be found in large numbers in the Ashanti, Western, Eastern, Brong-Ahafo and Central Regions; the second largest ethnic group, Mole-Dagbon, is found in the three northern regions, namely Northern, Upper East and Upper West Regions and the Ewe are predominantly found in the Volta Region (see **Figure 6.3**) (Agyei-Mensah & Owusu, 2012, p. 7). The focus group participants at Agbogbloshie were very vocal about how ethnic various ethnic groups co-exist within the settlement. "*Once you cross a certain street, you know you are in a different part because the language changes*," said Nana Kwame, a 32-year-old male resident. Ethnic divisions in Agbogbloshie, according to some of the participants, is not necessarily a bad thing. "*It just lets you know where your people are,"* one participant offered, while another chimed in, "*When a new person arrives at the bus station, you know where to send them for help*." Knowing where to send a new arrival is exactly what happened to Esther.

Esther is a 19-year-old who arrived in *Agbogbloshie* about three months prior to my focus group discussion. Esther told her parents she was going to fetch water from the well. However, Esther had been saving for months to pay for a one-way bus ticket to Accra. Like Ben, she heard stories of possibilities for work and education in Accra and wanted a better life. Esther planned to go to school – as public education is free in Ghana, but her village lacked the resources to maintain a school – and study to become a nurse. Upon arriving at the central bus stop in Accra, Esther had nowhere to go, no money for food, and nowhere to sleep. The current practice appears that new

arrivals with nowhere to sleep are welcome to stay in the mosque or church until they can find accommodations. Grace, a market woman, noticed Esther and recognized that look. Grace had been in a similar situation about a decade ago, and another market woman had taken care of her. Grace brought Esther to her tomato stand and after speaking with her, realized they were from the same northern region in Ghana, but from different villages. Grace fed Esther and gave her a place to sleep in her shared room with six other women. There have been other instances where Grace would have sent a new arrival to a different part of the settlement depending on the person's place of origin. These stories provide qualitative context to the quantitative findings of the logistic regression models in **Table 6.3** and **Table 6.4** which suggests that people experiencing poverty who migrate to Accra are more likely to end up in an informal settlement and be heavily dependent on a social network to find accommodations. As more migrants arrive and settle among their social networks, the settlement continues to evolve, and in a very tangible way, transform its built environment, in part because of social networks.

6.3 Results for Research Question 2

The second research question explores how the spatial organization of settlements – both formal and informal – impacts the livelihood activities of their residents. To better understand how the built environment influences livelihoods, residents at both research sites were surveyed about their income generating activities status (**Table 6.5**).

Table 6.5: Income Generating Activities of Survey Respondents at Research Sites in Accra, Ghana.

Research Site	No. of Income generating activity Residents	No. of Unincome generating activity Residents	Total
Agbogbloshie (Control Group)	109	0	109
Adjen Kotoku (Treatment Group)	113	0	113
Total	222	0	222

The hypothesis is that if the spatial organization of a settlement location does not impact the livelihood activities of its residents, then there should be no significant difference of income generating activities status between the control and treatment groups. Alternatively, a statistically significant difference would indicate that the spatial organization of a settlement does have some impact on the livelihood activities of its residents.

6.3.1 Quantitative Analysis: Spatial Organization and Livelihood Activities

Normally, a logistic regression model would be used to explore the relationship between settlement location and income generating activities status. However, because all respondents at both locations are income generating activity, there is no variability in the responses. Variability in the responses, meaning the difference between income generating activities and those with no income generating activities, is critical to fitting any regression model. Without variability, it is not feasible to fit a statistical model.

Essentially, the regression model would not be able to establish any relationship between the independent variables such as ‘strength of social network’, ‘how long a resident has lived in a settlement’, ‘having people to depend on daily’, ‘commuting distance’, and ‘settlement location’

and the dependent variable, 'income generating activities'. In this instance where all residents have income generating activities, we have to accept the hypothesis that the spatial organization of a settlement location does not impact the livelihood activities of its residents.

6.3.2 Qualitative Analysis: Spatial Organization and Livelihood Activities

The second research question explores how the spatial organization of settlements for both the control and treatment groups impact the livelihood activities of residents. While the built environment of the control group living in Agbogbloshie which is an informal settlement is vastly different from the treatment group relocated to Adjen Kotoku which is a formal residential suburban neighborhood, all survey respondents indicated that they had access to income generating activities. The income generating activity phenomenon is because most, if not all, residents living in Agbogbloshie find a way to participate in some form of commerce related to the market or the adjacent electronic waste dump sites. And when the decision was made to relocate residents to Adjen Kotoku, it was a targeted effort at a specific trade – onion sellers – being relocated to a newly built state sponsored market because of their livelihood activities.

The decision to relocate the onion sellers from Agbogbloshie was the result of decongestion policies. In my interview with Mr. Eden Gbeckor-Kove, the director of the Physical Planning Department in Accra, he agonized over the fact that planning in the city – and perhaps the country – is always politically driven. "*Elected officials tend to make decisions, have their subordinates implement them, then come to my department after the fact to fix their mess*," Mr. Gbeckor-Kove lamented. Multiple administrations have pursued the decongestion of Agbogbloshie with policies such as the National Urban Policy Framework (NUFP) and Action Plan, 2012; National Housing

Policy (NHP), 2015; National Spatial Development Framework (NSDF), 2015-2035; and other related national-level policies strongly recommending the urban renewal of informal settlements (Crentsil & Owusu, 2018, p. 214). After years of planning, the site of Adjen Kotoku was suggested by Mr. Nii Teiko Tagoe, the executive director of the Ga Mashie Development Agency (GAMADA), due to its remote location from the city center. From June 2008 to November 2011, the government worked to build new market stalls and storage facilities to accommodate residents identified for relocation from Agbogbloshie to Adjen Kotoku.

The new site remained unoccupied until the current administration decided to implement the decongestion policy, initiated by Mr. Henry Quartey, the Minister for the Greater Accra Region, and set a date for Thursday, July 1, 2021, as the relocation date(Arhinful, 2021; M. Awal, 2021). According to Mr. Quartey, the decongestion exercise was part of the *'Let's Make Accra Work'* campaign to improve conditions in the national capital(Arhinful, 2021). The original plan was to relocate some residents occupying a segment of the settlement, regardless of livelihood. However, after some deliberations, the municipality relocated only the onion sellers. According to Mr. Tagoe from GAMADA, the onion sellers made the most sense because they get their shipments from Niger, which is northwest of Ghana and separated by Burkina Faso. The delivery trucks come north of the city through Adjen Kotoku before unloading the onions in Agbogbloshie and creating much congestion along the way. Therefore, by ending the delivery route outside of the city, not only would the city be decongesting Agbogbloshie from residents, but there would also be less traffic.

Despite the appearance of careful and advanced planning, participants in the focus group discussions at both Agbogbloshie and Adjen Kotoku describe a different experience. As per a current resident in Agbogbloshie named Abdul:

> *"...there was a lot of chaos. I mean, demolishing that place [Agbogbloshie]. And the way they did it was, some of them [the informal settlement residents] were not informed. The soldiers arrived in the morning, surrounded the whole place, and started scuttling the shacks in the settlement. Nobody could collect their things."*

After the chaos, residents self-organized, found transportation and relocated to Adjen Kotoku. Upon arrival, leaders in the community allocated stalls to the sellers. The new market at Adjen Kotoku did not provide housing for the newly displaced residents, which meant everyone had to find accommodation. A few found rooms to rent in the area, while most commuted long distances, including from Agbogbloshie, where they stayed with friends. The decongestion policy may have been well-intended, but by all accounts, it was poorly executed and continues to affect the displaced residents adversely.

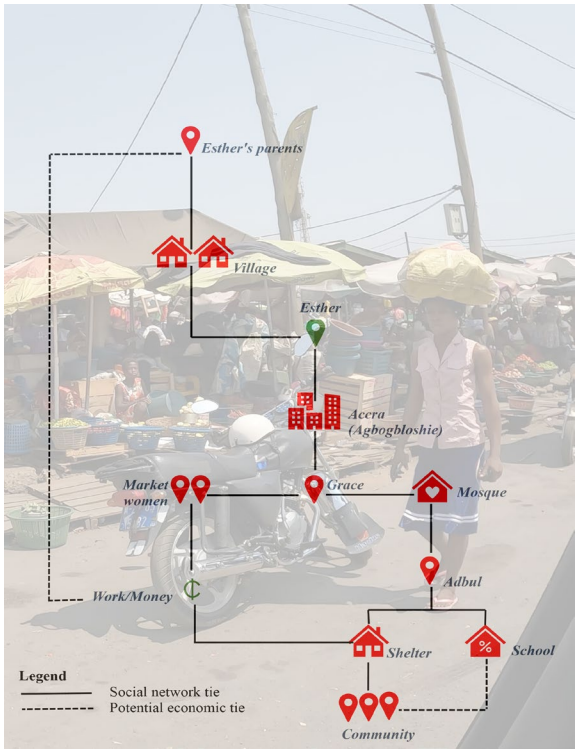


Figure 6.4: Egocentric social network map for Esther.

Despite the hardships associated with living in urban informality, the ability to depend on social networks in various forms has been a saving grace according to the focus group participants at Agbogbloshie, the control group for this study. For

example, since arriving in Agbogbloshie just a few months ago, Esther's current social network consists of Grace, the market women who helped her establish a livelihood, and Abdul, who acts as a guardian. While Grace initially provided a place of refuge for Esther, the introduction to Abdul at the mosque led to Esther finding her current shelter. The women in Esther's shelter have introduced her to a broader community, which continues to broaden Esther's current social network. As indicated in the egocentric social network map in **Figure 6.4**, Esther has the potential to positively affect her social network ties in her village through financial support from her earnings. At the same time, the community can provide potential economic support for Esther's education. The potential to grow her social network is essential for Esther because of the challenging financial realities of living in Agbogbloshie. According to Esther, people living in Agbogbloshie with livelihoods like hers earn about ₵10 Ghana cedis (approximately $1) on a good day. Outlined below is Esther's typical daily budget:

- ₵2 – morning shower.
- ₵1 – toilet use.
- ₵0.50 – a daily tax for selling goods in Agbogbloshie.
- ₵3 – a very basic lunch and possibly her only meal of the day.

This budget means that if all goes well, Esther should make a minimum of ₵6.50/day to cover her living expenses outside of rent. Beyond her expenses, Esther has to pay Grace and another market woman their share, and at the end of the day, she ends up with ₵1 if she is lucky. Weekly rent in Agbogbloshie ranges from ₵20 - ₵100 per week, depending on the accommodations. The lack of financial independence is where social networks are most critical for people like Esther, who will never make enough in her current job to afford any rent on her

own. Together with nine other women, they rent a small shack, and each contributes as much as possible to make the rent due every Saturday evening. In the opinions of everyone I spoke with, this is the most challenging part of living in Agbogbloshie because it makes desperate people do desperate things. On any given day, one will likely find their room ransacked because someone was looking for something valuable to sell to make ends meet. Everyone seems to understand that they are in it together but will do whatever they need to survive.

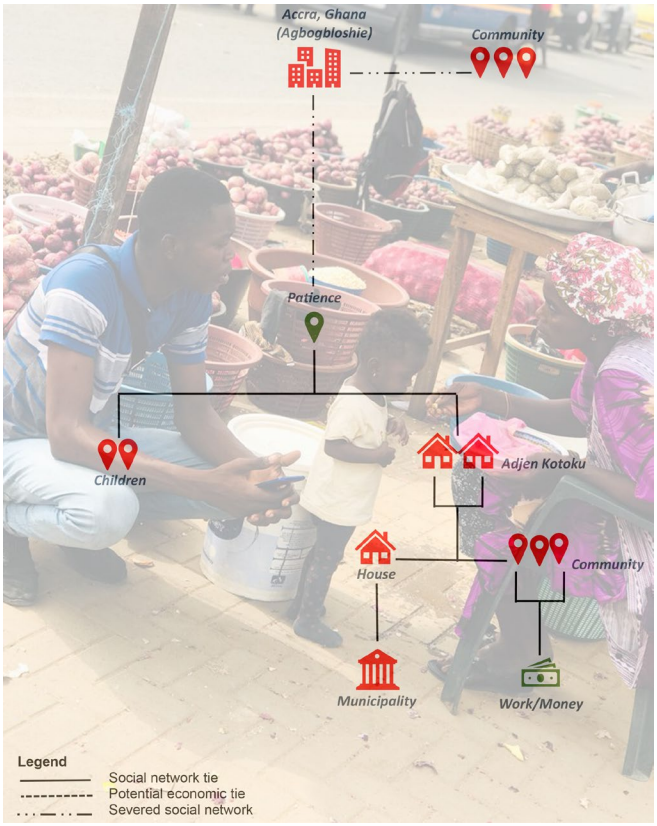


Figure 6.5: Egocentric social network map for Patience.

Meanwhile, at Adjen Kotoku, the community support is just as strong. The strength of the Adjen Kotoku community is partly because the relocated residents were all in the same trade (onion sellers) and had already built strong relationships with each other while at Agbogbloshie. The residents talked about how they watched each other's children during the workday and had people they could depend on within walking distance in the community. However, the challenging working conditions and competition for clients at Adjen Kotoku may have strained a previously close-knit community. In addition, the distance of the relocation and the severed ties to their social networks, which remain at Agbogbloshie, has become another burden. Patience, a 38-year-old mother of two young children, described her transition from

Agbogbloshie to Adjen Kotoku as challenging. At Agbogbloshie, Patience had people around her shack who cared for her children (and other children from the neighborhood) while the mothers worked at the market. At Adjen Kotoku, Patience has to take her children to work in conditions that are not very safe because of her reduced social network. As an example of unsafe working conditions, when a car slows down or pulls up, any onion seller within proximity rushes to the car for a potential sale. This requires much shoving, pushing, and yelling out prices while the children are left unattended beside a busy road. There is no protective barrier between the paved road with high-speed traffic and the dirt sidewalk where the women sit to sell onions. The lack of protection has resulted in deadly accidents involving children playing next to the road without adult supervision. According to Patience, all the competition for sales has strained friendships. *"It is complicated to push someone to try and make a sale, pretend nothing happened, and continue to be friends."* According to Patience and other focus group participants at Adjen Kotoku, the transition from Agbogbloshie has affected their social networks (see **Figure 6.5**). There is an overreliance on the municipality to provide basic services at Adjen Kotoku, which is not necessarily a bad thing, according to Patience, if the municipality was more responsive and prioritized the needs of people living in poverty at Adjen Kotoku. Patience reiterated by saying, "*We took care of each other at Agbogbloshie and now we expect the government to take care of us here. That part has not gone so well*."

6.4 Results for Research Question 3

The final research question seeks to understand how social networks and livelihood activities are impacted by the relocation of informal settlement residents (control group) to formal housing (treatment group). The initial inquiry asked survey respondents at both research sites about

the strength of their social network ties. The hypothesis is that relocation might disrupt existing social networks and livelihood activities for residents who are relocated from Agbogbloshie (control group) to Adjen Kotoku (treatment group).

6.4.1 Quantitative Analysis: Impact of Relocation on Social Networks and Livelihoods

The survey responses to the question regarding the social network ties of residents living in Agbogbloshie (control group) and Adjen Kotoku (treatment group) were coded into '0' (weak social network ties) and '1' (strong social network ties). The logistic regression model in **Table 6.6** uses 'social network' as the dependent variable and controls for the confounding variable 'length of stay.' The confounding variable was selected because it is highly likely that residents may have stronger social network connections based on how long they have been living in a location.

Table 6.6: Logistic regression model reflecting the impact of relocation on the social networks of residents at the research sites in Accra, Ghana.

	Dependent variable:
	Social network
Settlement – Adjen Kotoku	0.731*
	(0.385)
Length of stay	0.984***
	(0.026)
Constant	3.560***
	(0.411)
Observations	219
Log Likelihood	-128.248
Akaike Inf. Crit.	262.496

Note: *p<0.1; **p<0.05; ***p<0.01

After controlling for 'length of stay', the logistic regression model in **Table 6.6** indicates that the residents who have been relocated from Agbogbloshie (the informal settlement and

market) to Adjen Kotoku (the formal market and residential neighborhood) are approximately 26.9% less likely to have a strong social network. A statistically significant finding. Furthermore, for each additional year of living in Adjen Kotoku, residents are 1.6% less likely to form a strong social network, which is another statistically significant finding.

The second aspect of relocation is its impact on the livelihoods of residents. In this research, livelihood activities were determined by how residents responded to questions related to income generating activities status, the strength of social networks, and whether they have people they depend on daily to be productive. However, because all respondents at both research sites had income generating activities, 'having a job' was not included as a dependent variable in the following regression in **Table 6.7**. The strength of social networks and having people to depend on are the dependent variables, and the settlement location (control and treatment group) is the independent variable.

Table 6.7: Logistic regression model reflecting the impact of relocation on the livelihood activities of residents at the research sites in Accra, Ghana.

	Dependent variable:	
	Social Network	Depend On
	(1)	(2)
Relocated	0.875***	1.514***
	(0.303)	(0.282)
Constant	2.893***	0.453***
	(0.219)	(0.207)
Observations	222	222
Log Likelihood	-129.446	-144.012
Akaike Inf. Crit.	262.891	292.024

Note: *p<0.1; **p<0.05; ***p<0.01

According to the regression model in **Table 6.7**, relocated residents to Adjen Kotoku who constitute the treatment group in this study are 12.5% less likely to develop strong social networks.

However, this same group of relocated residents were 51.4% more likely to have someone to depend on daily.

In summary, relocation from Agbogbloshie (the control group) to Adjen Kotoku (the treatment group) appears to have a negative impact on social networks. Despite the negative impacts, all respondents continue to have income generating activities, primarily because the focus of the relocation was on livelihoods as opposed to only housing.

6.4.2 Qualitative Analysis: Impact of Relocation on Social Networks and Livelihoods

The final research question seeks to understand how social networks and livelihood activities are impacted by the relocation of informal settlement residents to formal housing. Exploration of this question began with survey participants responding to their level of satisfaction in their current living conditions (**Table 6.8**). The rationale is that with all things being equal there should be no significant difference between the two groups regarding their level of satisfaction. However, if the relocation has been a positive experience, the level of satisfaction from the control group should exceed the level of satisfaction among the treatment group. Conversely, if relocation has had a negative impact, then the level of satisfaction among the control group should exceed the level of satisfaction from the treatment group.

Table 6.8: Level of satisfaction with current living conditions between the control and treatment group in Accra, Ghana.

Location	Satisfied with current living conditions	Not satisfied with current living conditions
Agbogbloshie (Control Group)	79 (72%)	30 (28%)
Adjen Kotoku (Treatment Group)	62 (55%)	51 (45%)

Note: Numbers represent raw counts of survey respondents. Percentages are in brackets.

According to **Table 6.8**, the majority of respondents at both research sites are relatively satisfied with their current living conditions. However, it appears that the residents in the control group which is an informal settlement are far more satisfied with their living conditions than the residents living in the treatment group.

To understand the context of these findings, the focus group participants in both control and treatment groups were asked to expand on the benefits of living in their current location, and to also discuss the challenges. Beginning with the benefits, residents in the informal settlement control group cited the Agbogbloshie market as a major benefit. The market occupies both sides of the only well paved road that divides the settlement. It is crowded with pedestrians and vehicular traffic in what can only be described as organized chaos (**Figure 6.6**). It is vibrant with human activity engaged in all kinds of commerce from selling everyday food items to electronic spare parts and everything in between.

Figure 6.6: Aerial and ground level views of Agbogloshie Market. Images by author.

According to residents at Agbogbloshie, there is a social infrastructure built around the market. There are truck drivers who deliver goods to the market from nearby villages and farms. There are laborers who unload the goods from the trucks at the main transportation hub onto smaller vehicles, and sometimes on motorcycles. These smaller vehicles deliver goods to the stalls for sale. Most of the stalls are run by women while the men do the manual labor. In certain instances, there are men waiting to help load large orders into waiting cars for customers. These men work for tips and are not compensated by the women working in the stalls. However, one of the young men in the focus group mentioned that when a customer does not tip, the market women notice, and at the end of the day, the market women compensate the young men with free meals. There are daycare facilities and schools within the informal settlement and a hospital and multiple banks within walking distance. The banks are great for the small community members who create savings groups, according to one of the women in the focus group. "We really have everything that we need right here. "*I have lived here over 25 years and never have to go anywhere else in Accra to get what I need*," said an elderly woman in the focus group.

There is a similar social infrastructure at Adjen Kotoku as well. However, most of the benefits that the focus groups mentioned were about the physical infrastructure. The residents

relocated to Adjen Kotoku were mostly Muslims who migrated to Accra from the northern region of Ghana. Because of their religious affiliation, they organized two focus groups separated by gender. The focus group of women were quite pleased with the formal market and having structured places to keep their goods. The men liked the paved roads, sturdy structures, and efficient sewage system. "*At Agbogbloshie, a day of rain could mean that we cannot work because of the floods. Here [at Adjen Kotoku], we can work, rain or shine, and that means more earnings for us*," said one of the men in the focus group discussion. Both focus groups at Adjen Kotoku also liked their housing accommodations. While the government did not build any housing for the relocated workers, the community at Adjen Kotoku provided places for the workers to rent, and so far, this has been a good arrangement.

The downside to being relocated to Adjen Kotoku, according to both focus groups, has been the severed connection to Agbogbloshie. The relocated residents do not understand why they were specifically selected. One of the onion sellers voiced her complaint:

"*We do not understand why they [the Ghanaian government] decided to remove just the onion sellers from Agbogbloshie market. A market needs different people to work, but here, as far as the eye can see, everyone is selling onions. This cannot work!*", 38-year-old female onion seller at Adjen Kotoku.

Most of the residents interviewed at Adjen Kotoku agreed with the above statement. The decision to relocate a specific segment of residents from Agbogbloshie to Adjen Kotoku is highly questionable because the decongestion policy focused solely on onion sellers. The specific decision to remove the onion sellers from Agbogbloshie was made by the executive director of the

Ga Mashie Development Agency (GAMADA). The logic behind the decision was because of trade routes from the northern region of Ghana into the city according to the director who made the decision during my interview. As per the director of GAMADA, the onion sellers were primarily from the northern region of Ghana with connections Niger, a country located to the northeast of Ghana. Niger is where the onions originate from. The onions are brought into the city via the northern route on large 18-wheeler trucks, often creating traffic congestion in the CBD, especially in the market, as the trucks try to find parking spaces and need time to unload the onions. These conditions add to the crowded nature of the market. However, while Agbogbloshie is dense and overcrowded, this is great for the functioning of the market according to the residents in the focus group discussions. Stalled traffic means that people carrying items for sale could walk up to cars and efficiently conduct transactions with many people. The stalled traffic also means that drivers and passengers would impulse shop from various available goods in Agbogbloshie. All these conditions make market work in Agbogbloshie reasonably lucrative for the residents, which keeps food prices low, and everyone benefits from this arrangement.

"*At Agbogbloshie, we could sell 5 bags of onions in a day. It takes us about a week to sell a single bag here [at Adjen Kotoku],"* 31-year old male onion seller.

"*To come here [Adjen Kotoku] from Accra, you have to take a bus and make about 3 to 4 transfers, and about 2 hours before you arrive here. We have lost a lot of customers because of this,"* 46-year old male onion seller at Adjen Kotoku.

Residents interviewed at Agbogbloshie and Adjen Kotoku expressed similar frustrations with relocating just the onion sellers. At Adjen Kotoku, the social networks that residents had

cemented for decades with their fellow market sellers at Agbogbloshie have been severed, and the consequences have impacted a large part of the country. In the egocentric social network model, the first tie to be broken was the connection between the onion sellers and other produce sellers, specifically tomatoes, yams, and oil. Tomatoes, onions, and oil are the base for most Ghanaian stews and soups, while yams and plantains are often the primary starch according to the residents I interviewed. By severing the ties between those nodes, customers now lose access to one of the primary ingredients for making daily meals and thus will choose to go to other markets where all those ingredients will be available. The severing of the social network tie between sellers has affected the economy at both markets, although the impact at Adjen Kotoku has been more severe according to the focus groups.

By relocating the onion sellers to the periphery of the city limits, former customers are no longer incentivized to make the journey simply for a singular product. Some customers have chosen to use a different market altogether, thus abandoning Agbogbloshie altogether. The loss of customers has led to a decline in profitability and the viability of the onion market at Adjen Kotoku. The residents at Adjen Kotoku have had to raise the price of the onions by 50% - 75% to make up for the loss in earnings and to keep their market viable according to the residents I spoke with. The price increase has affected everything from households to restaurants to the villages in the northern part of the country, where the onion sellers would send some of their income to support family members.

An interview with the director of planning for the region included a review of current plans by the government to improve conditions at Adjen Kotoku (**Figure 6.7**). The planned proposal

includes expanding the market and bringing more onion sellers from other markets to 'decongest the city' and provide housing units for all the sellers (**Figure 6.7**). When this issue was raised at a focus group session at Adjen Kotoku, the residents expressed their disapproval rather loudly and very animatedly. One focus group participant exclaimed:

"We do not need housing! We need our social networks!"

Another chimed, *"We have lived here for three years and figured out our housing. We do not need help with housing. We need the tomatoes, yams, and oil people with us, or send us back!"*

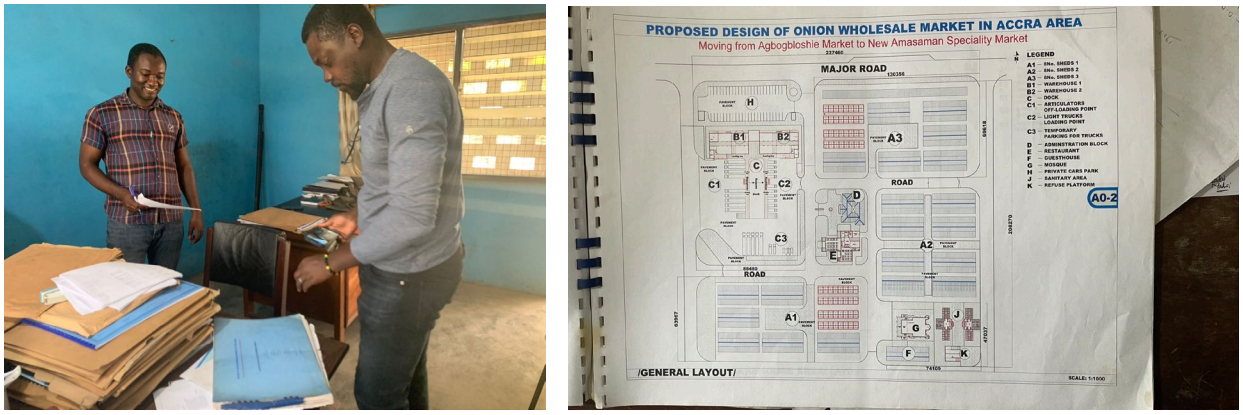


Figure 6.7: Meeting with the regional planning director to review current and future plans for Adjen Kotoku.

In fact, according to the residents, a few of them have already returned to Adjen Kotoku to clandestinely sell their onions, playing a game of 'cat and mouse' with officials. Moreover, according to the residents at Adjen Kotoku, if government officials do not listen, they will either follow suit and return to Agbogbloshie to be reunited with their social networks or abandon the onion trade altogether and find a different trade in a different location and build new networks. The consensus of the focus groups is that their relocation to Adjen Kotoku has yet to be successful.

6.5 Summary of Findings for Ghana

From these findings, it is evident that the residents of Agbogbloshie, an informal settlement, are heavily reliant on their social networks, and that when some of the residents were relocated to Adjen Kotoku because of their livelihood activities, they have become disconnected from previously cemented social networks and their livelihoods have been negatively impacted. The quantitative findings indicate that the choices residents of Agbogbloshie – the control group for this study – make regarding where to move and settle are greatly influenced by their social networks. According to **Table 6.3** in section 6.2.1, people who come from long distances to Accra have a high likelihood of ending up in an informal settlement like Agbogbloshie, and based on their ethnic group, are very likely to end up in a specific neighborhood within the informal settlement. These findings are supported by the narratives of Ben and Esther. Both narratives indicate how social networks play a critical role in the daily lives of informal settlement residents, and how the built environment of the settlement supports their livelihood activities.

The findings also support the strong relationship between the spatial organization settlements and livelihood activities. While both control and treatment group residents are all income generating activity, the narratives show that the built environment of the control group (see

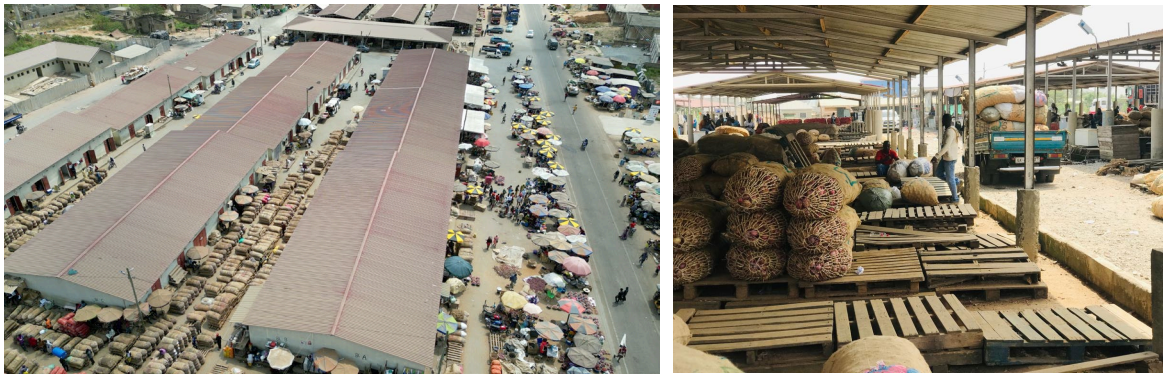


Figure 6.8: Aerial and ground level views of the formal market at Adjen Kotoku. Images by author.

Figure 6.6) is far more conducive to the livelihood activities of its residents than the built environment of the treatment group (**Figure 6.8**). The relocation to the outskirts of the city center has proven to have a negative effect on the livelihood activities of the residents.

First, relocating everyone who sells the same product – onions in this case – has proven to be shortsighted, according to the residents. It has created unhealthy competition between the residents and frayed what were relatively strong social network ties. These frayed social network ties are expressed in the logistic regression model in **Table 6.6** and **Table 6.7**. **Table 6.6** goes on to further suggest that for every year residents remain at Adjen Kotoku, they have a 1.6% chance of decreasing the strength of their social network ties. This particular finding is concerning, especially when it is supported by the residents who indicated that if things stay the same, Adjen Kotoku will cease to exist in three to five years.

Overall, the findings show that while life in the informal settlement remains challenging, it offers a lot of benefits that have yet to be replicated for the relocated residents. On its surface, a majority of relocated residents appear to be satisfied with their current living conditions, but that comes with a caveat. While they like being in a formal market with working infrastructure, if things do not change – such as diversifying the market, providing social services, and being reconnected with their social networks – the relocated residents will abandon their current living arrangements and either return to the informal settlement or find new livelihood activities elsewhere. This is a conclusion that the decision-makers in Accra need to pay very close attention to.

Chapter 7 Summary, Conclusion, and Recommendations

7.1 Summary of Key Findings

The study aims to understand how the spatial organization of informal settlements and formal housing designed for people living in extreme poverty are intricately linked to the strength of their social networks which in turn impacts the livelihood activities residents. To study this issue, my research looks at the overdependence of people experiencing extreme poverty on their social networks and how a change to these networks may play a role in their adjustment to relocation. This research does so by asking three critical questions with the following findings, which I consider part of my research's contributions to knowledge in urban informality.

7.1.1 Summary of Key Findings – Research Question 1

The first research question explores the influence of social networks on the spatial organization of informal settlements. Quantitatively, logistic regression models in **Table 4.3** (section 4.2.1), **Table 5.3** (section 5.2.1), and **Table 6.3** (section 6.2.1) suggest that people experiencing poverty who migrate to major urban areas have a high likelihood of living in an informal settlement across the research sites. Scholars have long considered rural-to-urban migration as a critical contributing factor to the proliferation of urban informality (Boamah & Amoako, 2020; Fox & Goodfellow, 2016; Huchzermeyer & Karam, 2007; Roy, 2012), and the logistic regression models in this study supports this assertion. Furthermore, the narratives across the research sites provide rich detail and context to indicate that various social networks play a

crucial role in determining where people experiencing poverty choose to live in an informal settlement. From South Africa, Kenya, and Ghana, the study maps the narratives of Lungelo, Frederick, and Esther respectively to show the variety of ways in which social networks influence where and how people end up in an informal settlement.

When a rural-to-urban migrant arrives in their selected city, **Table 4.4** (section 4.2.1), **Table 5.4** (section 5.2.1), and **Table 6.4** (section 6.2.1) provide further quantitative information regarding the specific networks that aid migrants to find shelter within a given informal settlement. For example, across all the countries, no migrant uses government services to find shelter in an informal settlement. Also, migrants who travel long distances often rely on friends and family members to find shelter within an informal settlement. On the other hand, residents who are originally from the same city as the settlement location appear to have no issues with finding shelter by themselves. This self-reliance can be attributed to their existing social networks in surrounding neighborhoods and the proximity of the informal settlement to their previous place of residence. For example, in Johannesburg, the informal settlement of Setswetla (the control group for this study) is adjacent – and within walking distance – to Alexandra Township (**Figure 4.1**), where some current residents of Setswetla moved from. In Accra and Nairobi, there are several low-income areas around the city in proximity to the respective informal settlements. The proximity allows residents who are struggling financially to relocate to an informal settlement when things such as rent become too expensive and displaces people.

As various social network mechanisms orchestrate how migrants arrive and where they decide to live within an informal settlement, a variety of ownership models also impacts the built

environment. According to the residents I interviewed at all the research sites, new arrivals to an informal settlement are most likely going to rent from established settlers until such a time when they can afford to own themselves.

Table 7.1: Percentage of owners and renters in the study areas.

	Johannesburg, South Africa		**Nairobi, Kenya**		**Accra, Ghana**	
	Setswetla (control)	Far East Bank (treatment)	Silanga (control)	Canaan Estates (treatment)	Agbogbloshie (control)	Adjen Kotoku (treatment)
Own	81%	67%	16%	52%	37%	37%
Rent	19%	33%	84%	48%	63%	63%

Table 7.1 is very significant with respect to how social networks impact the built environment of informal settlements. Specifically, a higher percentage of renters in an informal settlement usually means that a small number of people control much of the building stock within that settlement. Jeffrey Paller (2015, p. 32) refers to this approach as 'nonstate providers' or NSPs, whereby people motivated by informal norms and incentives are able to govern the provision of housing for urban residents in informal settlements. The NSP model is especially true of Nairobi and Accra where 84% and 63% of the informal settlement residents are renters respectively. A landowner is able to build multiple shelters that maximize their given plot, thereby affecting the built environment in certain areas.

Additionally, **Table 7.1** reveals a rental phenomenon in formal housing that theoretically should not exist according to legislation (Corder, 1997; *KENSUP*, 2013). In Nairobi and Johannesburg, their relocation programs are centered around an ownership model. For example, residents of the Canaan Estates formal housing in Nairobi are not eligible to rent their units until

the mortgage has been completely paid off, or they have resided in the apartment for 10 years, whichever comes first (*KENSUP*, 2013). The fact that **Table 7.1** indicates that 48% of Canaan Estate residents are renters suggests a strong disregard for the rental policy. Municipal officials I spoke to across the research sites mentioned that it is not unusual for relocated residents to rent their formal unit and return to the informal settlement with newly acquired income. *The Standard* newspaper documents numerous instances of residents willingly renting out their apartments units in Canaan Estates while returning to live in Kibera (Kijilwa, 2018). The reasons range from the added expense to the inadequate size of the house to not wanting to climb stairs (ibid).

Table 7.2: Percentage of residents who build their shelter compared to those who occupy existing structures across the research sites.

	Johannesburg, South Africa		**Nairobi, Kenya**		**Accra, Ghana**	
	Setswetla (control)	Far East Bank (treatment)	Silanga (control)	Canaan Estates (treatment)	Agbogbloshie (control)	Adjen Kotoku (treatment)
Self-built	43%	5%	12%	0%	32%	40%
Existing	57%	95%	88%	100%	68%	60%

In addition to the ownership model, residents are physically involved in the shaping of their built environment according to **Table 7.2**. The practice of self-constructed shelter is most prevalent in Setswetla, where, according to the residents in the focus group, people from nearby Alexandra who are struggling financially will come to the informal settlement and find a place – usually close to the Juksei River – and set up a shack. These are the kinds of residents that the authorities see as 'queue jumpers', but according to these residents, it is really a last resort and jumping the queue to access formal housing is not a top priority. When residents in all the informal settlement focus groups were asked how long they intended to stay when they first arrived, the universal response was that people living in poverty do not make long-term plans. Making it through the day is how

far they plan, according to the residents. So, accusing them of planning ahead by constructing a shelter in a precarious area and hoping for a natural disaster in the future that would enable them to access formal housing sooner rather than later is not in their thinking, according to the residents I spoke to.

Overall, this study reveals that residents living in informal settlements are heavily dependent on their social networks. Deciding to migrate to an urban area and where they choose to live within a settlement upon arrival is informed primarily by who they know. Also, those who come from longer distances to live in the city are more reliant on social networks than those who already live in the city where the informal settlement is located. Lastly, every informal settlement studied for this research has a system of governance in place that residents adhere to once they arrive and decide to settle, such as the 'strongman system' in Nairobi, the religious organizations in Accra, and the ethnic systems in Johannesburg. These governance systems further enable the formation of social networks, determine where people settle, and how a settlement grows.

7.1.2 Summary of Key Findings – Research Question 2

The second research question explores how the spatial organization of settlements for both the control and treatment groups impact the livelihood activities of residents. Quantitatively, **Table 4.6** (section 4.3.1), **Table 5.6** (section 5.3.1), and **Table 6.5** (section 6.3) suggest a strong and positive relationship between the spatial organization and livelihood activities of residents. The informal settlements in the study – which represents the control group – offers a flexible built environment that allows for residents to shape their surroundings to meet the needs of their livelihood activities. In addition to the built environment, the cemented social networks within the

control group allow for less dependence on income generating activities as the sole means of making it through the day, according to the logistic regression models. However, when residents are relocated, there is a decrease in the strength of their social networks and an increase in income generating activities as the sole means of making it through the day. Despite the similarities in the quantitative data, the three cities in this study present very different contexts.

Table 7.3: Percentage of residents with access to income generating activities across the research sites.

	Johannesburg, South Africa		**Nairobi, Kenya**		**Accra, Ghana**	
	Setswetla (control)	Far East Bank (treatment)	Silanga (control)	Canaan Estates (treatment)	Agbogbloshie (control)	Adjen Kotoku (treatment)
Income generating activity	59%	49%	88%	93%	100%	100%
Unincome generating activity	41%	51%	12%	7%	0%	0%

Table 7.3 reflects the different contexts across the research sites despite the similar relationships between the built environment and income generating activities status suggested by the logistic regression models. First, the research sites in South Africa exhibit the highest rates of residents without access to income generating activities among all the locations used in this study. In the opinion of a program manager for the City of Johannesburg Department of Human Settlements:

> "*This [South Africa] is the only country in Africa where citizens are guaranteed free housing, which has created a culture of dependency. People are waiting to be provided housing, and even those who can find their own housing are waiting for free housing due to this entitlement. The youth are waiting for housing to be delivered to them instead of working to deliver housing for themselves*."

Manny (the program manager for the City of Johannesburg Department of Human Settlements) further explained that all services to informal settlements are also paid for by taxpayers who do not live in those settlements, which is not a sustainable model according to Manny.

> *"Taxpayers see trash being collected from the slums the same way it is collected in their neighborhoods, but the people in the slums are not the ones paying for the trash collection. Things like this create animosity between people, and taxpayers see people living in the slums as freeloaders,"* Manny continued.

Despite these sentiments from decision-makers such as Manny, the residents living in Setswetla do not see themselves as "freeloaders." They work hard and are willing to work if there are jobs available, according to the residents in the focus group. In the meantime, what the informal settlement provides them with as an environment that allows them to be creative and mold to meet their needs, just as Sibongile did with her beauty shop (see **Figure 4.6**, section 4.4.2) and countless others have with *shabeen* and *spaza* shops (see **Figure 4.4**, section 4.3.2).

In Nairobi, the built environment of Silanga is seen as a benefit to the livelihood activities of its residents. The proximity of a large agricultural urban farm (see **Figure 5.5**, section 5.3.2) located next to the informal settlement, and the plethora of animal farmers – chicken, goat, sheep, and cows – living within the settlement, has made food much less expensive for the residents living in the informal settlement than the rest of the city. In addition to the farms, entrepreneurial residents living in the informal settlement have found ways to contribute significantly to the formal

economy. Kevin's bakery (see **Figure 5.6**, section 5.3.2) and Ibrahim's furniture store are excellent examples of this phenomenon. Both men have found ways to expand their shelter in Silanga to accommodate a commercial enterprise. Because both men own their properties, there is no need to pay commercial rents to a developer or a bank, which would be the case if they wanted to have centrally located stores within the central business district (CBD) of Nairobi. Such an enterprise will be lost once their section of the informal settlement is cleared and residents are relocated to the formal housing in Canaan Estates. That is when residents become more dependent on income generating activities because of the mortgage and the restrictive built environment. Meaning, residents like Kevin and Ibrahim will not be able to own a commercial enterprise within the boundaries of Canaan Estates. They can either rent shops outside of the residential boundary of Canaan Estates and continue with the bakery and furniture enterprise, or find new livelihoods, which is what Gladys did, transitioning from a beauty shop to selling trinkets and t-shirts in the street.

Lastly, Accra presents an interesting case where the government attempted to re-create an informal livelihood in a formal setting. Onion sellers in the informal Agbogbloshie market were relocated to a formal market site at Adjen Kotoku, thus ensuring that everyone with income generating activity did not lose that access with the relocation. However, despite all residents retaining access to income generating activities, the conditions are quite different between the informal and formal markets. The informal market is nestled between the informal settlement of Agbogbloshie and the somewhat formal Old Fadama (see **Figure 6.1**, section 6.2.2). The proximity of the informal settlement, the density of the market, and the diversity of products available, made the market experience at Agbogbloshie more tolerable. While the formal market at Adjen Kotoku

has its benefits such as better stalls, paved floors, masonry storage units, and efficient sewage systems, the downside has been quite challenging. The relocation to the outskirts of the city in the middle of a suburban residential neighborhood has been challenging. The built environment of the suburban neighborhood does not foster a thriving market environment, in the opinions of the residents at Adjen Kotoku. The market has become a destination and not part of a journey as it was at Agbogbloshie. To make matters worse, making a trip to the outskirts of the city to a destination market simply to purchase onions has deterred a lot of former customers. Which is why many of the residents interviewed do not see the current Adjen Kotoku formal market lasting much longer.

Overall, this study shows the importance of the built environment and its influence on the livelihood activities of people living in extreme poverty at the research sites. Relocating informal settlement residents to a drastically different built environment that does not maintain or support their livelihood activities such as in Johannesburg and Nairobi can have a negative effect. And even when livelihoods are thoroughly considered such as in the case of Accra, the location might not be ideal, which can also have a negative effect. The built environment of informal settlements, according to this study, has a critical role in supporting the livelihood activities of their residents, and the quantitative and qualitative data supports this argument.

7.1.3 Summary of Key Findings – Research Question 3

The final research question seeks to understand how social networks and livelihood activities are impacted by the relocation of informal settlement residents (control group) to formal housing (treatment group). From an observational perspective, the built environment of the state-

sponsored formal developments is vastly different from the informal settlements that the residents are coming from. The formal developments can be described as single-use residential zoning developments, including the formal market in Accra at Adjen Kotoku which is in a suburban residential neighborhood. Mrs. Irene Ikera, the architect and Assistant Director of Slum Upgrading with the Ministry of Land, Housing, and Urban Development in Nairobi made the following statement:

> *"Formal housing is inherently political. A politician makes a declaration to construct 1,000 housing units. Based on that statement, the department receives a budget, and we divide the budget to meet 1,000 housing units at a specific size that can fulfill the political promise."*

Planning directors in Johannesburg and Accra made similar statements about the political nature of formal development in their cities. Due to this political nature of formal development, the metrics of success for the municipalities are much different than the reality of the residents that the interventions are designed to help. For example, the median household size across the research sites in this study is 5 people per household (**Table 7.4**). However, a closer examination of the data revealed that there are higher rates of 5-person households in the control groups while the rate of people per household drops to 3 among the treatment groups (**Table 7.4**).

Table 7.4: Median household size and the most frequent (mode) household size surveyed across the research sites in this study.

	Johannesburg, South Africa		**Nairobi, Kenya**		**Accra, Ghana**	
	Setswetla (control)	Far East Bank (treatment)	Silanga (control)	Canaan Estates (treatment)	Agbogbloshie (control)	Adjen Kotoku (treatment)
Median household size	5	5	5	5	5	5
Mode	5	3	5	3	5	3

A planning director in Johannesburg explained that because of the budget, the reconstruction development project (RDP) houses have a very specific dimension. It is expected that residents will expand the units as they see fit once the occupy the residence. However, the cost of expanding a formal house can be more than residents who are newly relocated from an informal settlement can afford. Because of the mismatch between the household size and the size of the housing unit, some larger families have been known to return to the informal settlement while renting out the formal unit to a smaller household. Usually, the family that takes over the formal housing unit are residents who are already living in nearby low-income neighborhoods such as Alexandra, a narrative supported by the regression models in **Table 4.3** and **Table 4.4** (section 4.2.1), **Table 5.3** and **Table 5.4** (section 5.2.1), and **Table 6.3** and **Table 6.4** (section 6.2.1). All these regression models suggest that residents who are originally from the same city are more likely to live in the state-sponsored formal development than the informal settlement.

Another impact of relocation is the livelihood activities of the residents. This research argues that the spatial organization of informal settlements and formal housing designed for people living in extreme poverty are intricately linked to the strength of their social networks which in turn impacts the livelihood activities residents. Despite the fact that in Nairobi and Johannesburg, the formal development is in walking distance from the informal settlement, it appears that

residents are still impacted by the change in the built environment. The survey asked residents in both control and treatment groups to indicate their mode of travel to their primary place of income generating activities.

Table 7.5: Residents' mode of travel to places of primary income generating activities across the research sites in this study.

	Johannesburg, South Africa		**Nairobi, Kenya**		**Accra, Ghana**	
	Setswetla (control)	Far East Bank (treatment)	Silanga (control)	Canaan Estates (treatment)	Agbogbloshie (control)	Adjen Kotoku (treatment)
Walk	25.4%	3.7%	72.3%	37.3%	39.5%	34.5%
Bike	0%	0%	3.2%	3.9%	0.9%	10.6%
Drive	5.3%	3.7%	2.2%	5.9%	1.8%	9.7%
Public Transit	24%	33.3%	8.5%	34.3%	51.4%	43.4%
N/A	45.3%	59.3%	13.8%	18.6%	6.4%	1.8%

According to **Table 7.5**, walking is the primary mode of travel to places of income generating activities in the control group across all the research sites in this study. Once residents are relocated to formal development, there is a precipitous drop in a person's ability to walk to work, more noticeable in Johannesburg and Nairobi. An interesting development is that because of the newly paved roads and perceived security in the formal developments, public transit – and driving to a lesser extent – becomes a viable alternative for travel, but these come with an added cost to residents. **Figure 5.5** (section 5.3.2) shows the proximity of Silanga – and Kibera in general – to Canaan Estates in Nairobi. Despite this proximity, the rate of walking drops from 72.3% to 37.3%. The narratives of Kevin and Ibrahim's ability to walk to work while living in Silanga, the informal settlement, and Gladys having to find a new livelihood after being relocated to Canaan, provide context to these survey results. In the Far East Bank, a resident in the focus group mentioned how some forms of transit will not enter the informal settlement because of safety

concerns, but after relocating to the Far East Bank, transit options are now readily available. In Adjen Kotoku, residents talked about the lack of direct transit options from the city to the new market which explains the reduction in public transit as a mode of transportation, while personal transportation modes such as driving and biking have become more appealing options. **Table 7.5** reveals that while some residents retain access to income generating activities after being relocated, their path of travel between where they live and where they work changes, and the effects can take its toll on residents over time.

To better understand how social networks and livelihood activities are impacted by the relocation of informal settlement residents (control group) to formal housing (treatment group), residents were asked about their level of satisfaction with their current living arrangements.

Table 7.6: Level of satisfaction with current living conditions between the control and treatment groups in all the research sites included in this study.

	Johannesburg, South Africa		**Nairobi, Kenya**		**Accra, Ghana**	
	Setswetla (control)	Far East Bank (treatment)	Silanga (control)	Canaan Estates (treatment)	Agbogbloshie (control)	Adjen Kotoku (treatment)
Satisfied	19 (25%)	13 (16%)	48 (51%)	66 (65%)	79 (72%)	62 (55%)
Not Satisfied	56 (75%)	68 (84%)	46 (49%)	36 (35%)	30 (28%)	51 (45%)

As per **Table 7.6**, South Africa has the least satisfied residents regardless of settlement location. Residents in both focus groups in South Africa cited personal safety concerns and the general lack of state provided services and infrastructure as the reason for their dissatisfaction with their current living conditions. The treatment group living in the Far East Bank in South Africa represent the least satisfied residents across all of the research sites in this study, despite living in formal – and freely provided – RDP housing units. The continued mistrust of different ethnic

groups continues to be an issue in the Far East Bank, in addition to deteriorating buildings and infrastructure. Residents in the focus group indicated that while housing may have originally been free, the constant maintenance and upkeep has been expensive. When the added expense is compounded by other factors such as a longer commute to places of work or general lack of income generating activities, it creates the perfect recipe for dissatisfaction.

Meanwhile, **Table 7.6** shows that Agbogbloshie, which is an informal settlement in Accra with a famous market, has the most satisfied residents across all the research sites in this study. The fact that the residents in this particular informal settlement have been able to establish a market that is famous for the quality of the produce and relatively affordable prices, and a market that brings in daily revenue to the residents in Agbogbloshie, has made it a good place to live in the opinions of residents in the focus group. Also, for young residents like Esther and Ben, the strength of the social networks within Agbogbloshie has enabled them to make a living.

Finally, **Table 7.6** indicates that Canaan Estates, the formal housing development in Nairobi has the most satisfied relocated residents. According to the residents in this focus group, although they were relocated to a decanting (temporary) site while their shacks were demolished in order for the formal housing complex to be constructed, the proximity of their new homes to their previous networks – and Kibera – has been a great benefit. By constructing the formal housing complex in the same location as the informal settlement (**Figure 5.5**, section 5.3.2), the newly relocated residents essentially have access to some of the benefits of informality – such as low cost of food and other daily essentials – while avoiding the challenges that comes with living in an informal settlement such as poorly constructed shacks which are prone to fires and floods.

Overall, the qualitative models and qualitative narratives support the argument that the social networks and livelihood activities of informal settlement residents (control group) are impacted by relocation to state-sponsored formal developments (treatment group). However, the impacts are not all negative, as reflected in **Table 7.6**. People living in extreme poverty face daily challenges, and when the live in an informal settlement, the state is largely absent, and the dependence on each other becomes more acute. When residents are relocated to formal housing, their dependence changes from social networks to income generating activities, according to the regression models. Yet, despite the dependence on income generating activities, the new formal environments often lack the physical infrastructure to support previous livelihood activities in certain cases such as Far East Bank and Canaan Estates in Johannesburg and Nairobi respectively. And in the case of Adjen Kotoku, the severing of economic ties to Agbogbloshie despite being relocated with their livelihoods intact has proven to be a challenge as well. This study shows that there is a significant relationship between the built environment and the social networks and livelihood activities of residents living in poverty, and decision-makers such as politicians and planners need to include this metric in future relocation initiatives.

7.2 Concluding Thoughts

The central argument of this research posits that the spatial organization of informal settlements and formal housing designed for people living in extreme poverty are intricately linked to the strength of their social networks which in turn impacts the livelihood activities residents. Ideally, residents who are relocated to formal housing should experience a positive difference while maintaining their social networks and livelihoods, or perhaps improving their livelihood

activities. According to municipal officials in all of the research sites studied as part of this research, "*Their primary objective is to integrate informal settlement dwellers into the formal system, enabling them to enjoy reasonable basic amenities*." The secondary objective is to prevent the formation of new informal settlements.

Based on the cases studied in this research, people experiencing poverty in Johannesburg are given free formal housing, yet the issue of urban informality persists. In Nairobi, formal housing is provided in the exact location of the informal settlement and made as affordable as possible, and yet the issue of urban informality remains. In Accra, decongestion policies are carried out, and people experiencing extreme poverty are relocated out of the city center, yet urban informality persists. Meanwhile, more people are migrating to prominent cities in sub-Saharan Africa for better income generating activities opportunities without the financial means to live in formal housing, and this research shows that this demographic have a high likelihood of residing in an informal settlement.

The aim of this research is to amplify the reality of an informal settlement as more than just a place for people to set up shacks so that they have a place to sleep at night. These are functioning urban environments with established cultures and a sense of place. They are full of vibrant and hard-working residents who depend on each other to live in places where the state is conspicuously absent. Despite these hardships, new residents are showing up every day. When asked how long they intended to stay in the settlement when they first arrived, the residents said people living in poverty do not think like that. Long-term thinking is a luxury they cannot afford to indulge in. For people living in poverty, it is about surviving the day. This research studies how

the residents of prototypical informal settlements survive each day, and their dependence on their social networks is critical to how each day is lived. There are few social services within these settlements to assist low-income residents, such as clinics, a post office, a community center, or sometimes schools. If any exist, they are often the result of community efforts with the assistance of NGOs.

When residents are relocated to formal housing, they tend to feel disconnected from their cemented social networks. Formal housing is often not accompanied by increased income to cover new costs that the new residents did not know existed, such as utility bills or a more expensive mode of commuting to a place of income generating activities. Before living in formal housing, most residents cooked outside with pots resting on fire coals. There was no indoor plumbing, and residents had to pay to use community toilets and bathhouses. With formal housing, residents now have access to indoor plumbing and electric stoves, but these require occasional maintenance that residents need to be educated about or familiar with. Without any additional income to maintain the formal housing to a decent standard, some of these units often fall into a state of disrepair. Residents resort to life-long practices of cooking outside and finding discrete exterior places to use as a toilet. Some places within the formal housing developments begin to resemble and smell like the informal settlements that residents are supposed to have left behind.

Ultimately, this research reveals that prototypical informal settlements are not the spontaneous occupation of land by the landless who build chaotic structures and live in unsanitary conditions for the sole purpose of shelter. Instead, these are organized, and deliberate acts exercised within the constraints of a specific interest group based on social networks, which can

be social, political, or as needed to sustain a livelihood, and these relationships are manifest in a specific built environment of informal settlements. When these relationships are severed and residents relocated to formal housing, the relocated residents have a much more difficult experience integrating into the formal economy, and often remain exposed to the same life outcomes as those still living in urban informality.

7.3 Recommendations

As part of this study, residents who participated in the focus groups were asked "*what they would change about their living conditions if they had the power to do so*." Municipal officials were also asked "*What policies regarding urban informality would they improve on given the authority to do so*." Based on the responses to these questions, the findings of this study which are outlined in Chapters 4-6, and the concluding thoughts above, these are the following recommendations I would make regarding how to address prototypical informal settlements and relocation initiatives:

Johannesburg

i. Housing is currently a product promised by politicians and delivered by planners in the most efficient way possible to meet an identified budget. With this practice, the efficient product aligns differently with the needs of the targeted demographic.
    a. Suppose housing continues to be delivered as a product. In that case, the Department of Human Settlements needs to audit the residents of informal settlements and provide multiple housing options that meet the needs of various households living in informality—a more than one-size-fits-all approach is needed.

b. The dynamic and vibrant nature of Setswetla – and Alexandra in general – is missing from formal housing developments like the Far East Bank. Planners should try to capture the vibrancy in future designs to create places that foster the continuation of social networks and livelihoods after relocation.

ii. Backyard shacks have become common in the Far East Bank, making parts of the development resemble the prototypical informal settlement the government is trying to avoid. To prevent this from happening, codes need to be implemented to encourage the building of Accessory Dwelling Units (ADUs) on a site, but with appropriate construction. This will ensure that households can still grow and building owners can generate some revenue on their property without resorting to prototypical informal settlement construction methods.

iii. Current qualification for RDP housing is anyone making 0 – 3,500 Rands ($0 - $200) per month, and also has children. As such, anyone earning above this threshold does not currently qualify for the program and at the same time cannot afford market rate housing. Meaning there are hardworking people who have no option but to live in substandard housing in informal settlements. What is needed is for the housing department to build more rental units for this demographic, who are the most likely to make the transition and not return to the informal settlement.

Nairobi

i. Replacing prototypical informal settlements with formal housing in the exact location and not removing impoverished people from valuable land must be applauded. However, like Johannesburg, the Canaan Estates do not have the same vibrancy and dynamic urban form as Silanga. To ensure that social networks and livelihoods remain intact, the Ministry of Land, Housing, and Urban Development in Nairobi must design places to continue social networks and livelihoods after relocation.

ii. The time spent at the decanting site is too long, possibly due to funding and litigation issues. The ministry should reduce this time frame as much as possible.

iii. The ministry must find better financing mechanisms to retain all the relocated residents. Some residents who have to move away cannot afford to live in the decanting site or afford the mortgage and downpayment requirements for formal housing. To keep social networks intact, new financing mechanisms must be implemented to work for this demographic.

Accra

i. The city has a formal decision-making apparatus comprised of multiple stakeholders designed to ensure that any initiatives involving informal settlements follow a logical and rational process. However, this formal process is constantly being subverted by politicians.

a. The first recommendation would be to legally codify this decision-making body and make the representatives accountable for any actions taken with or without their consent.
b. Initiatives and decisions should be transparent to the general public, especially to the residents of informal settlements, to ensure that no one is surprised.
c. Relocations should be a phased process. Residents should be allowed to relocate at their own pace and not be forced under the threat of police violence.

ii. The city needs to re-evaluate the logic of relocating a singular product from a diverse market to a different location. The impact of this decision has not been favorable for the market sellers or the city. Instead of investing in housing for the singular produce market, the city should investigate what other produce would be worth relocating to Adjen Kotoku – or any other destination – to create a diverse market with appropriate produce.

The relocation of residents from Agbogbloshie to Adjen Kotoku has created two produce markets that are approximately 15 miles (24 km) apart (see **Figure 3.7**, section 3.4). Local government would benefit from investing in a direct transportation system from one market to the other so that vendors and customers can travel easily between the two markets. A robust transportation system would ease the financial burden of the vendors at Adjen Kotoku and incentivize customers to make the journey.

The Physical Planning Department should conduct a study of how Agbogbloshie can be re-designed to accommodate the current residents and the famous market while reducing vehicular traffic. Such a study could ensure a structured re-development of the area that is intentional and designed to maintain social networks and livelihoods.

iii. According to one planning official, "*Every new informal settlement that springs up within the city is a failure of rural policies, because there is a reason why people are flocking to the city [from the villages]. We need to start looking at Ghana as a whole, rather than always trying to solve urban problems in isolation of rural issues*."

General Recommendations

i. Multiple officials interviewed for this study commented that cities in sub-Saharan Africa need to embrace the dynamic urbanism of prototypical informal settlements. According to these officials, new formal housing projects tend to fall into two categories: detached single-family homes or tall tenement-style apartments buildings. Prototypical informal settlements are dynamic places where people live, work, play, and pray while forming some of the strongest social networks. This dynamism is often lost in the typical single-use residential housing projects. Studying prototypical informal settlements as an urban form and using those lessons to inform formal development may be a better approach.

ii. People living in prototypical informal settlements have established a way of living that is engrained and difficult to change without any guidance. Focus group participants in the treatment groups mentioned that the first time some of them had ever seen indoor plumbing was when they moved into their new formal homes. None had prior knowledge of how to use some of the basic equipment. Most admitted that some form of training to transition to formal housing would be helpful.

iii. Residents living in prototypical informal settlements have acquired valuable experience in skilled trades. Municipalities have an opportunity to tap into that resource to maintain newly developed formal housing. For example, while residents relocated to Canaan Estates in Nairobi wait for electrical and plumbing issues to be fixed, there are residents living on the other side of the wall with the necessary skills to assist. When municipalities acknowledge and tap into the social networks of residents, there is a high likelihood there will be a reduction in maintenance time and an increase in the lifespan of the new formal housing projects.

7.4 Areas of Further Study

This research provides a basis for further studies that will expand on the empirical research needed to understand the importance of social networks on urban informality in sub-Saharan Africa.

i. **Longitudinal Study of Relocated Residents**: This study surveyed three sites where residents have been newly relocated from prototypical informal settlements. Research conducted for this study included reviewing newspaper articles discussing the

immediate impacts of the relocation, which were mostly positive. However, my research, which was done a few years after the published newspaper articles revealed some negative impacts. Further studies such as a yearly survey among the same – or randomly selected residents – in the relocated sites, would show the long-term impacts of relocation and what lessons we can learn to inform future policies and practices.

ii. **Rural to Urban Connectivity**: Study participants indicated that the lack of physical connectivity to rural areas plays a role in the decision to live in urban informality. A controlled study looking at this issue would play a critical role in understanding if sound transportation systems between urban and rural areas can mitigate the formation of informal settlements around urban centers.

iii. **Government Involvement**: The dependence of people experiencing extreme poverty on social networks is due primarily to the absence of state involvement or investment in their daily lives. A study examining the correlation between state investment and the reliance on social networks in given areas would provide some evidence.

7.5 Contribution to Knowledge

This research applies quantitative and qualitative research methods to assess social networks in prototypical informal settlements and the impact of relocation initiatives on these social networks. The research also focuses on the importance of social networks in the daily lives of residents living in urban informality due to the general lack of access to formal state-provided services. While many researchers have studied informal settlements, few discuss the impact of

social networks on their residents, and none juxtapose these sites with newly relocated residents to formal housing developments.

The methods used in this study indicate very clearly that residents living in prototypical informal settlements depend heavily on social networks to sustain themselves. When these same residents are relocated, the transition can be challenging when those social networks are severed, and the newly built environment does not support previous livelihood activities. This study can be replicated in similar settings across the Global South using the same site selection criteria.

Finally, the findings from this study can be implemented into future urban policies to ensure that any relocation initiative can help the targeted demographic and achieve the desired results of transitioning people from urban informality into the formal economy. In this regard, the Global South can begin making meaningful strides towards mitigating the proliferation of informal settlements in urban centers and get to work on their grand development projects without negatively impacting people living in extreme poverty.

Appendices

Appendix A: Networks Survey Questionnaire

SURVEY
Control Group/ Informal Settlement Residents (no interventions)
Evaluation Purpose and Research Questions
Purpose: To evaluate the influence of social/informal networks on the built environment of informal settlements.

Q1. How do the social/informal networks of residents influence the spatial organization of informal settlements?

Q2. How does the spatial organization of informal settlements impact the livelihood activities of its residents?

Q3. Given the preference of new and improved housing, would residents in informal settlements willingly relocate?

Q4. What reasons would make a resident choose to relocate? And what reasons would make a resident choose to remain in the informal settlement?

Section A: Introduction and Consent
A1. Hello, my name is Nana Andoh. I am a researcher from the University of Michigan in the United States. I am interested in your opinions about this settlement, your connections to other people in this settlement, and your livelihood activities. There are no right or wrong answers, and your participation is entirely voluntary. You do not need to answer any questions you do not want to, and you can stop the interview at any time. I do not need to know your name and we will never record your name in any form. The interview usually takes about 30 to 60 minutes. Please read this participant information sheet or I can read it to you. Please ask any questions you have. Are you happy to talk to us?

A1. Hello, my name is _____ [name of research assistant]. I am a research assistant supporting Nana Andoh, a researcher from the University of Michigan in the United States. I am interested in your opinions about this settlement, your connections to other people in this settlement, and your livelihood activities. There are no right or wrong answers, and your participation is entirely voluntary. You do not need to answer any questions you do not want to, and you can stop the interview at any time. I do not need to know your name and we will never record your name in any form. The interview usually takes about 30 to 60 minutes. Please read this participant information sheet or I can read it to you. Please ask any questions you have. Are you happy to talk to us?

Yes >> A2
No [Terminate interview]

Please confirm the following statements:
A2. Have you read the participant information sheet (or someone has read it to you) for the study, understood it, and have had the opportunity to ask questions?
A3. Can you confirm that you understand that your participation is voluntary and that you are free to withdraw at any time without giving a reason?
A4. Can you confirm that you understand that all of the information you provide will be treated in confidence?
A5. Can you confirm that you understand that you also have the right to change your mind about participating in the interview and can stop at any time?
A6. Do you agree that the things that you say can be used for the research which will be shared through publications and presentations – but that your responses will remain anonymous?
A7. Do you agree to take part in the interview?

[If all statements "Confirm", "Agree", "Yes" >>> proceed with interview]
[If any statement is no, answer questions and continue once consent obtained]
[If refuse or do not agree>> terminate interview]

Interviewer Information
A8. Interviewer Name:
A9. Settlement Name:
A10. City Name:

List of Questions for Informal Settlement Residents

Q1. How old are you?

Q2. Gender:

- Female
- Male

Q3. How long have you lived in this settlement?

- Less than 1 year
- 1-2 years
- 3-5 years
- 5-10 years
- 10-15 years
- 15-20 years
- 20+ years

Q4. How long have you lived in this house/shelter location?

- Less than 1 year
- 1-2 years
- 3-5 years
- 5-10 years
- 10-15 years
- 15-20 years
- 20+ years

Q5. How many people do you live with under the same roof (<u>including yourself</u>)?

- 1-3
- 4-6
- 7-10
- 10+

Q6. What is your relationship with the people you live with (<u>select all that apply</u>)?

- Parent(s)
- Grandparent(s)
- Spouse/partner
- Child
- Sibling
- Aunt/uncle
- Niece/nephew
- Cousin
- Friend
- Other, specify:

Q7. Where did you move here from?

- A different country, specify:

- Same country, different city, specify:
- Same city, different neighborhood/settlement, specify:
- Born here (skip to Q11)

Q8. How old were you when you moved here?

- Less than 1 year old
- 1-5 years old
- 6-10 years old
- 11-15 years old
- 16-20 years old
- 21-25 years old
- 26-30 years old
- 31+ years old

Q9. What reason(s) caused you to move to this settlement? Note: Please rank each choice on a scale of 1 (not important) to 10 (very important).

- Relocation (permanent)
- Relocation (temporary)
- Following family
- Marriage
- Better work opportunities
- Salaried income generating activities
- Business
- Affordable/cheaper housing
- Other, specify:

Q10. How long did you intend to stay in this settlement when you first arrived?

- Less than 1 year
- 1-5 years
- 5-10 years
- 10+ years

Q11. Do you own this house or are you renting?

- Own (skip to Q15)
- Rent

Q12. If you rent, who is your landlord?

- Government
- Private developer
- Family member
- Friend
- Family connection
- Friend connection
- Other, specify:

Q13. Do you pay rent?

- Yes (skip to Q15)
- No

Q14. If no, what service do you provide in exchange for rent?

- Manual labor
- Skilled labor (example: mechanic, artisan, electrician, etc.)
- Service (example: childcare, cooking, cleaning, academic, etc.)
- None/not applicable
- Other, specify:

Q15. How did you find this land/property?

- Government
- Private developer
- Family
- Family connection
- Friend
- Friend connection

- Word of mouth
- Other, specify:

Q16. Did you have to build your house yourself?

- Yes
- No (skip to Q21)

Q17. If yes, where did you get the materials to build your house?

- Bought the materials
- 'Found' the materials
- Other, specify:

Q18. Did you have any assistance in building your house?

- Yes
- No

Q19. If yes, who assisted you in building your house (<u>select all that apply</u>)?

- Family
- Friends
- Paid workers
- Other, specify:

Q20. If you did not pay people to build the house, what did you have to trade in exchange for the help (<u>select all that apply</u>)?

- Manual labor
- Skilled labor (example: mechanic, artisan, electrician, etc.)
- Service (example: childcare, cooking, cleaning, academic, etc.)
- Other, specify:

Q21. Do you know the people living in the houses around yours?

- Yes
- No (skip to Q23)

Q22. If you do, what is your relationship with the other residents around you (<u>select all that apply</u>)?

- Family
- Friends
- Other, specify:

Q23. What is your primary economic activity (<u>select only one</u>)?

- Salaried income generating activities
- Manual labor
- Skilled labor (ex. Mechanic, artisan, etc.)
- Market work
- Landlord
- None/not applicable
- Work from home, specify:
- Other, specify:

Q24. What other economic activities do you pursue (<u>select all that apply</u>)?

- Salaried income generating activities
- Manual labor
- Skilled labor (ex. Mechanic, artisan, etc.)
- Market work
- Landlord
- None/not applicable
- Work from home, specify:
- Other, specify:

Q25. How do you commute to your primary economic activity?

- Walk
- Drive
- Public transportation
- Bicycle
- Motorbike

- None/not applicable
- Other, specify:

Q26. How long is the commute to your primary economic activity?

- 1-15 minute walk
- 16-30 minute walk
- 30+ minute walk
- 5-15 minute drive/public transport
- 16 – 30 minute drive/public transport
- 31-60 minute drive/public transport
- 1+ hour(s)
- None/not applicable
- Other, specify:

Q27. How do you commute to your other economic activities (<u>select all that apply</u>)?

- Walk
- Drive
- Public transportation
- Bicycle
- Motorbike
- None/not applicable
- Other, specify:

Q28. How long is the commute to your other economic activities (<u>select all that apply</u>)?

- 1-15 minute walk
- 16-30 minute walk
- 30+ minute walk
- 5-15 minute drive/public transport
- 16 – 30 minute drive/public transport
- 31-60 minute drive/public transport
- 1+ hour(s)

- None/not applicable
- Other, specify:

Q29. On a daily basis, who do you depend on the most in order to be more productive?

- Family member in my household
- Family member outside of my household
- Other member of my household, specify:
- Friend
- None/not applicable
- Other, specify:

Q30. How far does this person live from you?

- Same house
- A neighboring house
- Within walking distance
- Within driving distance (less than 1 hour)
- None/not applicable
- Other, specify:

Q31. If you experience any kind of emergency, who do you (or would you) turn to for help first (<u>select only one</u>)?

- Family member in my household
- Family member outside of my household
- Other member of my household, specify:
- Friend
- None/not applicable
- Other, specify:

Q32. How far does this person live from you?

- Same house
- A neighboring house
- Within walking distance

- Within driving distance (less than 1 hour)
- 1-5 hours of travel time
- 6-10 hours of travel time
- None/not applicable
- Other, specify:

Q33. What in your life has changed the most in a positive way since the relocation/upgrade (select all that apply)?*

- Economic activity
- Distance to necessities (work, school, market, hospital, etc.)
- Connection to family network
- Connection to social network
- Nothing/stayed the same
- Other, specify:

Q34. What in your life has changed the most in a negative way since the relocation/upgrade (select all that apply)?*

- Economic activity
- Distance to necessities (work, school, market, hospital, etc.)
- Connection to family network
- Connection to social network
- Nothing/stayed the same
- Other, specify:

Q35. If you could live anywhere in this city/country, where would you want to live?

- Current location/settlement
- Other location, specify (skip to Q37):

Q36. What criteria makes you want to stay in this place/location? Note: Please rank each choice on a scale of 1 (not important) to 10 (very important).

- Land tenure
- Salaried income generating activities
- Cheaper/affordable housing

- Better work opportunities
- Closer to family network
- Closer to social network
- School
- Daycare
- Library
- Hospital
- Other, specify:

Q37. What criteria makes you want to live in a <u>different</u> place/location that you identified? Note: Please rank each choice on a scale of 1 (not important) to 10 (very important).

- Land tenure
- Salaried income generating activities
- Cheaper/affordable housing
- Better work opportunities
- Closer to family network
- Closer to social network
- School
- Daycare
- Library
- Hospital
- Other, specify:

Q38. What can the government do to improve your current living situation? Note: Please rank each choice on a scale of 1 (not important) to 10 (very important).

- Provide land tenure
- Salaried income generating activities
- Cheaper/affordable housing
- Better work opportunities
- Schools
- Daycare

- Hospital
- Library
- Other, specify:

Q39. Is there anything else you would like to add?

***Note**: Questions 33 and 34 are for Treatment Group residents only.

Appendix B: Focus Group Discussion Prompts

INTERVIEW
Focus Group Discussion (FGD)
Purpose: To understand the importance of social networks and the impact of interventions (intended and unintended) on households, livelihoods, and communities, as well as perceptions and experiences on quality of life and livelihood changes.

Respondent Groups

- Settlement Residents
- Settlement Leadership Organization(s)

List of Potential Questions

Q1. Can you give me a brief history of the origins of this settlement?

Q2. What have been some of the benefits you have experienced living in this settlement?

Q3. What are some of the challenges you face living in this settlement?

Q4. What do you think makes people move to this settlement?

Q5. Are there any unspoken rules that most residents understand and need to know in order to live in this settlement? Examples can be how houses are constructed, what kinds of businesses people have in their homes, how different spaces can be used, the difference between public and private spaces, etc.

Q6. What do most people here do for work?

Q7. If you had the power to change anything in this settlement, what would you change and why?

Q8. Where do you see the state of this settlement in the next 10-20 years? Better, same, or worse? Why?

Appendix C: Key Informant Interview Prompts

INTERVIEW
Key Informant Interviews (KII)
Purpose: To understand the criteria and metrics used to decide programs and interventions that affect informal settlements and their residents.

Respondent Groups

- Ministry Officials
- Policymakers
- Program Implementers
- Program Managers

List of Potential Questions

Q1. What is your name and position in your organization?

Q2. What is the objective of your organization with regards to informal settlements?

Q3. What kind(s) of interventions have you been involved with regarding informal settlements?

Q4. What were some of the challenges you encountered? How were the challenges overcome?

Q5. What is the decision-making process of your organization when it comes to developing programs for informal settlements?

Q6. What are some of your metrics for success?

Q7. What are some areas that can be improved?

Q8. Where do you see the state of informal settlements in this city in the next 10-20 years? Better, same, or worse? Why?

Q9. If same or worse, what can we do to make it better?

Appendix D: Tables

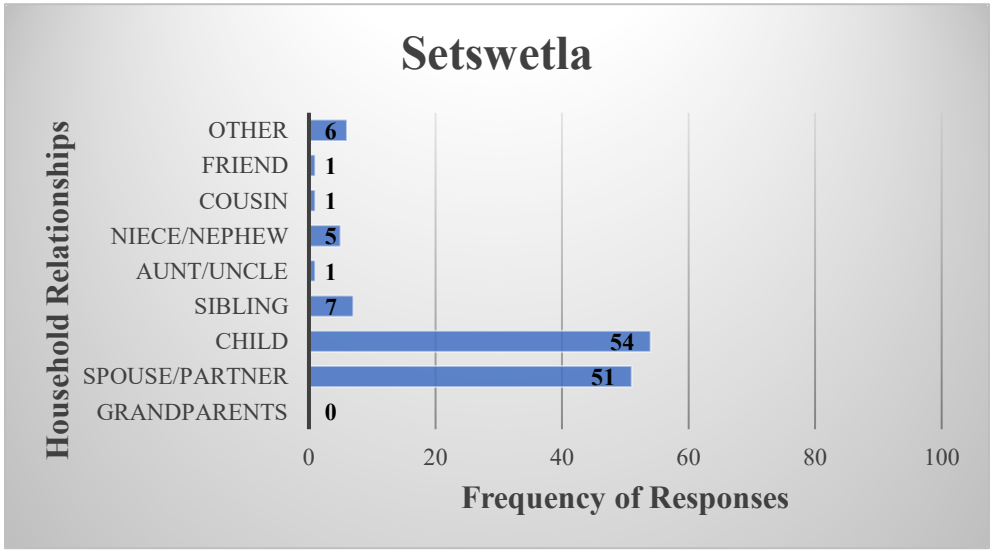
Appendix Table G.1: Descriptive Statistical Demographic Analysis of Research Site Residents

Descriptive statistics of research sites						
	Accra, Ghana		**Johannesburg, South Africa**		**Nairobi, Kenya**	
	***Agbogbloshie*[+]**	***Adjen Kotoku*[++]**	***Setswetla*[+]**	**Far East Bank[++]**	***Silanga*[+]**	**Canaan[++]**
No. of households	109	114	77	81	94	102
% of female respondents	81.65	59.29	68.0	51.85	57.45	54.9
% of male respondents	18.35	40.71	32.0	48.15	42.55	45.1
Average age of respondents	45.51	37.65	38.69	36.49	36.86	41.57
Household size	***Agbogbloshie*[+]**	***Adjen Kotoku*[++]**	***Setswetla*[+]**	**Far East Bank[++]**	***Silanga*[+]**	**Canaan[++]**
% 1-3	29.63	49.11	46.67	46.91	31.91	48.04
% 4-6	51.85	26.46	48.0	41.98	53.19	46.08
% 7-10	14.81	16.96	4.0	9.88	13.83	5.88
% >10	3.7	4.46	1.33	1.23	1.06	0.0
% of homeowners	36.7	37.17	81.33	66.67	15.05	51.96
% of renters	63.3	62.83	18.67	33.33	84.95	48.04
Years in current location	***Agbogbloshie*[+]**	***Adjen Kotoku*[++]**	***Setswetla*[+]**	**Far East Bank[++]**	***Silanga*[+]**	**Canaan[++]**
% < 1 year	0.92	15.45	5.33	8.75	3.19	7.84
% 1-2 years	5.5	50.0	12.0	13.75	4.26	12.75

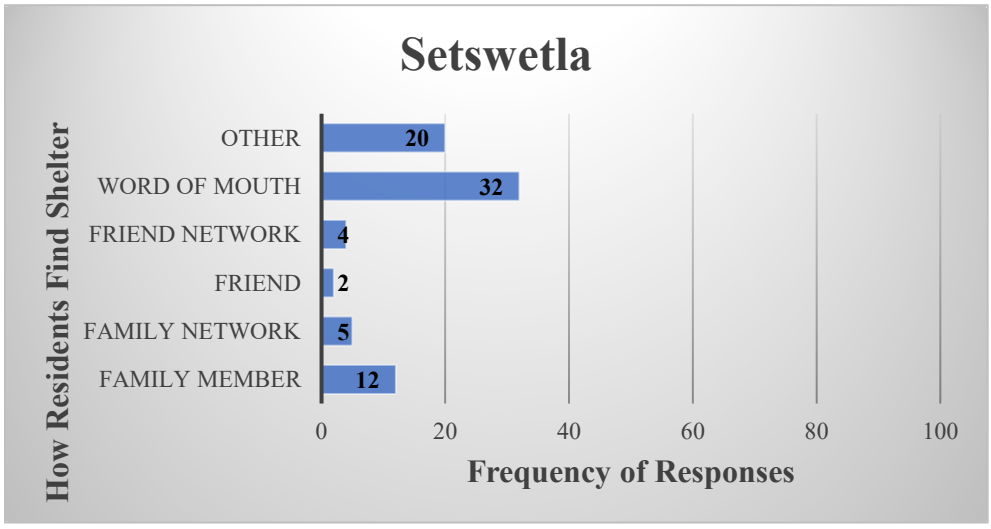
% 3-5 years	12.84	11.82	16.0	6.25	6.38	14.71
% 5-10 years	17.43	10.91	25.33	13.75	6.38	21.57
% 10-15 years	17.43	4.55	10.67	52.5	18.09	7.84
% 15-20 years	7.34	4.55	12	3.75	19.15	5.88
% > 20 years	38.53	2.73	18.67	1.25	42.55	29.41
Primary Income generating activities	***Agbogbloshie***[+]	***Adjen Kotoku***[++]	***Setswetla***[+]	**Far East Bank**[++]	***Silanga***[+]	**Canaan**[++]
% Salaried income generating activities	0.0	1.77	13.33	33.33	5.32	19.61
% Manual labor	0.0	2.65	18.67	2.47	9.57	8.82
% Skilled labor	0.92	1.77	4.0	3.7	24.47	11.76
% Market work	84.4	67.26	14.67	2.47	13.83	32.35
% Other	14.68	26.55	10.67	12.34	35.11	19.61
% None	0.0	0.0	38.67	45.68	11.7	7.84
Primary mode of transportation to place of income generating activities	***Agbogbloshie***[+]	***Adjen Kotoku***[++]	***Setswetla***[+]	**Far East Bank**[++]	***Silanga***[+]	**Canaan**[++]
% Walk	39.45	34.51	25.33	3.7	72.34	37.25
% Drive (personal vehicle)	1.83	9.73	5.33	3.7	2.13	5.88
% Public transportation	51.38	43.36	24.0	33.33	8.51	34.31
% Bike	0.92	10.61	0.0	0.0	3.19	3.92
% Other	0.92	0.88	0.0	0.0	0.0	0.0
% None	5.5	0.88	45.33	59.26	13.83	18.63
Length of commute to place of income generating activities	***Agbogbloshie***[+]	***Adjen Kotoku***[++]	***Setswetla***[+]	**Far East Bank**[++]	***Silanga***[+]	**Canaan**[++]
% 1 – 15 minutes	39.45	34.4	14.67	3.8	52.13	40.2
% 15 – 30 minutes	18.35	24.78	26.67	15.19	24.47	25.49
% 30 – 45 minutes	15.6	9.73	6.67	11.39	4.26	11.76
% 45 – 60 minutes	15.6	9.73	4.0	5.06	2.13	0.98

% > 60 minutes	9.17	18.58	2.67	1.27	3.19	3.92
% None	1.84	1.77	45.33	63.29	13.38	17.65
% Preference to stay	72.48	54.87	25.33	16.05	51.06	64.71
% Preference to leave	27.52	45.13	74.67	83.95	48.94	35.29

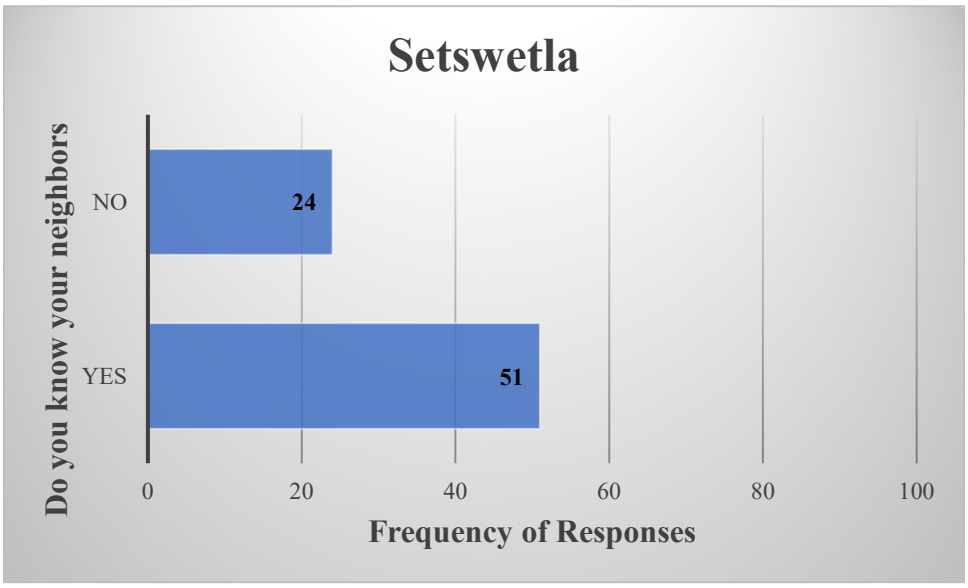
Appendix E: Descriptive Statistics of Question Combinations Comprising of Strength of Social Ties Within the Control Group in Johannesburg, South Africa.



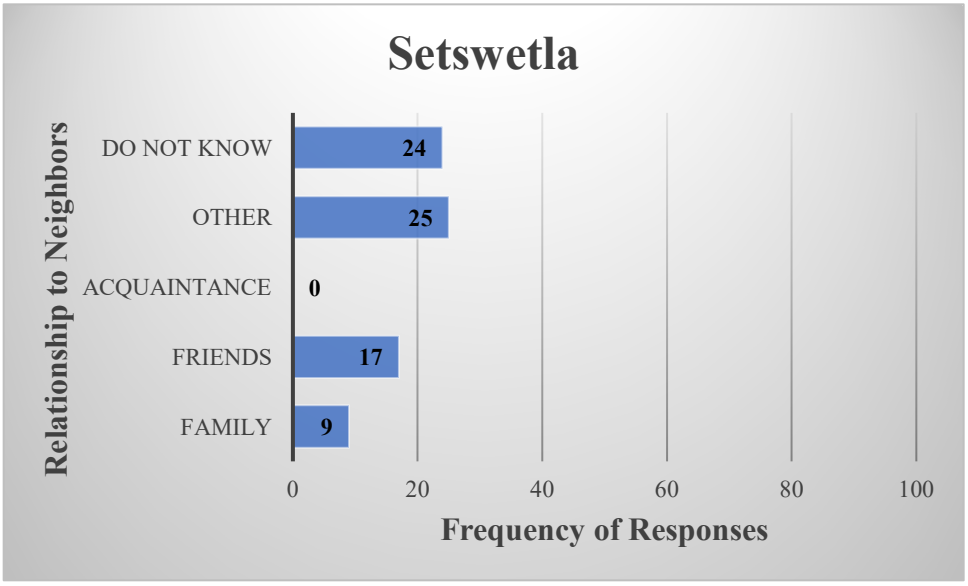
Appendix Figure E.1: Relationships between household members in control group.



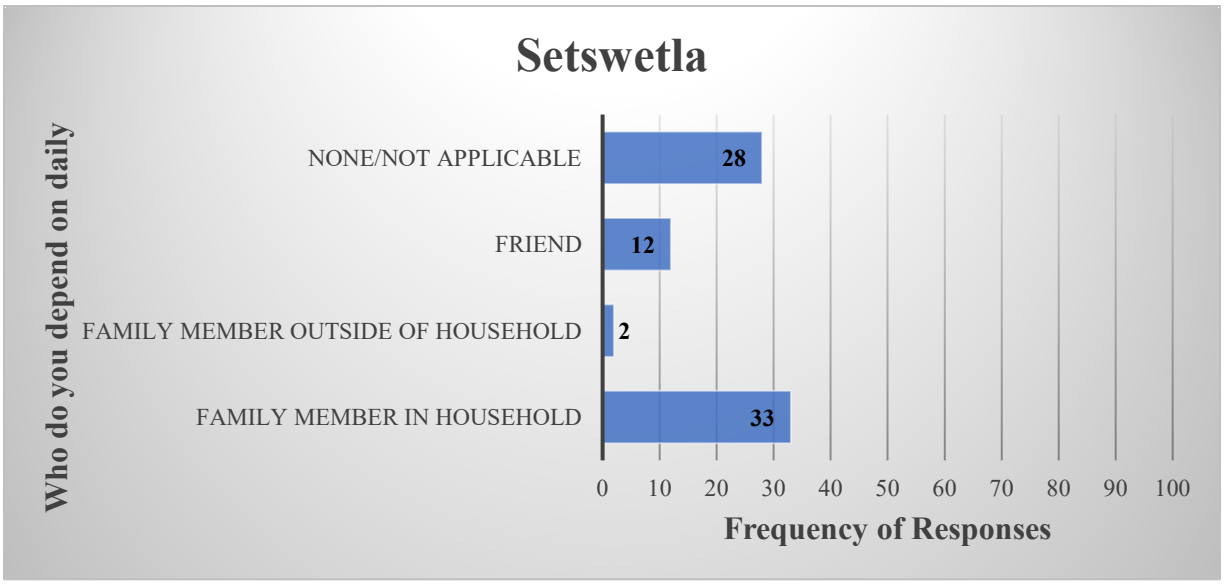
Appendix Figure E.2: How social ties aid residents in finding shelter.



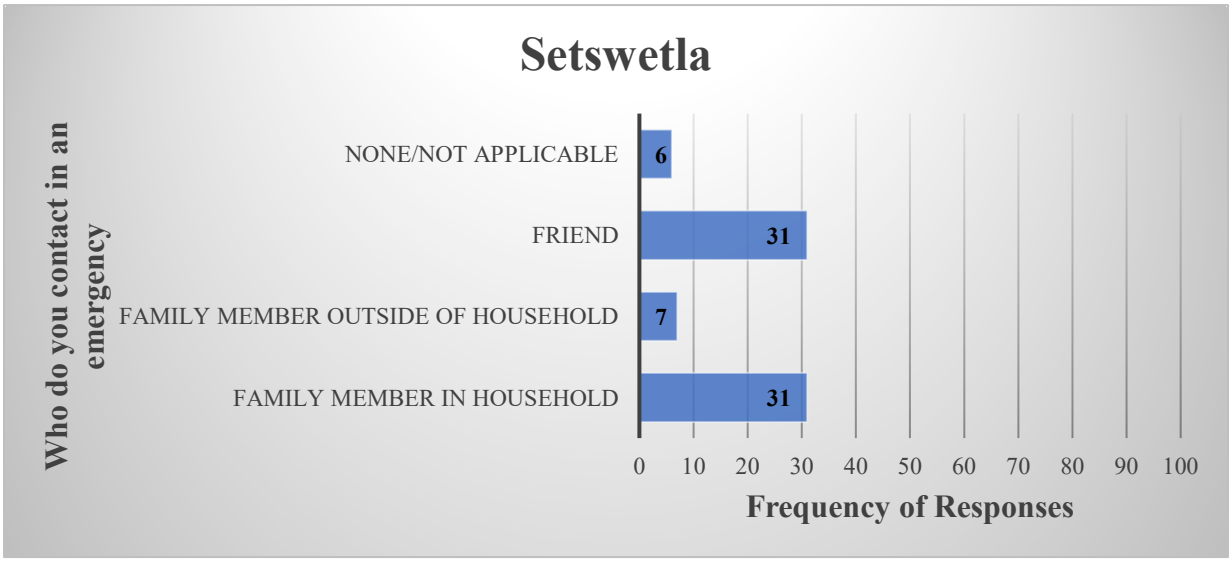
Appendix Figure E.3: How well do residents know their neighbors.



Appendix Figure E.4: The relationship between residents and neighbors.

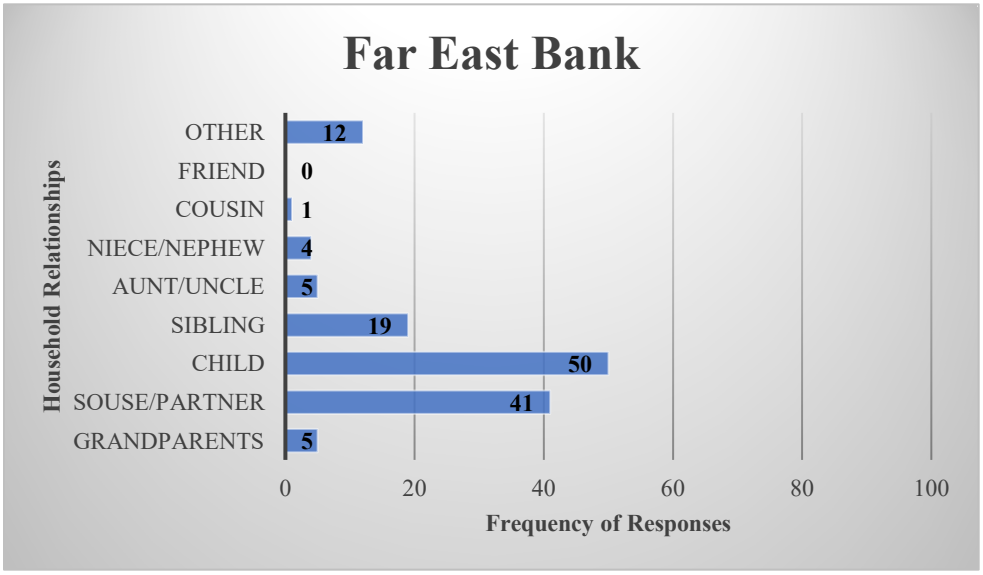


Appendix Figure E.5: Who do residents depend on daily.

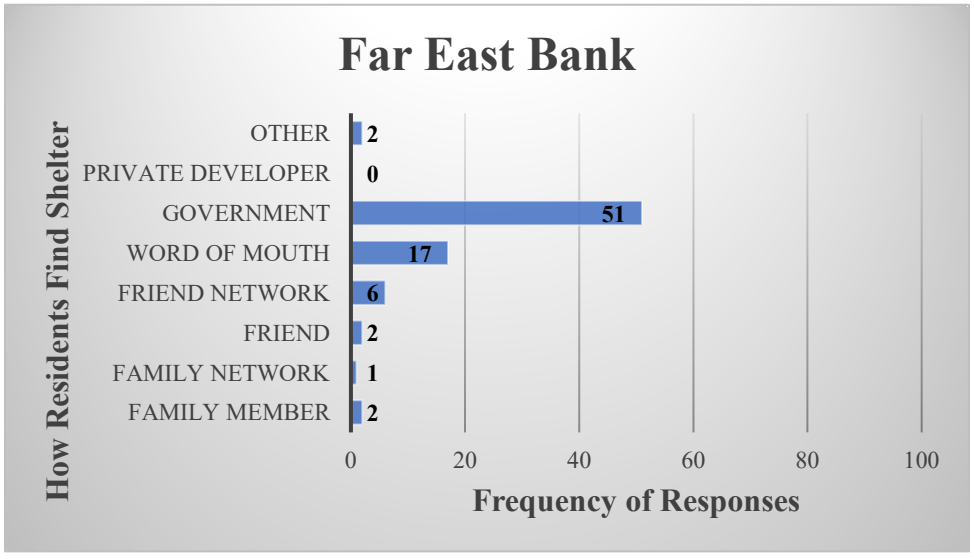


Appendix Figure E.6: Who do residents turn to for assistance in an emergency.

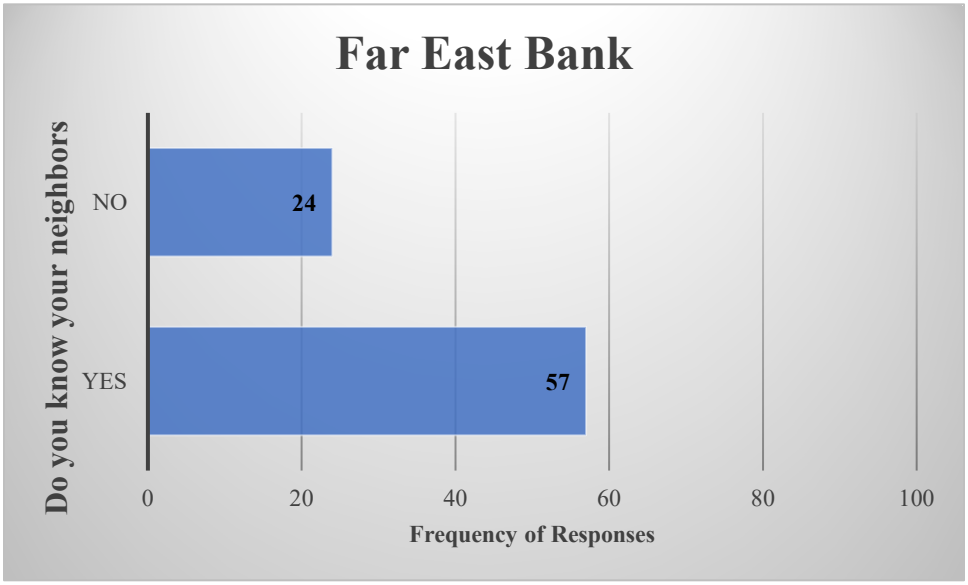
Appendix F: Descriptive Statistics of Question Combinations Comprising of Strength of Social Ties Within the Treatment Group in Johannesburg, South Africa.



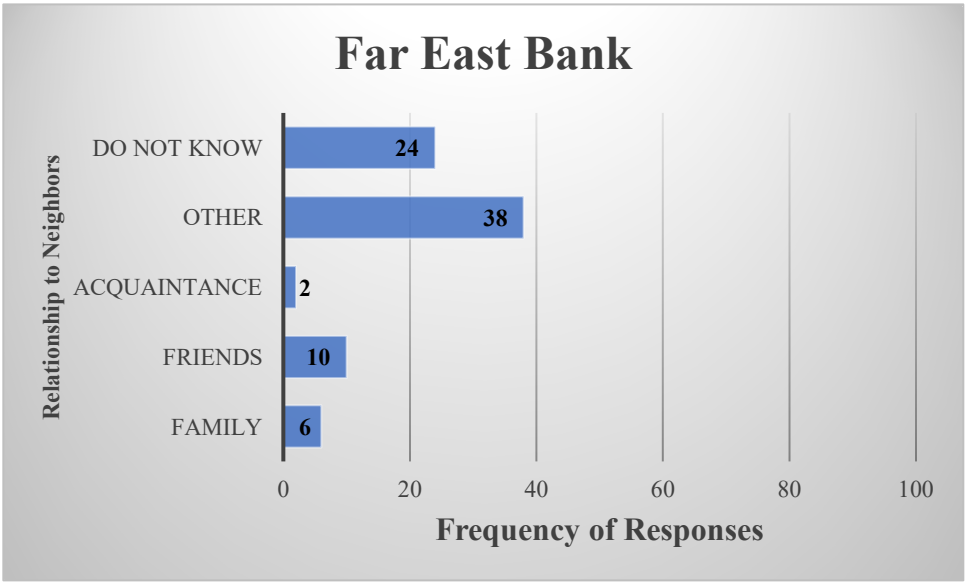
Appendix Figure F.1: Relationships between household members in control group.



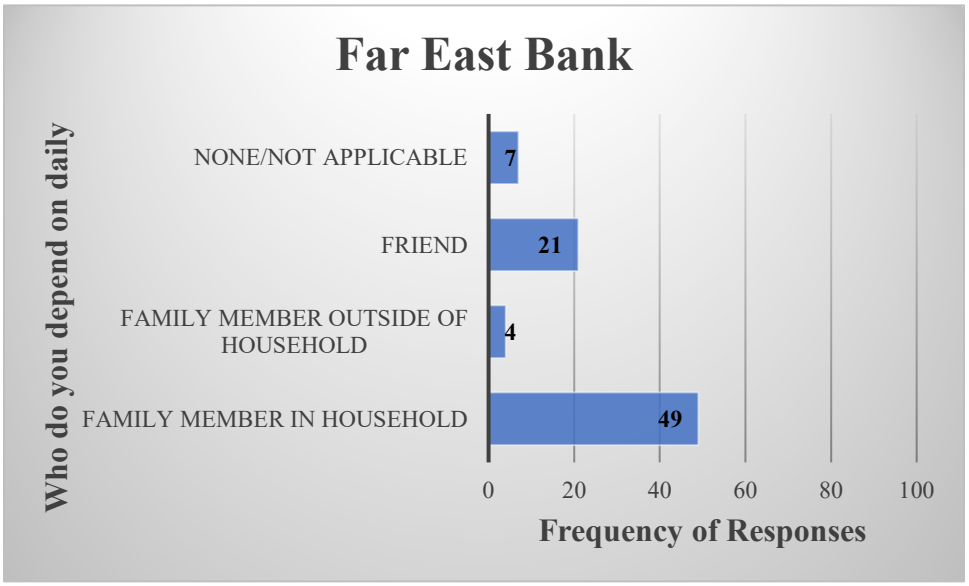
Appendix Figure F.2: How social ties aid residents in finding shelter.



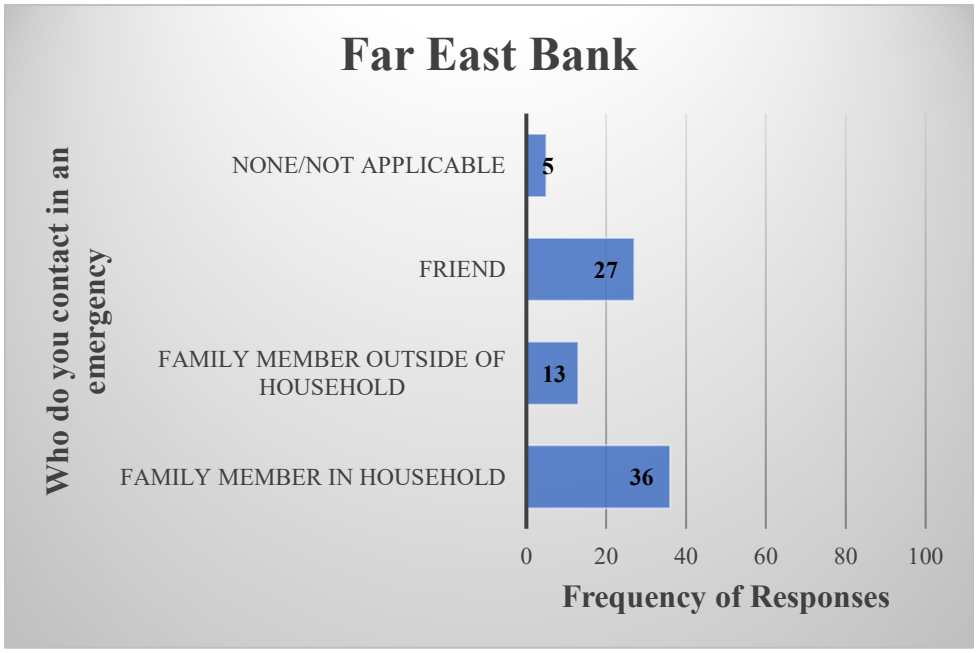
Appendix Figure F.3: How well do residents know their neighbors.



Appendix Figure F.4: The relationship between residents and neighbors.

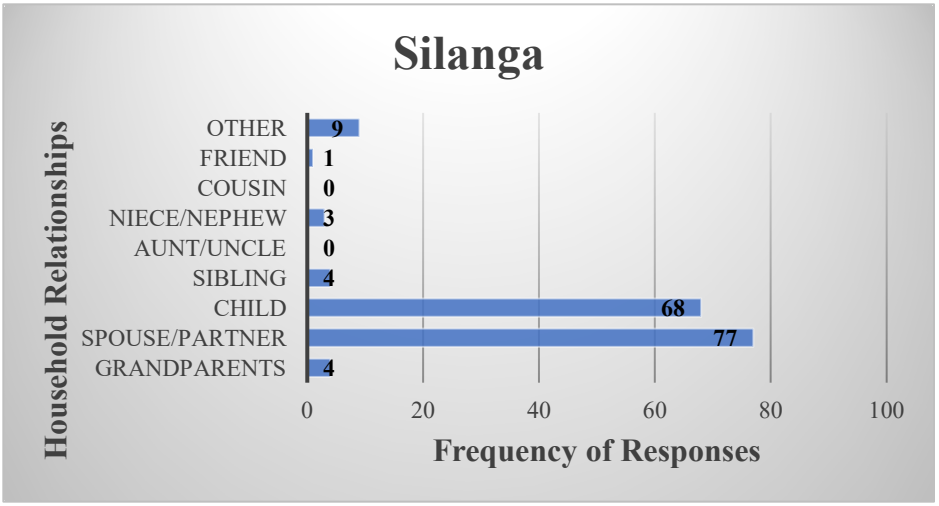


Appendix Figure F.5: Who do residents depend on daily.

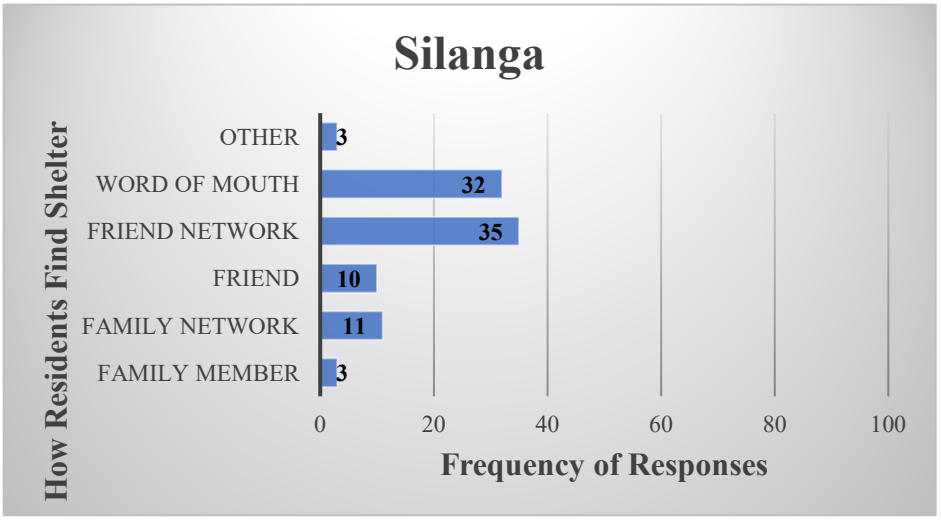


Appendix Figure F.6: Who do residents turn to for assistance in an emergency.

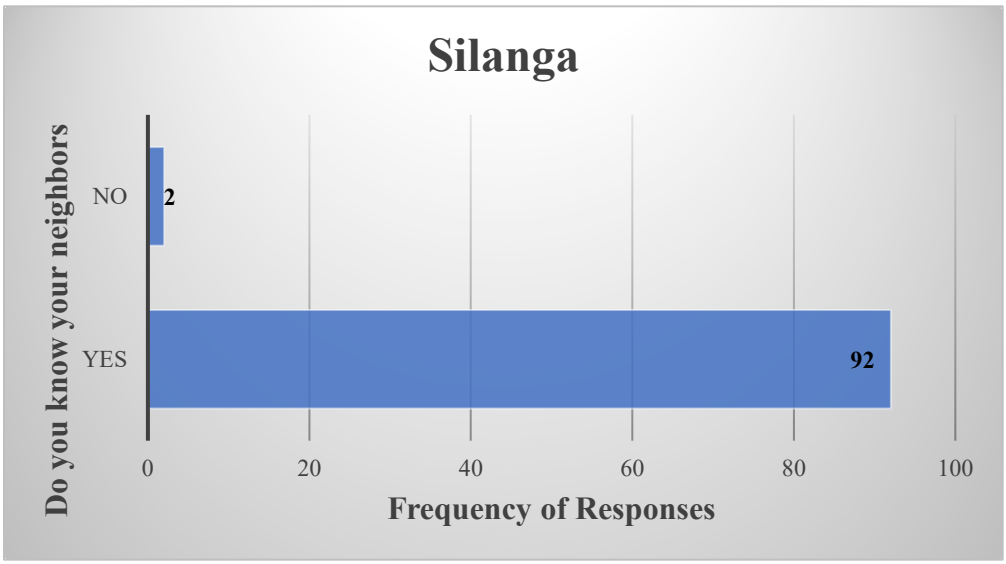
Appendix G: Descriptive Statistics of Question Combinations Comprising of Strength of Social Ties Within the Control Group in Nairobi, Kenya.



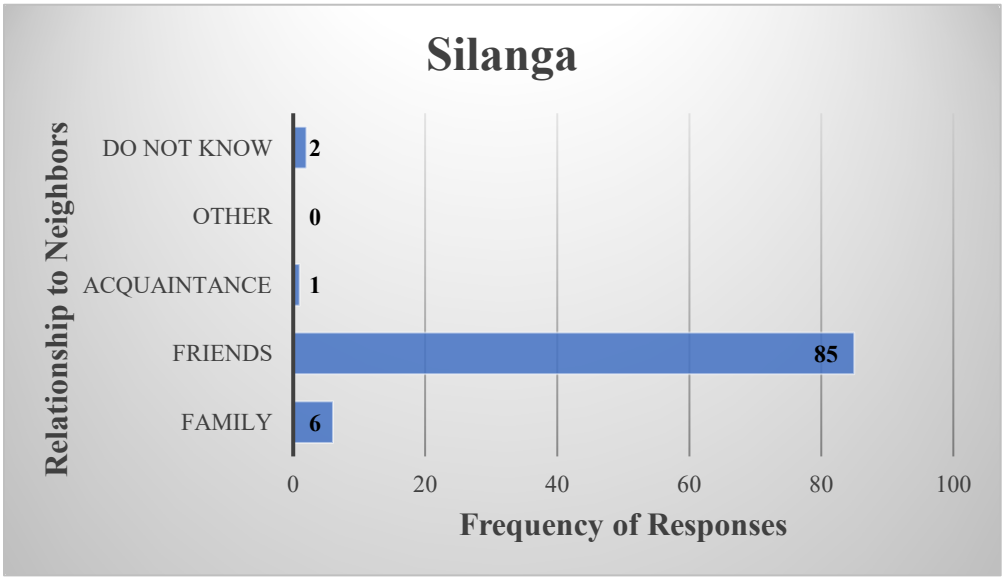
Appendix Figure G.1: Relationships between household members in control group.



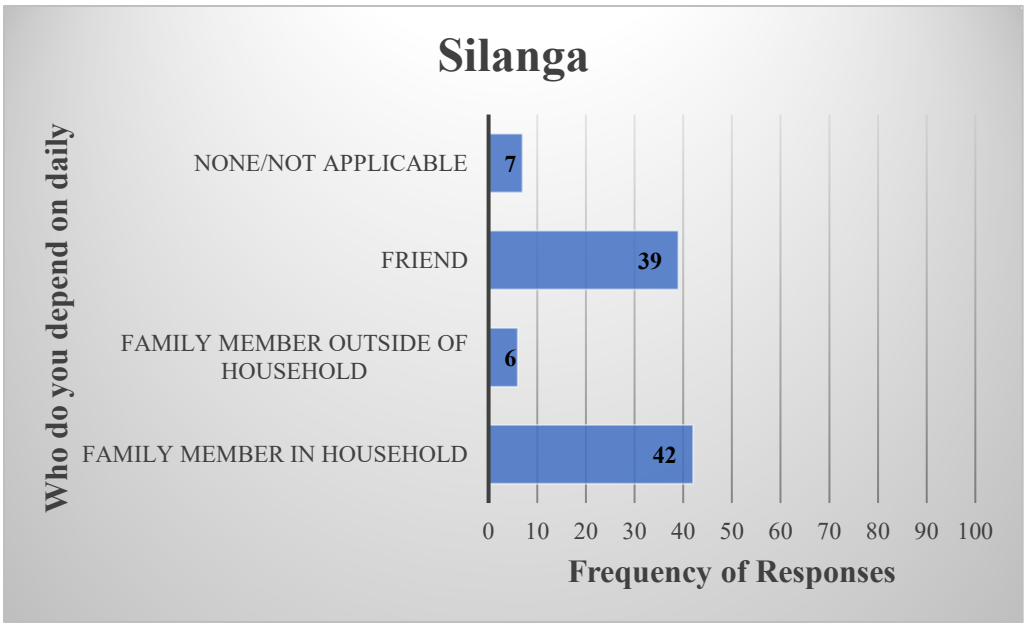
Appendix Figure G.2: How social ties aid residents in finding shelter.



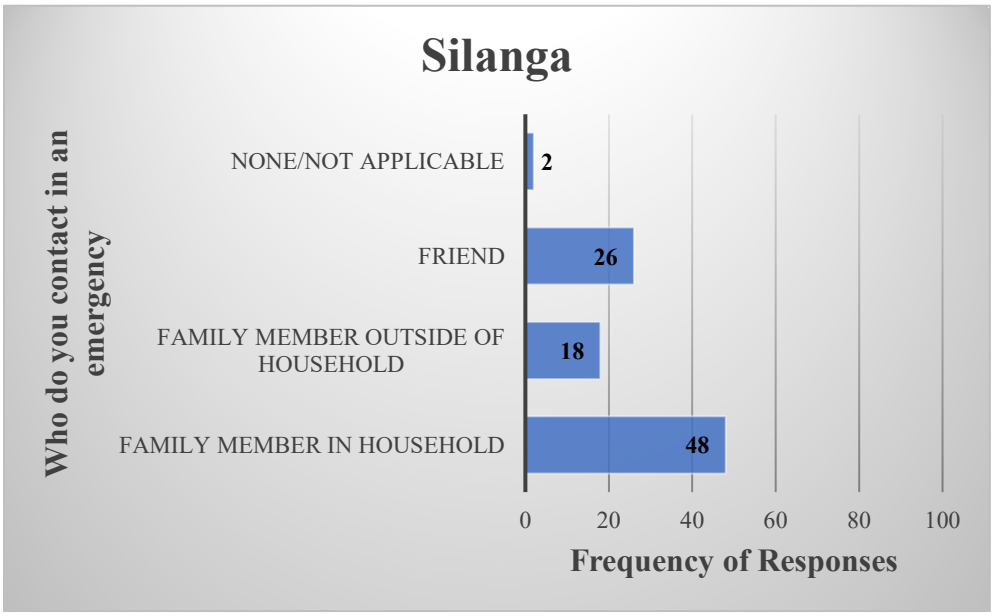
Appendix Figure G.3: How well do residents know their neighbors.



Appendix Figure G.4: The relationship between residents and neighbors.

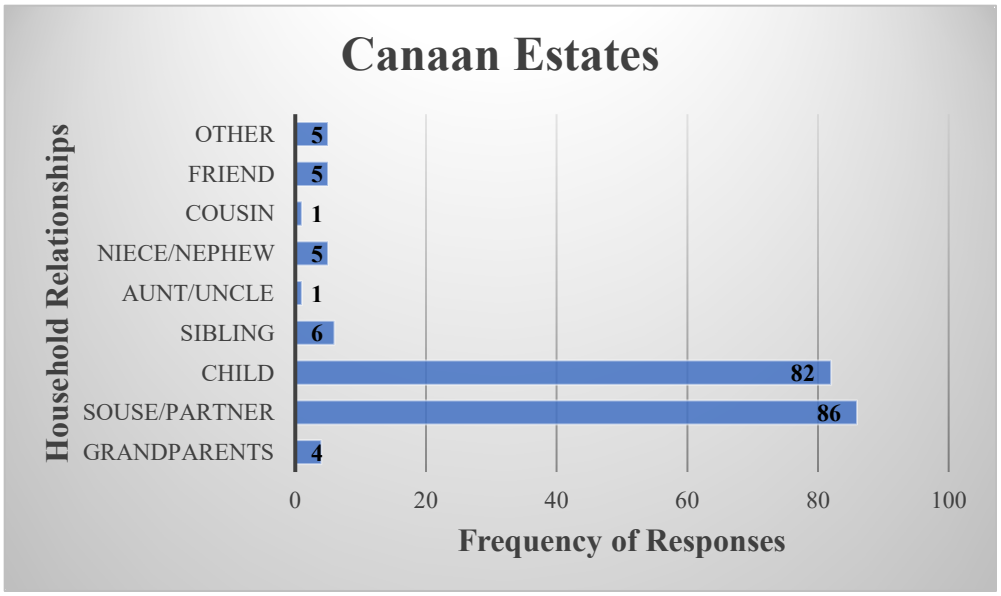


Appendix Figure G.5: Who do residents depend on daily.

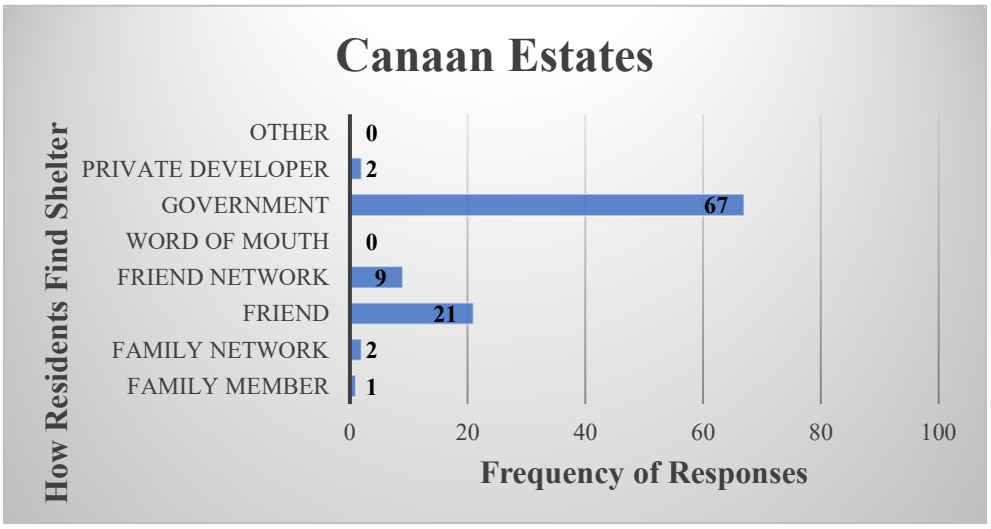


Appendix Figure G.6: Who do residents turn to for assistance in an emergency.

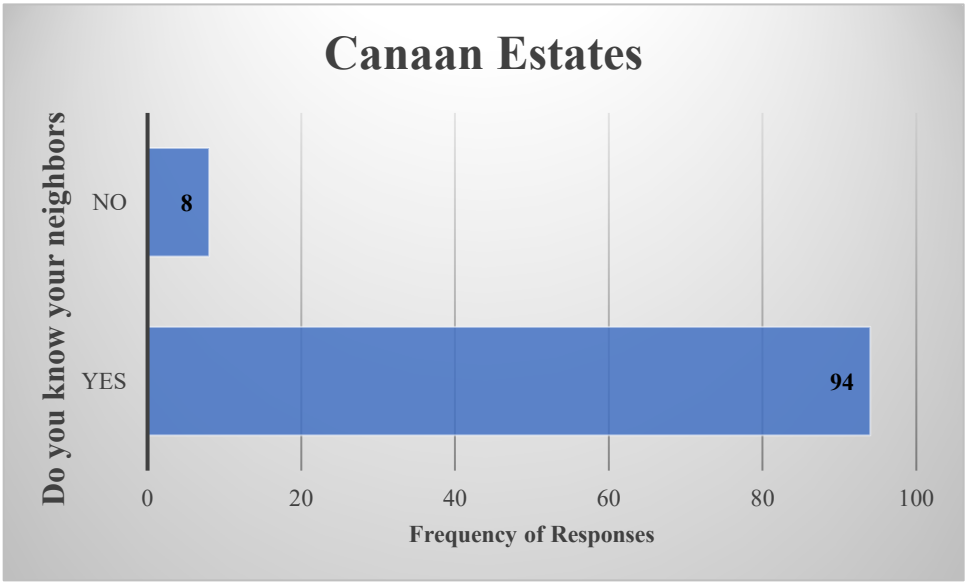
Appendix H: Descriptive Statistics of Question Combinations Comprising of Strength of Social Ties Within the Treatment Group in Nairobi, Kenya.



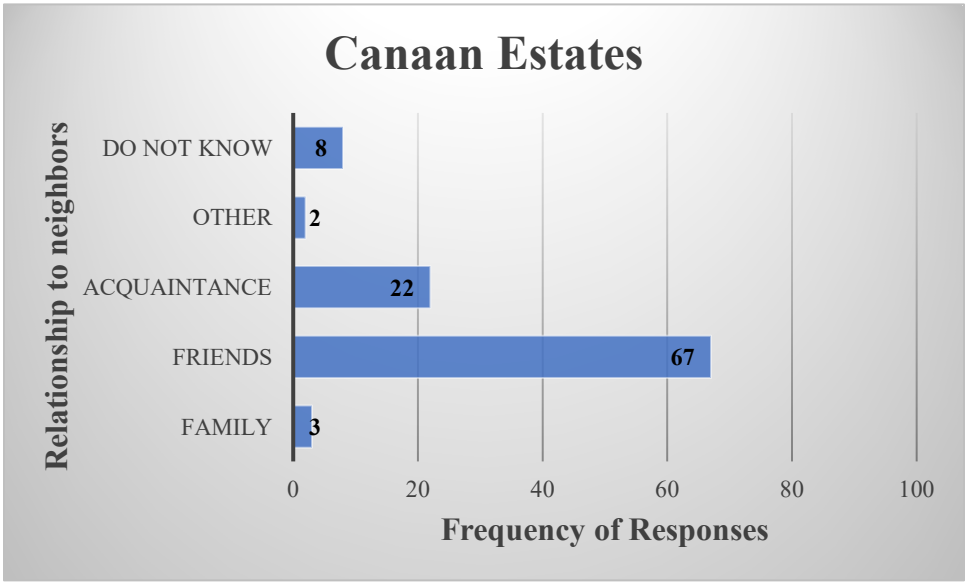
Appendix Figure H.1: Relationships between household members in control group.



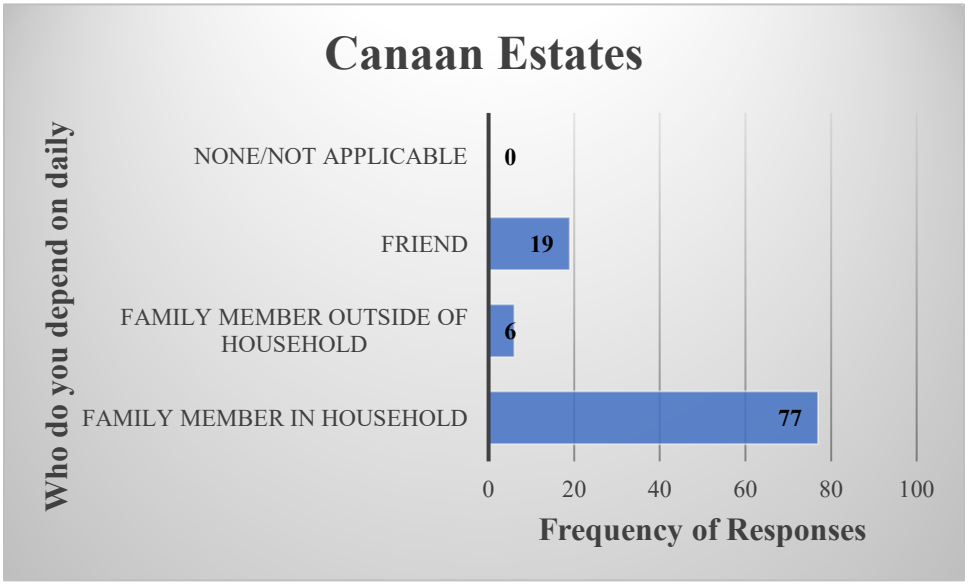
Appendix Figure H.2: How social ties aid residents in finding shelter.



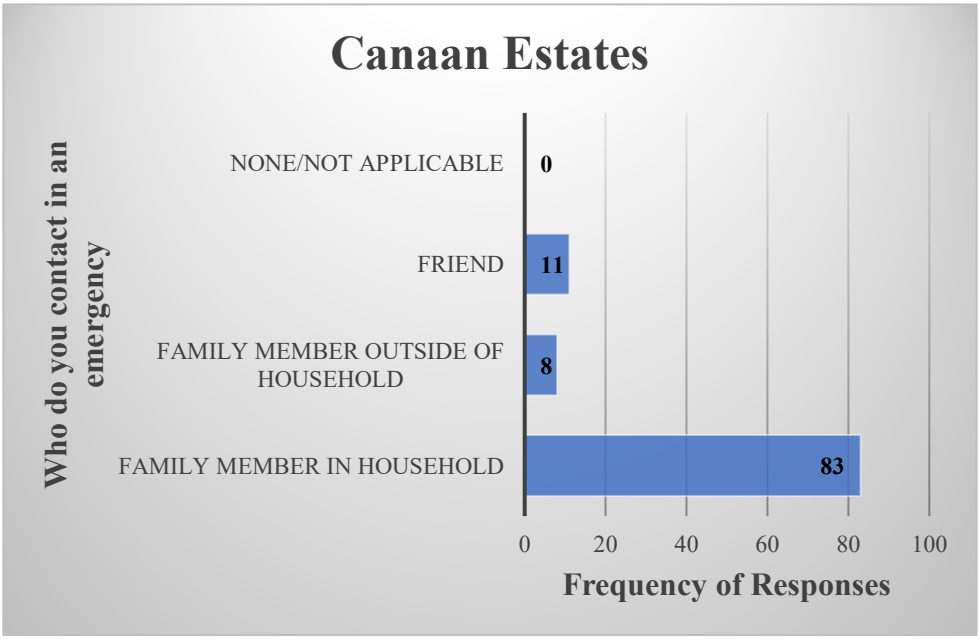
Appendix Figure H.3: How well do residents know their neighbors.



Appendix Figure H.4: The relationship between residents and neighbors.

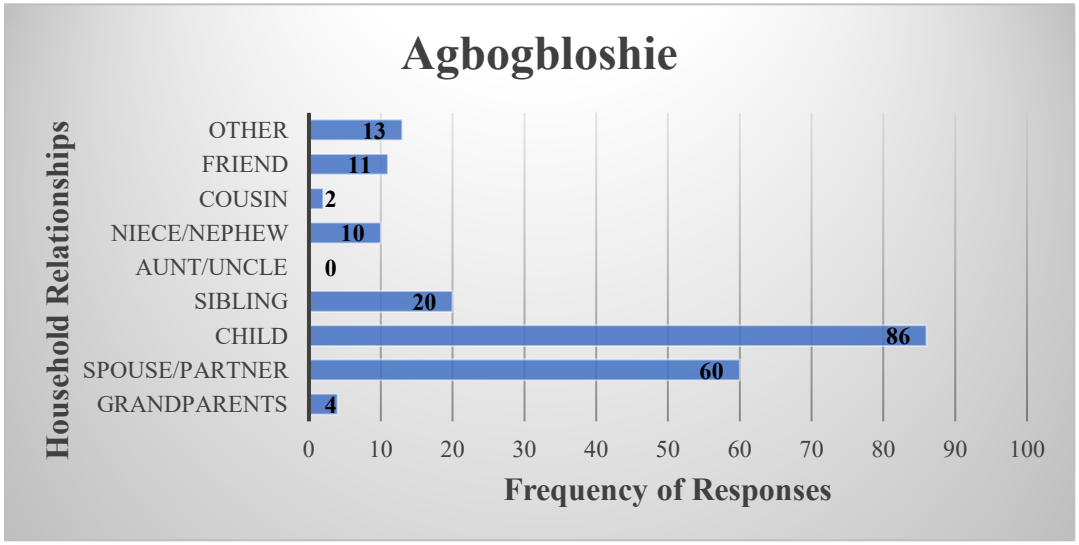


Appendix Figure H.5: Who do residents depend on daily.

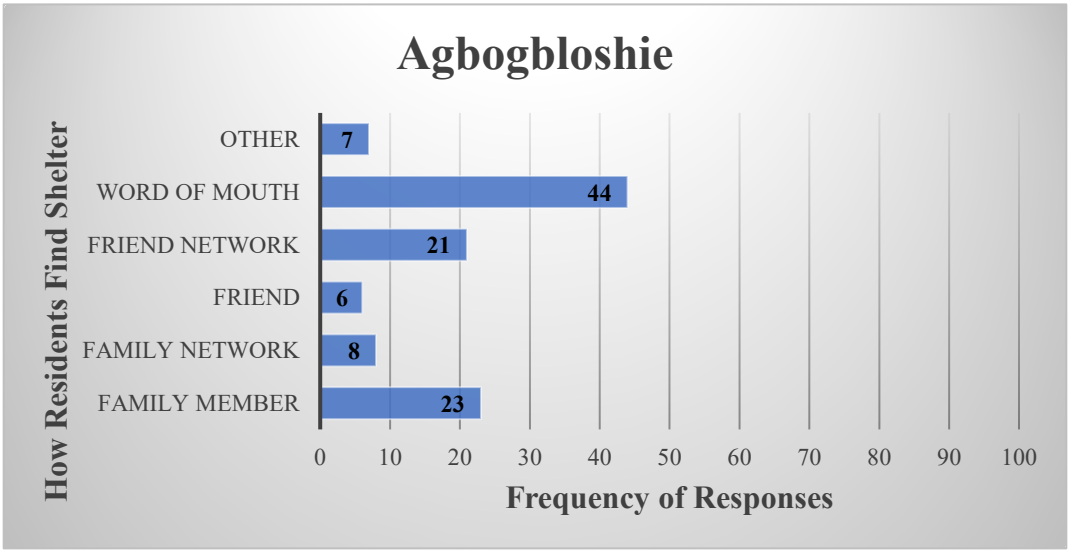


Appendix Figure H.6: Who do residents turn to for assistance in an emergency.

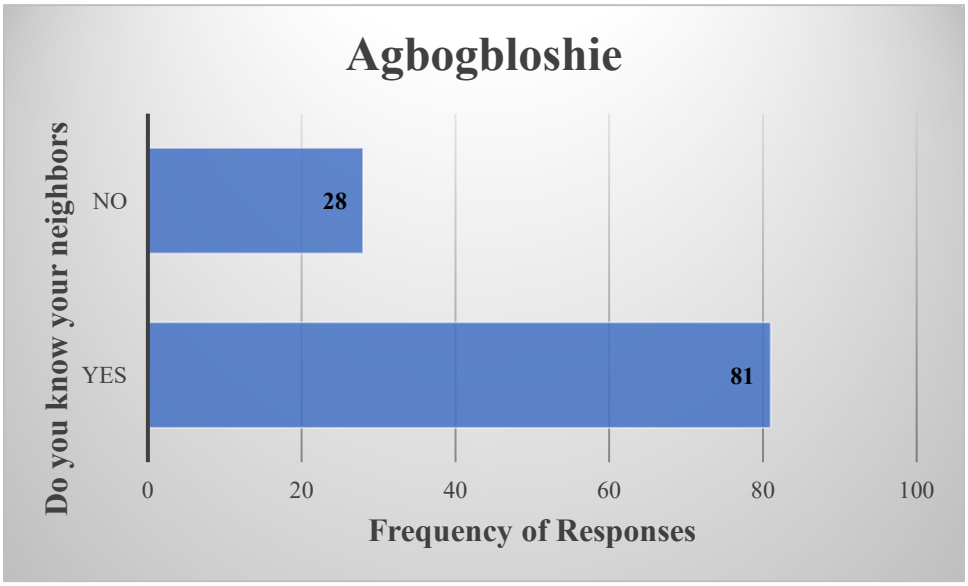
Appendix I: Descriptive Statistics of Question Combinations Comprising of Strength of Social Ties Within the Control Group in Accra, Ghana.



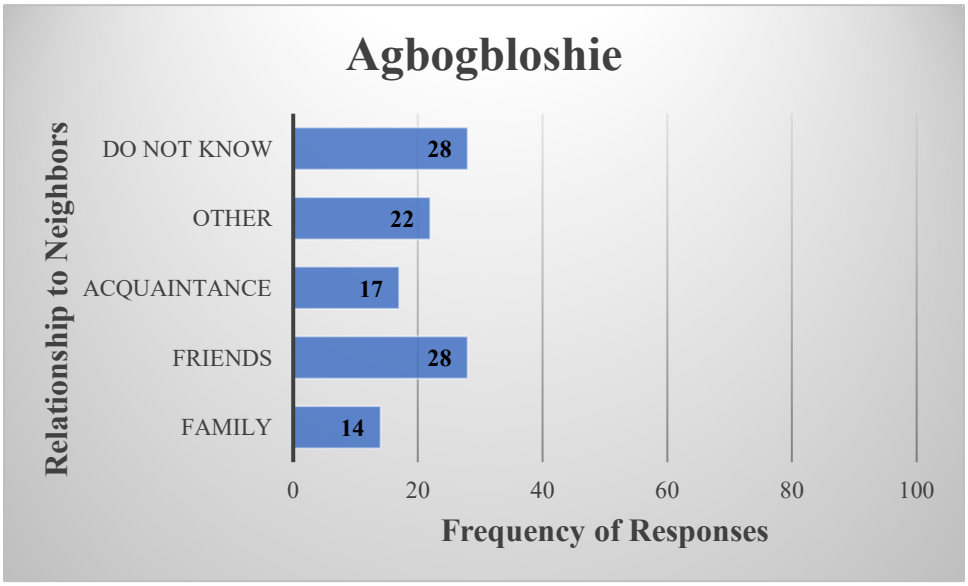
Appendix Figure I.1: Relationships between household members in control group.



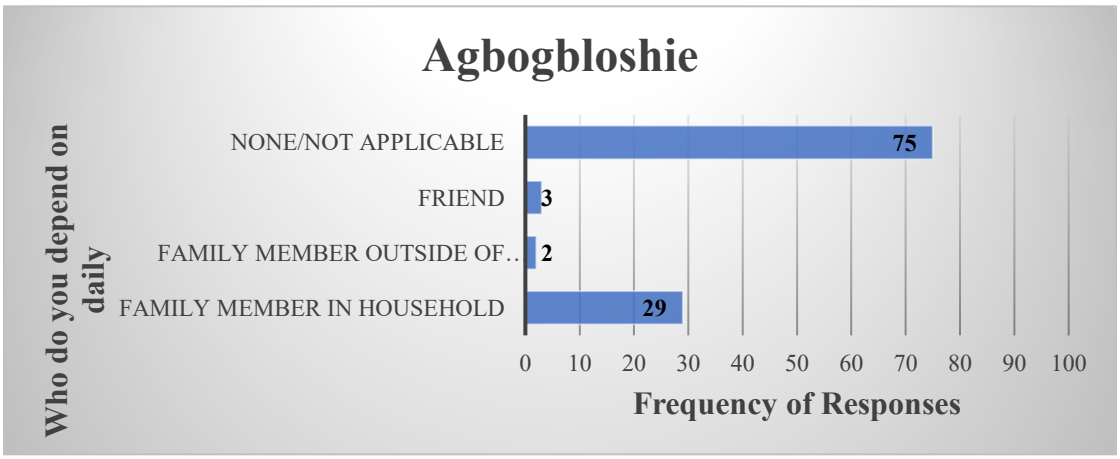
Appendix Figure I.2: How social ties aid residents in finding shelter.



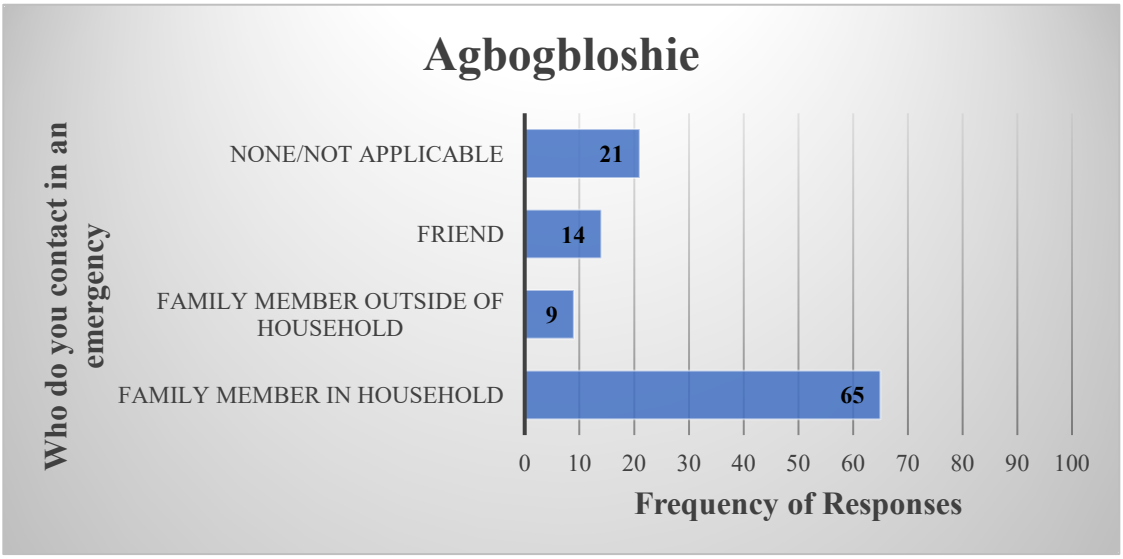
Appendix Figure I.3: How well do residents know their neighbors.



Appendix Figure I.4: The relationship between residents and neighbors.

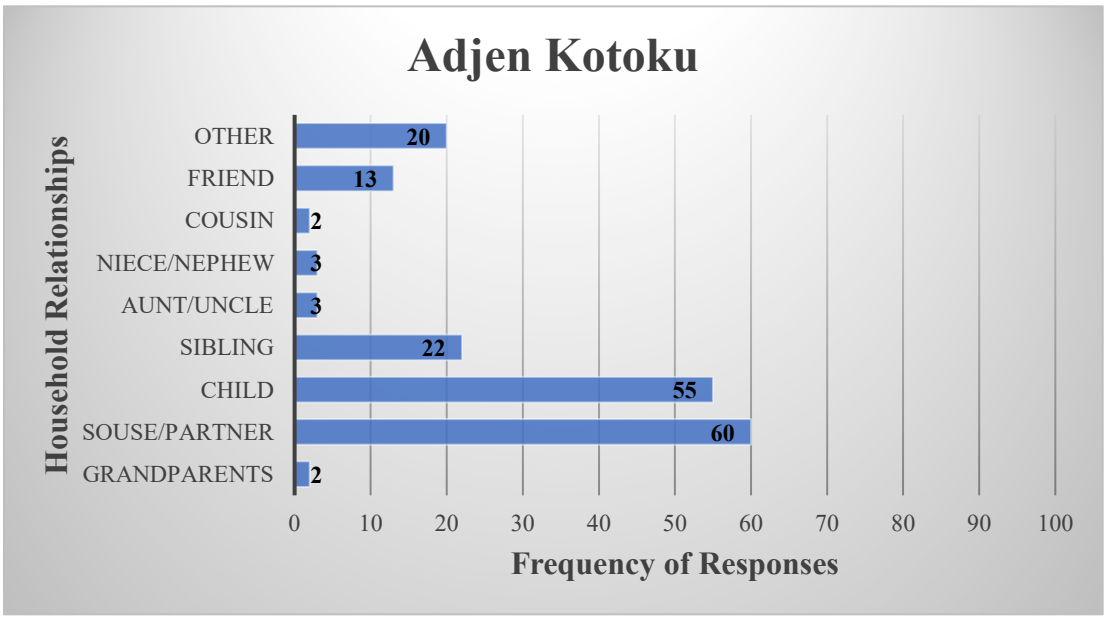


Appendix Figure I.5: Who do residents depend on daily.

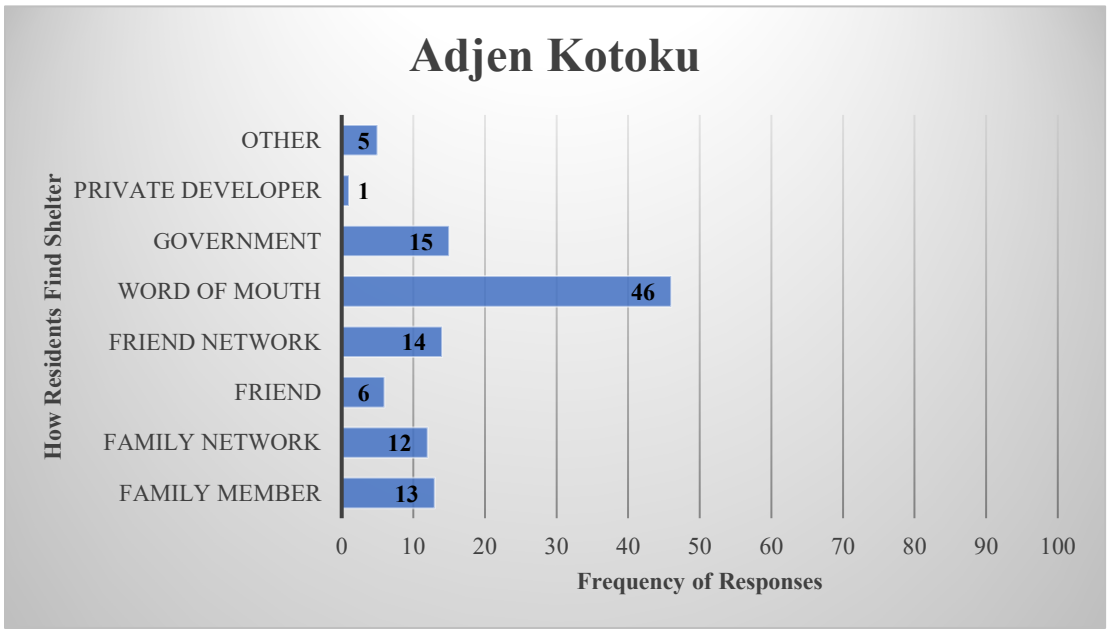


Appendix Figure I.6: Who do residents turn to for assistance in an emergency.

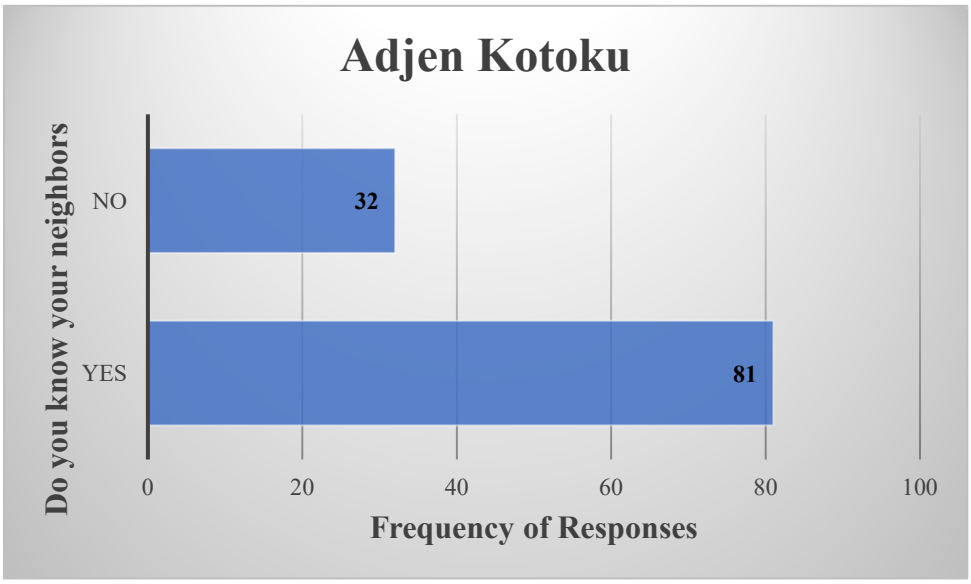
Appendix J: Descriptive Statistics of Question Combinations Comprising of Strength of Social Ties Within the Treatment Group in Accra, Ghana.



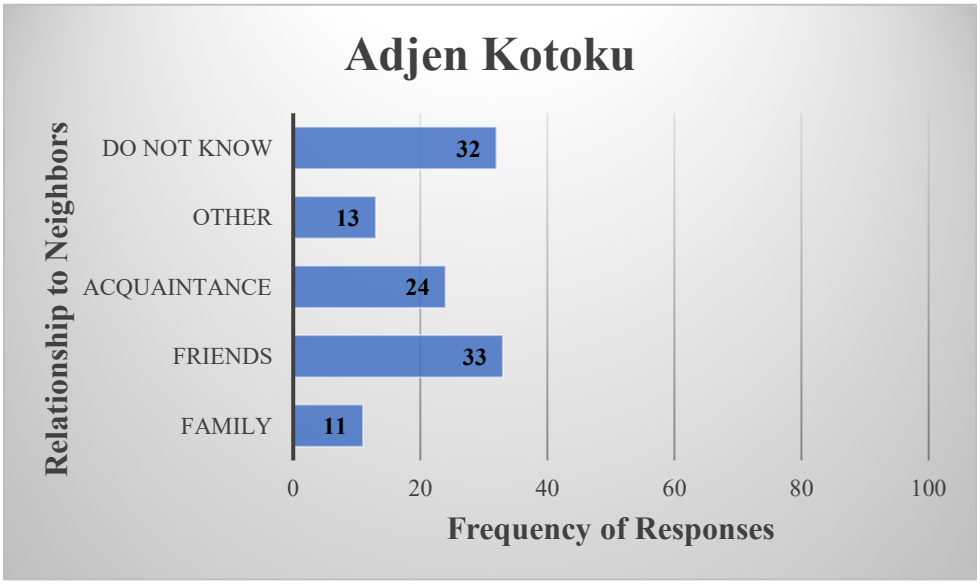
Appendix Figure J.1: Relationships between household members in control group.



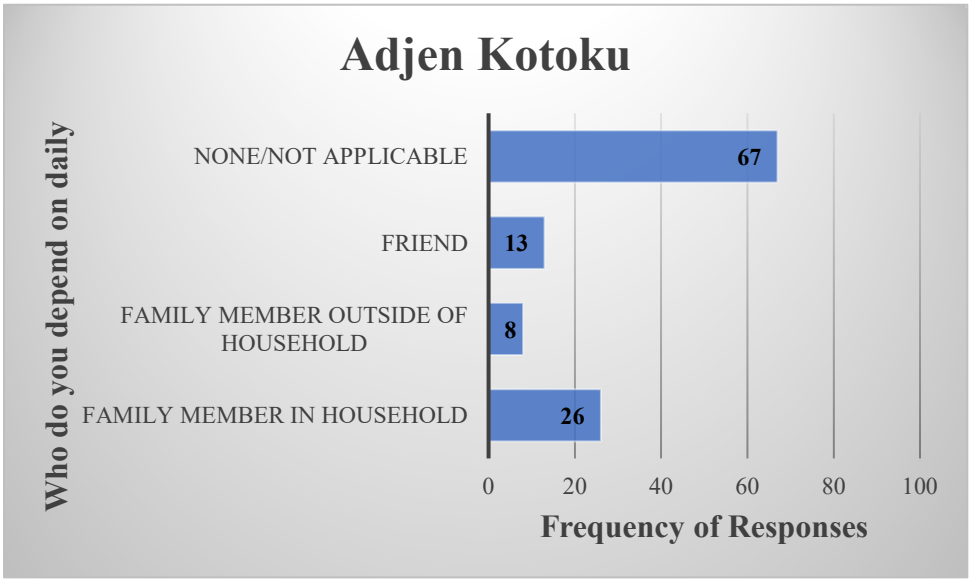
Appendix Figure J.2: How social ties aid residents in finding shelter.



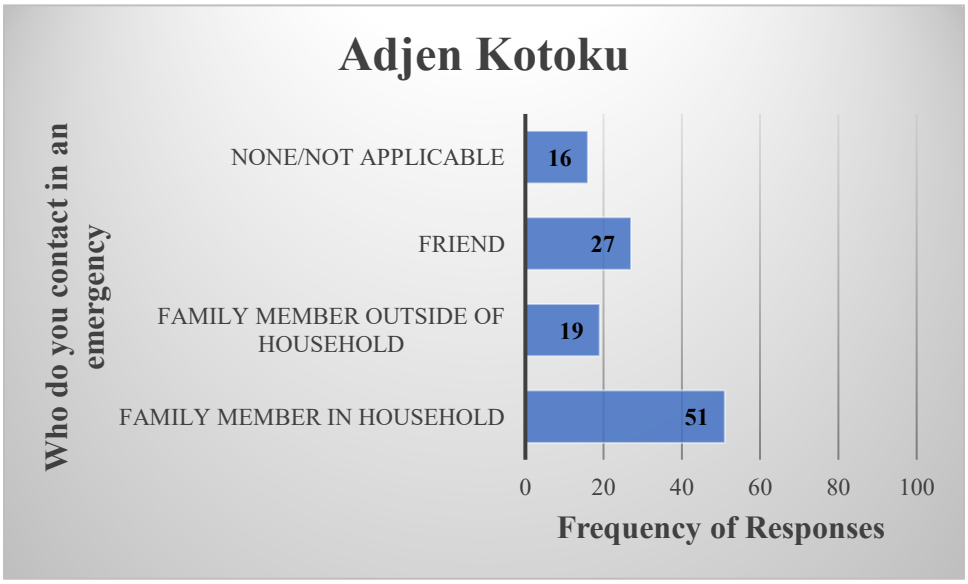
Appendix Figure J.3: How well do residents know their neighbors.



Appendix Figure J.4: The relationship between residents and neighbors.



Appendix Figure J.5: Who do residents depend on daily.



Appendix Figure J.6: Who do residents turn to for assistance in an emergency.

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