Food Riot? Analyzing the July 2021 Unrest in South Africa Using Topic Modeling

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List of Abbreviations

KZN	KwaZulu-Natal
IMF	International Monetary Fund
SAP	Structural Adjustment Program
ANC	Africa National Congress
BFAP	Bureau for Food and Agriculture
SRD	Social Relief of Distress
STM	Structural Topic Model
LDA	Latent Dirichlet Allocation
STATS SA	Statistics South Africa
GHS	General Household Survey

Abstract

The July 2021 unrest in South Africa trended on Twitter between the 9th and 31st of July 2021. The unrest received attention from different groups of society, it was interpreted by the media, government, and scholars. This paper explores whether the July 2021 unrest was framed as a food riot by the affected communities across KwaZulu–Natal and Gauteng provinces in South Africa. A dictionary-based analysis and STM topic modeling were conducted on 8264 geo-tagged tweets extracted from the 9th to the 31 of July 2021 to capture the views of the communities in areas affected by the unrest. The findings indicate that conversations concerning the unrest were around collective action, food disturbances, political dissatisfaction, looting, and socio-economic stressors. This study found that political dissatisfaction is linked to a lack of governance response to the deteriorating socio-economic conditions associated with the COVID-19 pandemic. The findings of this study suggest that loss of income and high food prices associated with the pandemic contributed to food disturbances. In addition, food price increases were expected in the aftermath of the social unrest. In conclusion, the views on Twitter revealed conversations around multiple interlinked issues.

Declaration

I, Palesa Khoza, declare that this research report titled “Food Riot? Analysing the July 2021 unrest in South Africa using topic modelling,” and the work submitted is my unaided work. I confirm that this work was primarily and exclusively done while pursuing a research degree at this institution. This work has neither been previously conferred in substance for any degree nor simultaneously submitted for a degree at another university. In cases where I have consulted the published work of others, it has been credited. The main sources of help have all been acknowledged.

Sign Here: P.Khoza

Date: 18/03/2024

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To my grandfather who is no longer with us.

1. Introduction

This section introduces the study. It provides readers with a brief overview of the motivations underpinning this research paper, the aims, and objectives of the research, as well as an overview of the remainder of the paper.

1.1 Motivation

#SouthAfricaisburning trended on Twitter from the 9th to the 31st of July 2021, during which time South Africa experienced significant social unrest. Attacks on trucks flared up on the N3 National Route resulting in the shutdown of the N3, a crucial road network that connects KwaZulu-Natal and the Gauteng provinces in South Africa (*Report of The Expert Panel into The July 2021 Civil Unrest*, 2021). In addition, the N3 is a key part of the road network that serves Southern Africa. In parts of Kwa-Zulu Natal (KZN), the unrest started as small protests against the arrest of former President Jacob Zuma (*Report of The Expert Panel into The July 2021 Civil Unrest*, 2021). The unrest escalated and intensified in areas around KwaZulu-Natal and Gauteng.

The rise in urban social unrest in South Africa suggests that there is significant social dissatisfaction. According to Ngwane (2021), #ShutdownKZN N3 in the Mooi River has been happening for years, since 2004 led by truck drivers who are against the employment of foreign drivers. According to Booysen (2018) the protests were driven by claims that foreign drivers pushed down wages and posed a threat to their livelihood, a grievance that resonated with a community that has suffered from continuous economic hardship including high unemployment, poverty and lack of service delivery. These difficult conditions left the population feeling marginalised and frustrated, resulting in reccurring unrest to demand change (Ngwane, 2021). The July 2021 unrest happened in a space of five days but resulted in damage that affected all levels of society (Ngwane, 2021). During the July unrest, looting of supermarkets occurred, especially looting of food (Ngwane, 2021). The unrest has had a knock-on effect on the already struggling economic and social situation. According to the *Report of The Expert Panel into The July 2021 Civil Unrest* (2021), the July unrest claimed over 300 lives and generated billions of rands' worth of business losses and economic devastation.

About 40,000 businesses and informal traders were negatively impacted, businesses shut down, and jobs were lost (Vhumbunu, 2021).

This paper seeks to contribute to the existing debates by exploring the question, "Was the July unrest framed as a food riot by affected communities across KwaZulu-Natal and Gauteng provinces?" The focus on the July 2021 unrest in South Africa is motivated by the need to better understand the underlying issues that spark social unrest. Different theories attempt to explain the events of July 2021, which will be discussed in the literature review below. While the body of knowledge already out there has focused on perspectives from the government, scholars, and media outlets, this study analysed the views of people in affected areas through their voices as expressed on Twitter (now known as X). It is critical to gain insight into the issues that may have triggered the social unrest. According to Gros and Cuesta (2014), from 2011 there was a gap in food riots literature. This study may contribute to the existing food riots literature in Southern Africa. While this study may not provide a definitive answer, in terms of the cause of the unrest, it will contribute to a deeper understanding of the events of July 2021, which is crucial for policy planning and implementation of strategies to address the socio-economic issues that the nation is facing. Moreover, this study will provide insight into the narratives around social unrest as experienced by participants, which will expand the literature on urban social unrest.

1.2 Aim

This study aims to explore whether the July 2021 unrest was framed as a food riot among affected communities across KwaZulu-Natal and Gauteng using topic modeling.

1.3 Research Objective

To explore whether the July 2021 unrest in South Africa, based on the perspectives expressed on Twitter of affected communities across the KwaZulu-Natal and Gauteng, could be considered a food riot.

1.4 Research Question

Was the July unrest framed as a food riot by affected communities across KwaZulu-Natal and Gauteng?

1.5 Research Report Overview

The rest of the paper is set out as follows:

Chapter 2 reviews the literature on the views surrounding the events of the July unrest. Chapter 3 provides the methodology used to collect data and data analysis. In chapter 4, I present the results from the analysis of the tweets included in this study. Chapter 5 discusses the themes that have emerged from the twitter data. Chapter 6 concludes the paper, outlining the findings and possible avenues for future work.

2 Literature Review

In this section, I examined the different framings of the July unrest. First, I provide a theoretical framework to support this study: the food riot. I then look at the interconnected forces that shaped the unrest including political dynamics, socio-economic crisis and looting. Food-related social unrest has been observed throughout history and across societies, studies found that food riots tend to be shaped by an interaction of internal economic, political, social, and cultural factors more than global shocks (Auyero and Moran, 2007; Berazneva and Lee, 2013; Booth, 1977; Bush and Martiniello, 2017; Engel, 1997; O'Brien, 2012; Patel and McMichael, 2009; Thompson, 1971).

2.1 The History of Food Riots

Barbet-Gros and Cuesta (2014), stated that four components define a protest as a food riot. One, a food riot must be violent to distinguish it from a peaceful demonstration. Two, the protest must be associated with food disturbances like changes in food prices. Thirdly, there should be some sense of root motivation to encourage a riot. The fourth element is that it must be a collective event. Other Studies describe a food riot as a collective action/online activism that stems from multiple factors that are linked to food disturbance (Auyero and Moran, 2007; Berazneva and Lee, 2013; Booth, 1977; Bush and Martiniello, 2017; Engel, 1997; O'Brien, 2012; Patel and Mcmichael, 2009; Thompson, 1971).

The food riots in the North-West of England 1790-1801 were brought on by four factors: harvest and speculative price patterns, declining wages, and rising unemployment (Booth, 1977). According to Booth (1977), low wages and unemployment resulted in struggle and deprivation that may have driven people to riot.

Eighteenth-century Britain also experienced food riots. Central to the wave of food riots in eighteenth-century Britain was a society that felt its traditional entitlements were being taken away (Thompson, 1971). Similarly, during World War 1, Russia experienced subsistence riots due to the government's incapacity to maintain equality among different social classes (Engel, 1997). Riots broke out as people of the lower class expressed anger over deteriorating standards of living and basic foods became inaccessible (Engel, 1997).

In the twentieth century, riots in Russia were shaped by the shift to the market economy whereby rural life was impacted by industrialization (Engel, 1997). According to Engel (1997),

riots were provoked by working-class households that experienced a lack of food-related to high food prices. According to Patel and McMichael (2009), the transition to free-market capitalism led to the erosion of peasants' entitlements. Rather than being demonstrations of public anger, most protests were politically organized to bring attention to issues of food scarcity and increasing prices and to pressure local governments to act (Patel and McMichael, 2009). In addition to the demand for sufficient food, these demonstrations opened the door to other related claims (Patel and McMichael, 2009).

Turning to more recent food riots that emerged due to the 2007-2008 global food crises, O'Brien (2012) noted that these protests demonstrate motivations that can be related to the past events of food riots. O'Brien (2012) described the 2007-2008 food riots in relation to human security. O'Brien (2012) refers to human security as a form of continuous insecurity particularly under governments that are incapacitated and fail to provide for the people. He argued that food riots do not unfold from lack of food alone but go further in terms of political and economic insecurity (O'Brien, 2012). O'Brien (2012) argues that rising food prices are a challenge to economic security, whereby food becomes a significant expense. He argued that human security goes hand in hand with political security, the state plays a role in ensuring human security (O'Brien, 2012). The inability of the government to protect or provide human security may lead to anger and unrest as people's needs go unmet. Furthermore, O'Brien (2012), argued that food riots can play out as a score-settling field between opposition groups, as food riots depend on any form of injustice in a population to erupt.

In past studies, looting has been identified as a prominent feature of food riots (Mac Ginty, 2004; Auyero and Moran, 2007). Mac Ginty (2004) defined looting as a form of political violence or politically motivated action. He argued that while acts of looting may not be directly violent, it is triggered by violence (Mac Ginty, 2004). According to Mac Ginty (2004), looting does not spontaneously occur, enabling conditions must exist. He identified the following as the enabling conditions: "availability of looters, availability of 'lootable' goods, absence of restraint, permissible socio-cultural environment". Regarding the availability of looters, perhaps it is more appropriate to refer to the presence of potential looters as many people involved in looting don't set out to engage in criminal activity; rather, looting often occurs as a result of opportunism (Mac Ginty, 2004). According to Mac Ginty (2004), looters tend to include young males from marginalized groups of society who are politically active

and hold membership in militant groups. However, central to the twentieth-century riots in Russia were women as they were vulnerable to hardship, making reproductive labour difficult (Mac Ginty, 2004). Mac Ginty (2004) argued these political and armed groups may play a role in encouraging the masses to take part in looting. In other words, looting is organized rather than a spontaneous act of violence (Mac Ginty, 2004).

Similarly, Auyero and Moran (2007) define looting as an act that involves two or more individuals who forcefully take items by overcoming physical restraint or attempting to take items but are faced with restraint. In their analyses of the 2001 Argentina food riots, Auyero and Moran (2007) investigate the internal elements of riots and suggest that third parties in terms of political brokerage are instrumental in the making of collective action. In addition, they suggest that collective action/online is affected by state repression and looting is rarely a random act. Instead, looting is targeted at specific stores and influenced by other factors such as the ethnicity of the owners and the location of the stores (Auyero and Moran 2007).

2.2 Food Riots in Africa

The earlier wave of food riots between 1983 and 1985 that spread across developing countries was triggered by structural reform programs introduced by the International Monetary Fund (IMF) and the World Bank (Berazneva and Lee, 2013). According to Reinsberg et al., (2023), structural adjustment programmes (SAPs) contributed to social unrest related to food in developing countries in the Global South. In the context of Africa, Reinsberg et al., (2023) described the food riots as material hardship and alienation. Reinsberg et al., (2023) argued that material hardship is created by limiting the role of government in the economy in the following ways. Firstly, SAPs introduced fiscal policies that cut government subsidies which squeezed out local producers and increased the supply of imports (Reinsberg et al., 2023). Secondly, they removed any barriers to trade exposing the people to food price inflation. Thirdly, they encouraged marketization which led to increased food prices that triggered social dissatisfaction (Reinsberg et al., 2023). According to Reinsberg et al., (2023), alienation arises from state betrayal whereby government elites are invested in the interests of foreign organizations and neglect the interests of the people. In the case of Zimbabwe, Chattopadhyay (2000), noted that marketization policies implemented in 1990 impacted the relationship between supply and demand. When the government cut subsidies for farmers, trade openness contributed to an import-dependent market. When the government cut

spending, workers' incomes shrank. This led to a food surplus that people could not buy, therefore inciting violent protests. According to Walton and Seddon (1994, cited in Bush 2010: 121), these food riots were the result of political and economic conditions produced by neoliberal policies.

Studies indicate the recent food riots in Africa have taken a different shape. Sneyd et al., (2013) explored media views on the causes of food social unrest in Africa and found that food price increases trigger food riots linked to other problems. Sneyd et al., (2013) argued that food protests are triggered by anger over inter-related issues of unemployment, inflation, and alienation from government resulting in discontent and political instability. Walton and Seddon (1994, cited in Bush 2010: 121) reported that large urban populations faced with a lack of employment opportunities and lack of political participation created the conditions for social unrest. In a previous study conducted by Berazneva and Lee (2012), they concluded that high poverty levels in urban areas and political instability were the drivers of the 2007-2008 riots in Africa. Furthermore, Sneyd et al., (2013) found that international media suggests that global price speculation and food monopolies drove the food price increases between 2007 -2011 contributing to rioting. Legwegoh (2015) put forward that some African countries experience food riots due to discontent with the state when the government fails to ensure basic needs like food through appropriate policies. Marginalized households in cities that rely on markets integrated into the global food system tend to be vulnerable to price increases and likely to protest. In addition, types of diets can contribute to riots, Legwegoh (2015) found that countries that are cereal dependent are likely to riot as cereals drive food inflation.

2.3 Insurrection and Other Political Explanations for the July Unrest

Debates have erupted around the real cause behind the July 2021 social unrest. One framing of the unrest favours political explanations. In the preliminary *Report of The Expert Panel into The July 2021 Civil Unrest* (2021) President Cyril Ramaphosa described the July unrest as an insurrection, an attempt to create instability and dislodge ANC leadership. Dunlop (1995) refers to insurrection as an armed revolt against the state. In the July unrest report, the Minister of Police, Bheki Cele viewed the unrest as organized violence to create national disorder. In support of these claims, in the report, looting that took place during the unrest was described as "organized spontaneity". According to the expert panel, looting was planned in hostels and meant to appear spontaneous. Furthermore, Fogel (2021) described the July

unrest as a well-organized insurgency that aimed to take down key logistics, transportation, and communication systems. While there was panic and a social crisis in the form of food shortage, the state would be crippled and not be able to maintain or ensure order resulting in the forced removal of ANC leadership.

In a different, but also political, view, Thandi Modise, the Minister of Defense argued that the July unrest was not an insurrection but a counter-revolutionary attack on the state, in which those who supported Zuma called for violence. According to Lamb (2021), brokerage was a key feature of the looting that took place. Lamb (2021) argues that looting does not spontaneously happen, influential people or groups are often the initiators who assert that looting is acceptable and justified. Lamb argued that those in Zuma's camp had been urging violent protests in KZN and Gauteng. Lamb (2021) suggested that looting spread across KZN and Gauteng as there was a prevalence of Zuma supporters in those areas willing to take part in violent collective action.

Some scholars view the July unrest as political factionalism. Habib (2020) refers to political fractionalization as a struggle for control of social movements between different political factions. However, in this case, it refers to intra-ANC fractionalization. Duncan (2021) argues that intra-ANC fractionalization has four consequences. The first consequence is that it disrupts the provision of crucial services. As a result, the second consequence is that the masses become increasingly vulnerable and desperate for intervention. Third, this creates the opportunity for political factions to intervene with promises of what will be done. Fourth, it undermines the current president by creating the notion that he is ineffective (Duncan, 2021). Reddy (2021) interprets the events of July 2021 as an intra-elite conflict that is a serious threat to democracy. In reality, there was no riot by the poor, but rather elites attacked democracy (Duncan, 2021; Fogel, 2021; Reddy, 2021).

A key feature of food riots is looting. Having studied the Mogadishu riots in Somalia between 1990 and 1990, Bakonyi (2010) speaks of leveling looting that is aimed at political entities and social elites over a sense of injustice. Bakonyi (2010) argues that these riots happened in an attempt to challenge the system and create the desired state. Auyero and Moran (2007) examined food riots in Argentina in 2001 and found that looting took different forms influenced by the relation between the market scale, involvement of political brokers, and police presence. Their study found a negative relationship between political brokers and

police presence, in the sense that political brokers' activity was associated with a low or no presence of police. Auyero and Moran (2007) refer to political brokers as members of the public that have networks that provide resources in impoverished communities. The patterns of looting in Argentina in 2001 showed that political brokers were often active around small-scale markets rather than supermarkets that were more likely to be protected by police. Furthermore, Auyero and Moran (2007) suggest that political brokers play a role in providing access to food and serving the interests of the people.

In the context of the July riot, looting was not just theft, but it was strategically used by political brokers to undermine the current government and gain public support (Lamb, 2021). Political groups took advantage of public frustration and anger over economic hardship to mobilize government support (Lamb, 2021). In contrast to the patterns of looting in Argentina in 2001, political brokerage was active and directed at supermarkets. Furthermore, media outlets and section three of the *Report of the Expert Panel into the July 2021 Civil Unrest (2021)* suggest that there was a lack of police intervention and in some cases absence of police (Erasmus, 2021; Stoltz, 2021).

2.4 Economic Threats and the July Unrest

Another view circulated in academia, some parts of government, and media outlets is that the unrest was due to the multiple economic crises the country has experienced. In this view, the July 2021 unrest revolved around the government's failure to address the issues of poverty, unemployment, and inequality, which resulted in the economic exclusion of certain communities (Ngwane, 2021; Report *of The Expert Panel into The July 2021 Civil Unrest*, 2021; Vhumbunu, 2021). According to Fogel (2021), the July unrest cannot be attributed to support for freeing Zuma. The unrest took place at a time when the country was experiencing a socio-economic crisis which was enough to stir up a riot (Fogel, 2021). Vhumbunu (2021) argued that the pre-existing issues of unemployment, poverty, hunger, and inequality were exacerbated by stringent COVID-19 regulations. This exclusion was created by racial segregation under Apartheid, but studies indicate that even under democracy, marginalized groups continue to face deteriorating economic conditions (Ngwane, 2021). Therefore, anger and frustration towards the state led to the eruption of social unrest.

The July unrest spread across urban areas in KZN and Gauteng and intensive looting occurred in low-income communities (Eyewitness News, 2021; Head, 2021; Ngwane,2021; Vhumbunu 2021). According to the United Nations (2021), about 67% of South Africa's population is concentrated in urban areas. When looking at food riots through the lens of South Africa's history of apartheid, it is also important to acknowledge that the people and areas where the looting occurred have faced long-standing social and economic marginalization compared to the neighboring higher-income communities (Nqwane, 2021). Similarly, Berazneva and Lee (2013) looked at the 2007-2008 riots across Africa and identified that high levels of poverty were linked to food riots. They found that one of the contributors to high poverty levels in Africa was rapid urbanization, with countries that have large urban populations tending to experience food riots. This is because urban populations depend on food purchases, meaning that they are more vulnerable to changes in food prices and likely to spark food protests (Berazneva and Lee, 2013).

Previous studies show that rioting can be driven by economic hardship (Berazneva and Lee 2013; Ngwane, 2021; Vhumbunu, 2021). In this instance, the Minister of State Security described the protests as a reaction to the hunger among the people, but also as collective action/online activism in support of Zuma. During the State of the Nation Address in 2022, Minister Mondli Gungubele stated, "Mr President, when you addressed South Africa on Thursday, you unequivocally spoke to their frustrations, dejections, and vulnerability, demonstrating to the nation that you are alive to the underlying factors responsible for their desperation as it emanates from the state of inequality, poverty, unemployment and security." In this statement minister Gungubele reaffirmed the president's words indicating that he supports his views about the July unrest. In support of this view on the July 2021 events, the Minister of State Security described the protests as a reaction to hunger (*Report of The Expert Panel into The July 2021 Civil Unrest*, 2021). This interpretation suggests food disturbances were related to food access in terms of affordability. This interpretation suggests food disturbances were related to food access in terms of affordability and contradicts the president's insurrection view. The work of Battersby (2017) shows that food retail in South Africa is dominated by supermarket chains that inflict high food prices on consumers impacting affordability. Food affordability has been impacted by unemployment, growing poverty, and the state's inability to provide social security (Ngwane, 2021; Vhumbunu, 2021).

Studies by Swan et al., (2010) and Moseley et al., (2010) suggest that in urban areas significant portions of income are spent on food while buying power continues to decline. According to BFAP (2021), households spend almost a third of their income (29.5%) on food expenditure. Due to the Covid-19 pandemic food prices rose dramatically, and all foods including bread, cereals, and fruit had year-on-year inflation rates of above 5.7% (BFAP, 2021). Meat with a rate of 31.7% was a big driver of inflation (BFAP, 2021). Thus, the July unrest may have been driven by frustration and desperation related to reduced means of purchasing food.

At the State of the Nation Address in 2022, the president briefly mentioned the issue of hunger being aggravated by the COVID-19 pandemic. In the aftermath of the initial COVID-19 lockdown measures, many South African households suffered increased economic hardship due to loss of income. The loss of income and rising food prices put pressure on household food security, especially on poor urban households that depend on purchasing food. According to Stats SA (2021), the number of households experiencing moderate to severe hunger jumped from 17.3 % (10, 1 million people) to 23.6%, while households that experienced severe hunger doubled, from 7 % to 14.9%. The state made efforts to cushion the socio-economic effects of the pandemic by providing a social relief of distress (SRD) grant of R350 per month for the unemployed. However, it did not reach enough individuals (Vhumbunu, 2021). Moreover, the food poverty line was adjusted to R624 (Stats SA, 2021). This refers to the minimum amount of money an individual needs to reach their daily food intake per month (Stats SA, 2021). The food poverty line of R624 is considered the extreme level of food poverty. This tells us that households that were dependent on the SRD of R350 as their main source of income could have been living below the extreme food poverty line and may have been experiencing hunger.

Many of the studies of food riots in Africa have focused on the consequences of global food price increases and external forces such as structural adjustment programs established by the International Monetary Fund (IMF) and World Bank (Berazneva and Lee, 2013; O'Brien, 2012; Sneyd et al., 2013; Walton and Seddon, 1994 cited in Bush 2010: 121, cited in Bush 2010: 121). Where other studies examined global food prices, this study will focus on internal country threats to economic and political security that contribute to food riots. This study will contribute to the literature on social unrest by including the voices and views of those in affected areas, as expressed on Twitter. This research is novel in terms of its methods. It offers

computational text analysis based on Tweets, which will shed light on the views of the people in areas affected by civil unrest in South Africa. Previous studies have examined social media's role in mobilizing people to partake in rioting, particularly in the case of the Arab Spring (Moldovan, 2020; Smidi and Shahin, 2017; Tudoroiu, 2014). Other work has looked at the use of social media in predicting riots (Alsaedi et al., 2017; Edouard, 2018; Islam et al., 2020; Osborne and Dredze, 2014). More recently, Chinta et al., (2021) explored social media engagement during civil unrest.

2.5 Theoretical Framework

As discussed above, the July 2021 unrest has been explained from different perspectives. For this study, a food riots framework will be used. Drawing on the above theories, and specifically the work of Barbet-Gros and Cuesta (2014) and Auyero and Moran (2007), a food riot, here is defined as violent collective action/online activism that involves looting and damage to property in response to reduced ability to access food following a change in socio-economic stressors. What factors determine whether socio-economic stressors are related to food riots? This study considers Twitter conversations that mention a change in food prices, income shock, and unemployment that leads to food disturbances. This study is also interested in other non-food themes that are related to political and socio-economic issues. This definition of food riots is used to assess the July unrest through tweets of people in affected areas. This study relies on this definition of food riots as it assists us to understand the relation between the socio-economic stressors, and reduced food access and looting in the affected areas of KZN and Gauteng.

2.6 Conclusion

This chapter discussed how the July unrest was framed from different perspectives. The July unrest was an event that involved various social groups, each motivated by different reasons. There are debates around political insurrection and factionalism. Contradictory views came from the President reported in the preliminary *The Expert Panel into The July 2021 Civil Unrest* (2021) and expressed during the State of the Nation Address in 2022. Scholarly debates bring up long-existing issues of inequality and poverty as possible motivations. The chapter also introduced the concept of food riots. All the studies mentioned above indicate that food riots are dynamic across time and society. Earlier food riots were influenced by a transition from rural to industrial economies and high food prices while the standard of living declined.

Contemporary food riots have been generally triggered by rising food prices and in some cases end up catalyzing other issues, addressing long-standing complex socio-economic conditions. Inconclusion the various explanations presented in this chapter suggest that overlapping factors collaboratively may have contributed to the July unrest.

3 Research Methods

This chapter describes the approaches used to select and explore tweets. The methodological process used is summarized in Figure 1. Spatial analysis was performed to get the geographic distribution of the tweets across relevant areas of Gauteng and KwaZulu-Natal. Then using the following two methods, dictionary-based text analysis, and STM topic modelling, tweets were analyzed to investigate the conversations that surfaced around the July unrest.

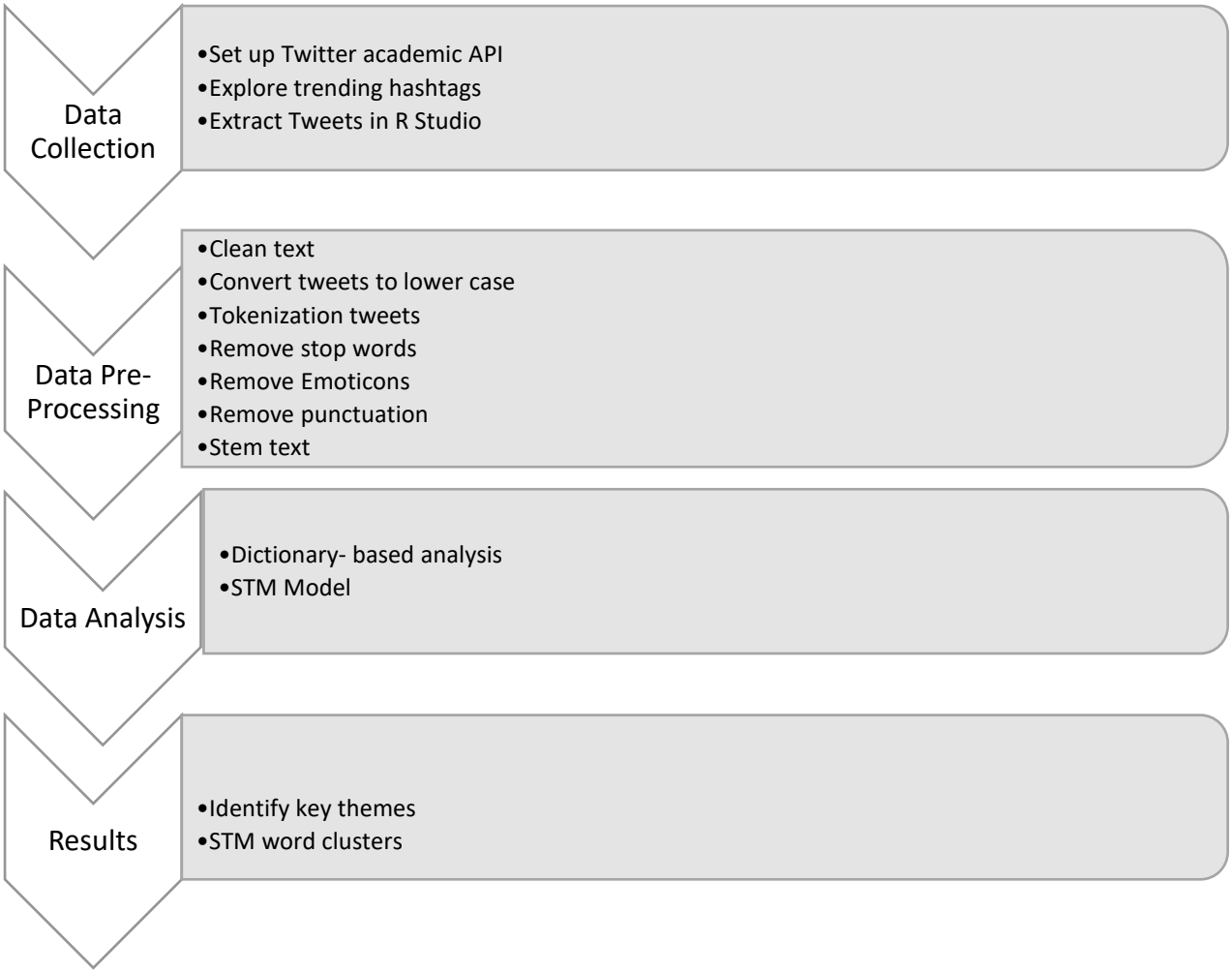

Figure 1: Methodological Process

3.1 Data Collection

In social science research, there is an increase in the use of all types of social media platforms. According to Vicente (2023), social media platforms offer a new means of data collection for social researchers to study human behavior. Twitter is the most used platform as it provides a large quantity of data within a short time frame that can be utilized for qualitative and

quantitative studies.[1] Twitter has a large user base, approximately 400 million active users per month that tweet about 500 million times in a day (Vicente, 2023). This translates into a vast amount of data that may be useful for conducting large-scale behavioral studies. Vicente (2023) stated that Twitter provides a large quantity of data in two ways, tweets as a sample unit and users as a sample unit. However, studies highlight some challenges of using big data for social science research (Hargittai, 2015; McCormick, 2017; Vicente, 2023). These scholars argue that big data may have a high prevalence of user bias influenced by factors such as age, race, and socioeconomic status which means tweets/ online populations may not be equally represented (Hargittai, 2015; McCormick, 2017; Vicente, 2023).

According to Edouard (2017), Twitter serves as a means to share and participate in real-time events. He describes events as an occurrence of something at a particular location and time. Using this notion of events, the July unrest is fitting to be described as an event. Twitter was chosen as the source of data as it is a highly popular social media platform in South Africa and enables access to the direct views of people in affected areas. According to BusinessTech (2021), Twitter has a total of 9.3 million active users in South Africa, suggesting that there is an abundance of data to explore. Furthermore, a previous study on unrest by Chinta et al. (2021) demonstrated how Twitter has played a role in capturing unrest narratives and found that there is a high presence of unrest discussions in South Africa.

This study analyzed Twitter data consisting of tweets as the sampling unit and the target population is tweets from the affected areas of the Gauteng and KwaZulu-Natal in South Africa. The extraction returned *N*= 54339 tweets of the widely spoken languages in South Africa. Table 3.0.1 shows the top ten hashtags that were identified from these tweets. Another extraction was run using the top ten hashtags to determine if it would capture more tweets, and it returned the same number of tweets. After the data were extracted using the top ten hashtags, they were filtered by geo-tagged tweets that provided a location name of the affected areas across the KZN and Gauteng. The tweets were filtered down to the suburban or township levels. This reduced the number of tweets to *N* = 8326 tweets. This was followed by removing duplicates from the data and reducing the tweets to *N*= 8264 tweets. Tweets that are relevant to the July 2021 unrest were mined to capture the voices of the

[1] At the time of the research the social media platform that was used to obtain data was known as Twitter but now it is referred to as X.

people in areas in KZN and Gauteng affected by significant unrest. To identify Tweets about the July unrest, I manually selected the following hashtags: #KZNShutdown, #UnrestSA, #FreeZuma, #GautengShutdown, #Looting #Phoenix Massacre from Twitter, as they were generally trending during the week of the July 2021 unrest and are related to this study.

Head (2021) identified the following areas in KZN where significant unrest occurred: Durban Central, Umzinto, Addington Hospital, Bellair, Prospection, and Point 6 (Warner Beach). Extensive looting and destruction took place in shopping complexes in townships across Gauteng in Daveyton, Benoni, Tembisa, Sebokeng, Thokoza, Alberton, Soweto, and Alexandra (Eyewitness News, 2021). I hypothesized that many of the Twitter conversations about the July unrest would be related to food.

This section describes the methods used to explore the Twitter data that was extracted. I obtained an Academic Twitter API that enabled me to establish a connection between Twitter and R-studio and gain access to the data. The get_all_tweets function was used to extract from the 9th of July to the 31st of July 2021. This period was chosen because the tweets that contain hashtags that are useful for this study peak from the 9th of July and dramatically die down towards the end of July. Therefore, there is no significant data after July.

Table 1: List of Top Ten Hashtags

	Hashtag	Frequency
1	#sashutdown	23154
2	#gautengshutdown	16535
3	#kznshutdown	9256
4	#unrestsa	8318
5	#freezumanow	5879
6	#freezuma	4477
7	#freejacobzuma	4241
8	#shutdownsa	3982
9	#looting	3089
10	#freejacobzumanow	2644

3.2 Data Pre-Processing

Moodley and Marivate (2019) stated that to proceed with data analysis, the process of data cleaning must be performed to reduce noise. Data processing was performed using the Quanteda package in R-studio. The remove function in tokens was used to process the tweets. The following steps were involved in processing tweets:

Step 1: Tokenization was performed, whereby all tweets were reduced to smaller and interpretable words to improve computational efficiency during the analysis.

Step 2: Remove Emoticons, an emoticon is a pictorial representation of facial expressions, usually used in social media texts to express a user's feelings. In this process, all emoticons were removed, and only words in the tweets were retained.

Step 3: Remove punctuation, symbols, and numbers; tweets usually include hashtags to highlight topics. The hashtag was removed to focus on keywords that would help identify topics of interest for this research.

Step 4: Lower Case: tweets contain text in uppercase and lowercase; to further reduce noise, all tokens were converted to lowercase.

Step 5: Stemming: This process involves removing suffixes from words and reducing them to their roots. For example, words like 'looting,' 'looter,' and 'looted' result in their root word 'loot.' This helps to classify or categorize texts during the analysis.

Step 6: Remove stop words. According to Moodley and Marivate (2019), words that commonly appear in a corpus create noise that defeats the aim of generating diverse topics. Stop words are common words in a language that carries no significant meaning such as 'is', 'too', and 'like.' It is necessary to remove stop words from tweets to reduce the text to more insightful features. After all the text processing there were *N*= 8264 documents and *N* = 12306 features left.

3.3 Data Analysis

After processing, the data extracted was analyzed to gain insight into the Twitter conversations about the July unrest. Firstly, spatial analysis was performed to get context as to where the tweets were coming from across the two provinces. To carry out spatial analysis, the location names were converted into latitude and longitude coordinates using the *geocode* package in R. Once this conversion was completed, I used the leaflet *package* to produce visual provincial maps of Gauteng and KZN displaying the percentage of tweets by subplace (see chapter 4). This is followed by an examination of the text using a dictionary-based analysis and Structural Topic Modeling, an unsupervised machine learning approach. To identify and categorize keywords in tweets generated by people in the affected areas of the

KZN and Gauteng, I developed several main food riot themes, including, but not limited to food disturbances, looting, collective action, violence, and socio-economic stressors. These themes were based on the definition presented in the literature review (Chapter 2).

Table 2: Food Riot Themes

Food Riot Themes
Food Disturbances
Looting
Collective Action
Violence
Socio-Economic Stressors

3.3.1 Spatial Analysis

As social media participation depends on having access to the internet, it is useful to look at internet usage at a provincial level. According to the General Household Survey (2022), 80% of households in Gauteng have access to the internet compared to 76% of households in KZN. A large portion (69.6%) of the South African population access the internet through mobile phones (GHS, 2022). Interestingly, in KZN, 74.6% of the population are internet mobile users compared to 71.5% in Gauteng. Earlier, I mentioned that in total there are 9.3 million active Twitter users in South Africa. How many of these users are based in Gauteng and KZN? *The Social Media Landscape Report* (2022) found that the majority (33.4%) of Twitter users are from Gauteng and only 8.7% are based in KZN. At the city level, 19% of Twitter users are in Johannesburg while 4.1% are in Durban (*Social Media Landscape Report*, 2022). The internet usage across both provinces suggests that there is good potential for social media use. However, *Social Media Landscape Report* (2022) indicates that social media usage is spread out across different platforms like Facebook and WhatsApp. Twitter is not as widely used as instant messaging platforms like Facebook and WhatsApp combined. 43.4% of WhatsApp users are in Gauteng, and 39% of South African Facebook users are in Gauteng. 13.7% of

WhatsApp users are in KZN while 11.5% of Facebook users are in KZN. These social media usage statistics indicate that there may be a lower number of Twitter users in the study areas.

3.3.2 Dictionary-Based Analysis

The dictionary-based approach counts how often certain concepts appear in texts by using patterns, from simple keywords to regular expressions (Welbers et al., 2017). A dictionary-based text analysis approach was conducted, which counts how often words associated with the themes that I developed were present in the documents. The top 200 words based on their frequency were generated from tweet data. Meaningless words were excluded which reduced the top words to 169 words. According to Muddiman et al., (2019), dictionary analysis based only on frequency count may raise the question of validity, as the top words can be out of context or be completely irrelevant to this study. Muddiman et al., (2019), suggest that human validation of each top word is necessary to ensure that the top words align with the research. To ensure validity, I performed a key in-context analysis using the *kwic()* function in the quanteda package(Benoit et al., 2018). For instance, one of the top words was 'just', and the researcher examined how the word was mentioned in twenty-five tweets to get a sense of the context. I included the word in the top features if 80% or more of the analysed text mentioned the word in a context that suggested a particular theme. In addition, the key in context analysis was useful in categorizing the words into key themes.

3.3.3 Structural Topic Modelling

With the increased availability of large-scale social media data, there has been a growing interest in examining text data. This has been able to be explored with the use of topic models. There are many approaches to topic modeling, Latent Dirichlet Allocation (LDA) has been widely used in literature (Slige and Robison, 2017). An LDA model generates topics on the assumption that a textual document consists of many topics as determined by their probability distribution. For example, it has been used to map topic networks of Twitter data during the Arab Spring (Carley et al., 2016). In another study in Kenya LDA modeling was used to study social conflict events (Sokolova et al., 2016). However, LDA has some limitations, there is a limit to the number of *(k)* meaning that topics can only be generated up to a certain number (Bai et al., 2021). Another limitation is that LDA is unable to pick up correlations or associates which results in the occurrence of unrelated topics (Bai et al., 2021; Blei et al., 2003).

These limitations led to the development of a structural topic model (STM), which enables topic correlation. According to Curry and Fix (2019) and Bai et al., (2021), STM topic modelling was designed in consideration of social science research and has been used in political science and linguistic studies. Concerning large-scale text analysis, structural topic modeling has gained popularity. Using STM, we can explore how different documents describe a topic using different word choices (Curry and Fix, 2019). Mishler et al., (2015) used STM modelling to detect social conflict events and categorize Twitter users in Ukraine. In this study, structural topic modeling (STM) was the most suitable unsupervised machine learning method that categorizes words into a single topic. To date, there is limited application of both dictionary and STM approaches in food riot studies.

A Structural Topic model was used to generate similar groups of words that make up topics. This analysis was conducted using the *stm* package in R. According to Curry and Fix (2019), the first step in structural topic modelling is to determine the number of topics *(k)*. The end goal of setting the number of topics is to pick several topics that produce interpretable topics (Curry and Fix, 2019). According to Alence (2020), having a large number will lead to differentiated topics that might have worked better as a single topic. On the other hand, setting a lower number can result in topics that are too broad, making them difficult to interpret or analyse (Alence, 2020). Therefore, it is crucial to find a balance between the two settings. Through trial and error, I settled on 6 topics as the optimal.

3.4 Limitations of this Study

A strength of this study is that it has captured an important event that occurred across two provinces. However, there are a couple of limitations to this study. One of the limitations is that the July unrest was extensively visually documented through videos and images which could provide insight into looting, which will be excluded in this text-focused study. Another limitation is that Tweet locations are important for gaining insight into the views from affected areas, but the actual number of Tweets from the places of interest will remain unknown as some tweets are not geo-tagged. Crucial for this study are tweets that come from the affected areas, Vicente (2023) stated that big data studies like this one may be impacted by under-coverage where populations of interest may have a low social media presence, many people in the affected areas may not be Twitter users. This may raise the question of bias as the sample does not represent the entire population but a narrow range of voices. As

McCormick (2017) pointed out, demographic information is often absent from Twitter data. Demographic information on Twitter users would have been useful to better understand the characteristics of the population, especially socio-economic attributes. Another limitation of this study is that tweets were limited to 140 characters and recently increased to 280 characters (Stokel-Walker, 2023). This means that words may be distorted by using abbreviations which may make it challenging to interpret or decipher the context of a topic. That would also impact on the performance of the STM model. Lastly, tweets are temporal, the July unrest only trended for two weeks. This may result in insufficient insights on long-standing issues that may be strong underlying motivators of a riot. It is critical to understand these drivers to prevent future riots and develop policies and support systems.

Another limitation of this study is that social media data can be impacted by misinformation, which can distort the public narratives and findings of the study. Madrid-Morales et al. (2021) argued that social media disinformation has become a major concern, particularly during crisis situations. In the context of this study, there's no denying the possibility that some tweets may have been posted with the intention to mislead, thereby swaying narratives and contribute to the escalation of the unrest. According to Pijoos (2022) during the July unrest, instances of misinformation were reported on social media, increasing tensions and violence. Notable examples included fake tweets alleging prisoners were on hunger strikes for Zuma's arrest, and old taxi strike images being recirculated as current events. Pijoos (2022) argued that this misinformation undermined human rights and contributed to an atmosphere of anger and confusion.

3.5 Conclusion

In this section, I provided a detailed description of the methods employed to collect and analyze data to answer the study's objective. The spatial analysis provides a geographic context for the tweets. Lastly, I discussed the limitations of this study. Two approaches of text analysis were used as a means to explore the words categorized based on key themes and the group of words generated by the STM model as presented below in the results section.

4 Results

In this section, I present the findings of this study. I provided a detailed overview in Chapter 3 of the methods used to derive these findings. Here, the findings are intended to provide insight into Twitter narratives about the events of the July unrest. This section is divided as follows, first is a visual representation of the percentage of tweets by subplaces across the Gauteng and KZN. Then I discuss the results of the dictionary-based analysis. Specifically, this section will examine the top 169 words that were present in the Tweets. After that, I present the results of the STM model, in terms of the 6-word clusters that emerged, before concluding with a comparison of the two methods.

4.1 Spatial Analysis of Gauteng and KwaZulu-Natal Provinces

In total 54339 tweets were extracted, and 8264 tweets generated contained geo-tagged location names that fall within the Gauteng and KZN being explored in this study. The maps below in Figure 2 and Figure 3 show the percentage of tweets by subplace. As can be seen along the map is a legend that indicates percentage brackets between 0 to 10 percent and 50 to 60 percent. Areas with a higher relative percentage are darker in shade compared to places with a lower percentage. Subplaces with relatively high percentages are present in Gauteng. What is obvious to see in both provinces is the places in grey that represent areas with missing Twitter data. This suggests that not all people in the affected areas in Gauteng and KZN use social media, let alone Twitter. Also, this indicates that the target population for this study is impacted by under-coverage.

Table 2 and Table 3 provide a breakdown of percentages for each subplace captured. Interestingly the majority (67.5%) of the tweets came from Gauteng and 32.5% came from KZN. Looking at the Gauteng a large number (56.45%) of tweets came from Johannesburg while in KZN, 24.88% came from Durban—in both cases, these indicate the major city in the province, without a finer level of detail (e.g. neighborhood). Surprisingly, only 1% of tweets came from Johannesburg's central business district (CBD). Also, a very small percentage (0.19%) of tweets came from Nkandla, the site of former President Zuma’s homestead. Table 3 indicates that a high percentage of the geo-tagged tweets are at a city scale.

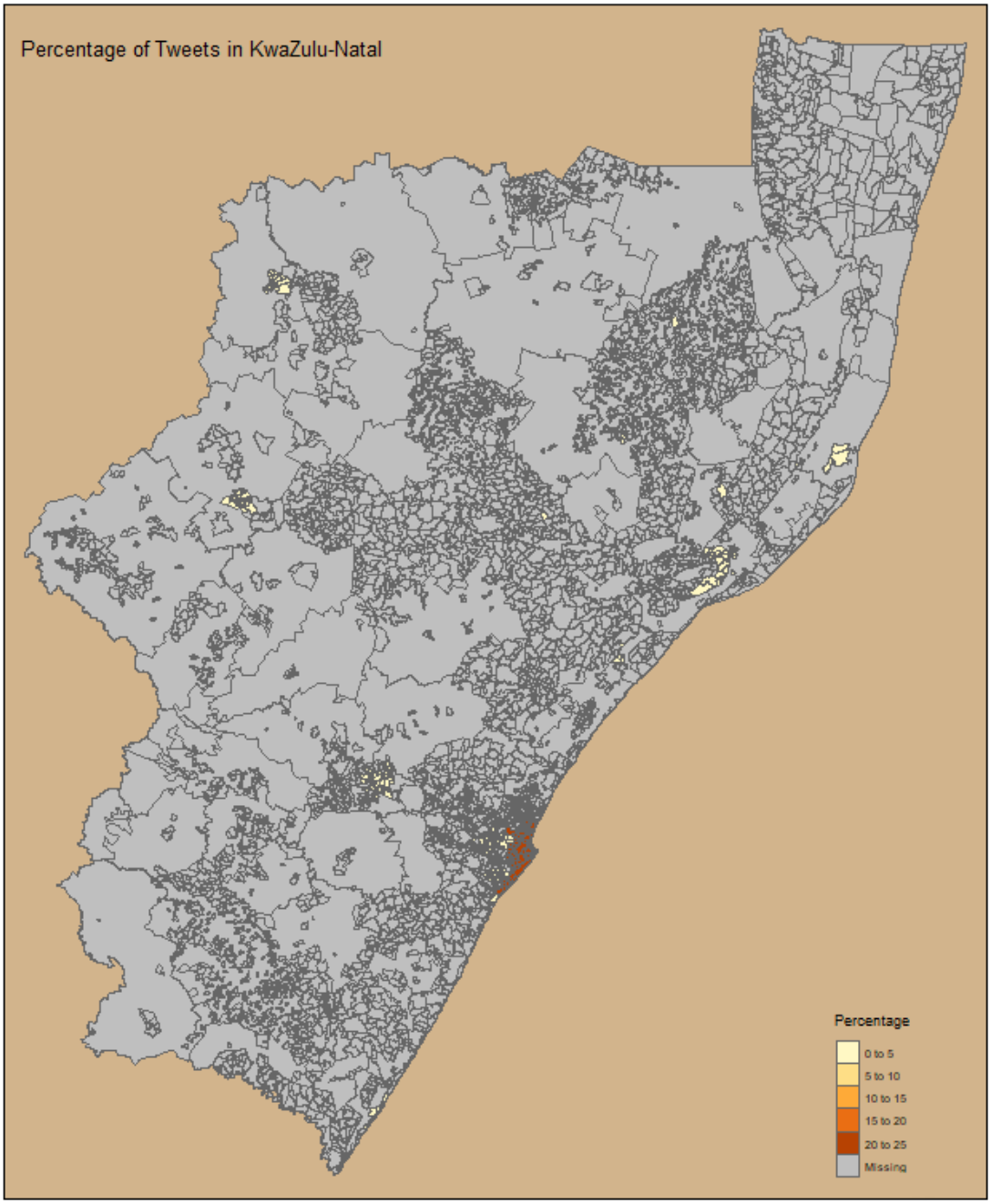

Figure 2: Map displaying the percentage of Tweets in KwaZulu-Natal Province, South Africa

Table 3: Percentages of Tweets across the Kwa-Zulu Natal Province, South Africa

Location	% Tweets
Durban	24.88
Pietermaritzburg	2.98
Newcastle	1.48
Richard's Bay	0.74
Pinetown	0.46
Margate	0.33
Amanzimtoti	0.29
Umlazi	0.29
Westville	0.28
Ladysmith	0.19
Nkandla	0.19
Mandeni	0.07
Mtubatuba	0.06
KwaDukuza	0.04
Bellair	0.02
Empangeni	0.01
Nongoma	0.01

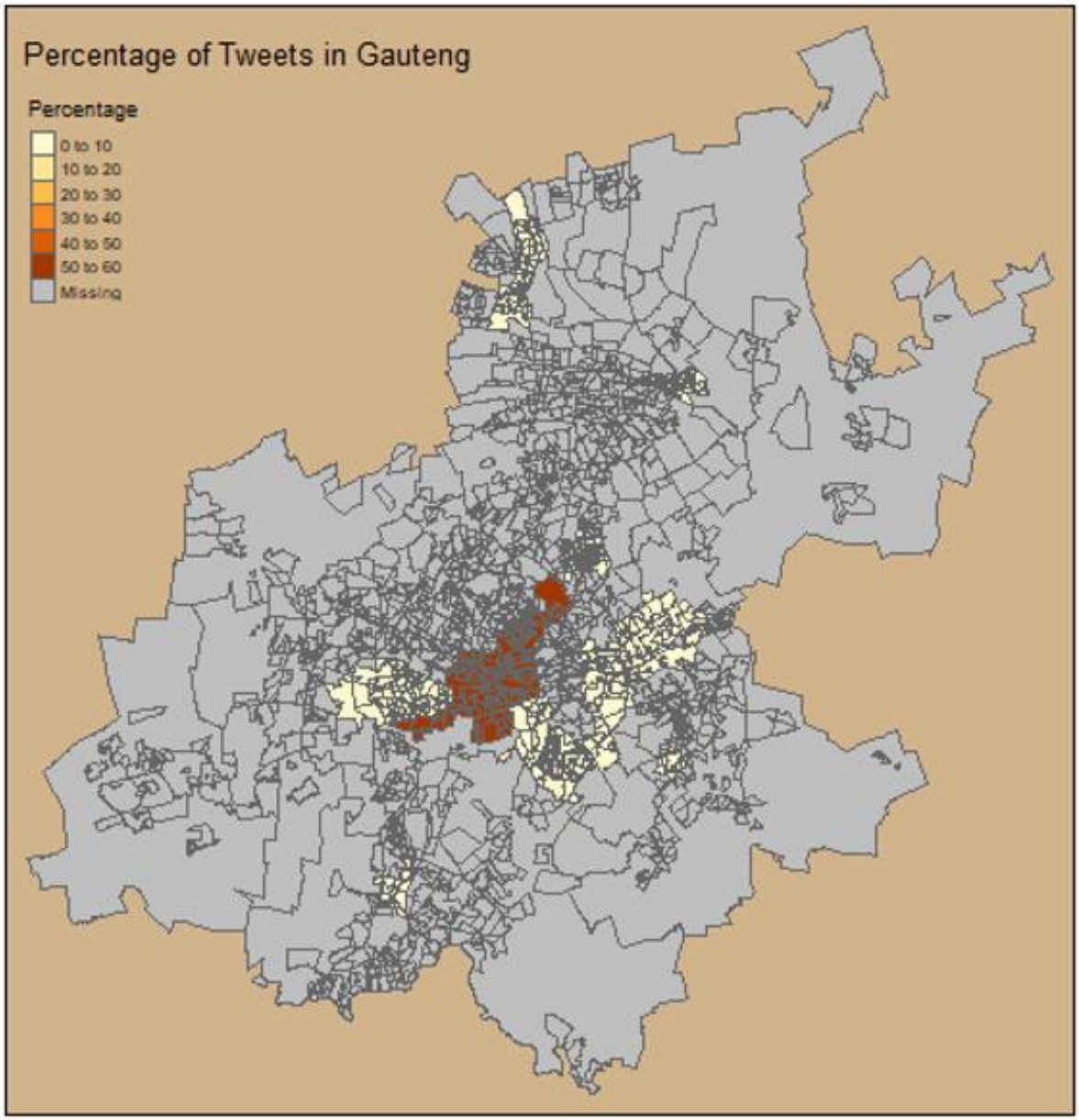

Figure 3: Map displaying the percentage of Tweets in the Gauteng Province, South Africa

Table 4: Percentages of Tweets across the Gauteng Province, South Africa

Location	% Tweets
Johannesburg	56.45
Soweto	4.72
Boksburg	1.65
Tshwane	0.54
Alexandra	0.46
Daveyton	0.46
Soshanguve	0.29
Protea Glen	0.24
Diepkloof	0.22
Meadowlands	0.17
Braamfontein	0.16
Katlehong	0.16
Sebokeng	0.12
Tsakane	0.12
Mamelodi	0.07
Alberton	0.06
Ndofaya	0.05
Thokoza	0.04
Benoni	0.02
Johannesburg CBD	0.02

4.2 Dictionary – Based Analysis

As discussed earlier, the Twitter data was filtered by the affected areas across the Gauteng and KZN. The dictionary analysis and STM model analysis are based on 8264 geo-tagged tweets. In Table 5 I present the theme of Loot. This theme is called 'Loot' as a result of term stemming, which is a method of reducing words to their roots in linguistic analysis. The dictionary analysis is based on the core themes previously discussed, namely: food disturbances, loot, collective action, violence, and socio-economic stressors. There are 44 words and words with frequencies between 52 and 369. Table 5 shows the theme of Loot and "kzn" is the word that appeared the most (369). Other words refer to KZN such as "shutdownkzn" (305) and "kwazulu-natal (97). Words like "Soweto", "southafrica" and "provinc" provide a geographic context as to where the unrest took place. Then there are words like "mall", "shop", "store", "truck", "busi" and "street" that are linked to tweets that mention looting events at specific places such as tweets in Appendix (A) that refer to Boxer, one of the supermarkets targeted in Alexandra Township, Johannesburg. *Interestingly,* the word "night", is mentioned in tweets that include the term "night shift", a period when looting would have taken place. The words "loot", "looter", "lost", "taken", "loss" and "steal" with

relatively high frequencies allude to events of looting. Other significant words in Table 5 that focus on law officials and crime include “polic”, “crimin”, “cele”, “bheki”, “solidier”, “order” and “sapoliceservic”. [2] As seen in Appendix (A), these words are mentioned in tweets that are concerned about the lack of police presence. Another tweet mentioned the lack of police presence. Interestingly, words like “media” are related to tweets that mention the reporting of the unrest. The word “video” commonly appeared alongside videos of looting scenes that were circulated on Twitter.

Table 5: Words that are associated with the theme of Loot

Word	Frequency	% Percentage
kzn	369	7.25
shutdownkzn	305	6.16
loot	286	5.77
polic	251	5.07
looter	215	4.34
busi	198	4.00
mall	192	3.88
southafrica	189	3.82
crimin	152	3.07
shop	141	2.85
down	134	2.70
cele	117	2.36
lost	116	2.34
report	110	2.22
sandton	110	2.22
situat	108	2.18
media	108	2.18
kwazulu-nat	97	1.96
video	89	1.80
saunrest	89	1.80
shutdown	85	1.72
lootingforzuma	80	1.61
secur	79	1.59
bheki	76	1.53
prayforsouthafrica	76	1.53
order	74	1.49
street	74	1.49
claim	74	1.49
provinc	71	1.43
store	69	1.39
soldier	68	1.37
steal	63	1.27
soweto	63	1.27

[2] Bheki Cele was the South African minister of police at the time of the unrest. He also served as a member of the National Executive Committee of the ANC (Oxford Analytica, 2021).

crime	60	1.21
sapoliceservic	60	1.21
stupid	59	1.19
sad	59	1.19
truck	58	1.17
lead	57	1.15
mzansi	57	1.15
notlooting	56	1.13
taken	55	1.11
loss	53	1.07
night	52	1.05

Having explored the twitter data, Table 6 related to the theme Collective Action/Online Activism contains 16 words, with words that occur between 58 and 292 times. The word with the highest frequency is “zumaunrest”, occurring 144 times which is relatively low when compared to the highest-frequency words in the other themes. The term “zumaunrest” is related to collective action/online activism based on that most of the tweets were circulated to organize for Zuma. Under this theme were words such as “support”, “zulu”, “member”, “continu and “join” are associated with tweets that were inviting people to joinin the previous theme, the ‘night shift’ is associated with the looting attacks that take place in the evenings. What is interesting is the word “instig” refers to instigation which is related to other words like “WhatsApp”, “taxi’ and “dzumasambudla”. Dzumasambudla is the daughter of Zuma who was one of Zuma’s supporters who led the Twitter activism. Some tweets suggest that “WhatsApp” was a form of social media that is associated with organizing people for collective action/online activism during the July unrest. Similar to Table 5, there are words like “gauteng” whereby conversations were encouraging Gauteng to mobilize. On the other hand, words like “fight”, “help”, “protect” which are related to tweets that mentioned safeguarding to prevent property damage. Tweets indicate that taxi drivers played a role in providing such support by standing guard outside properties.

Table 6: Words associated with Collective Action or Online Activism

Word	Frequency	% Percentage
gauteng	292	13.31
support	280	9.06
kznprotest	275	13.88
fight	202	7.27
zulu	151	5.51
zumaunrest	144	6.84
taxi	116	5.37
shutdownsouthafrica	113	4.75
protect	100	4.71
instig	99	4.42
continu	93	4.09
help	86	4.04
dzumasambudla	85	3.37
member	71	3.18
whatsapp	67	2.76
zulus	58	2.52

Looking at some of the Twitter conversations, Table 7 presents terms that are associated with the theme of politics. As can be seen, there are 48 words with a frequency ranging from 56 to 810. From observation, the word “zuma” emerged 810 times as the most common word in the entire corpus of tweets. The obvious reason for this high frequency is that Zuma’s arrest started Twitter conversations and hashtags that trended during the unrest. Looking at the top 5 terms in the politics theme, they focus on the current and previous ANC leaders President l Ramaphosa and Zuma. Table 6 and appendix (B) show that words such as “zumaarrest”, “release” and prison are associated with tweets that are against the arrest of Zuma. Other terms like “ramaphosamustfall” are mentioned in tweets that indicate dissatisfaction with Ramaphosa and the government as a whole. Terms like “family meeting”, “leader”, “address”, and “govern” were mentioned in tweets that were concerned with the lack of engagement and communication about the unrest from the president. Words like “ethnic” and “tribal” were mentioned in tweets that were displeased with Cyril Ramaphosa describing the unrest as a “tribal” conflict. The collection of words in Table 7 indicates that there was support for Zuma and discontent towards Cyril Ramaphosa.

Table 7: Words associated with Politics

Word	Frequency	% Percentage
zuma	810	11.21
ramaphosa	522	7.22
presid	514	7.11
cyrilramaphosa	346	4.79
anc	264	3.65
familymeet	264	3.65
govern	241	3.33
cyril	230	3.18
ramaphosamustfal	226	3.13
nation	200	2.77
right	162	2.24
minist	160	2.21
law	153	2.12
zumaarest	149	2.06
leader	144	1.99
state	143	1.98
release	143	1.98
good	138	1.91
polit	135	1.87
address	115	1.59
campaign	114	1.58
presidencyza	113	1.56
fail	110	1.52
famili	107	1.48
jacobzuma	102	1.41
against	98	1.36
jacob	93	1.29
power	93	1.29
court	91	1.26
corrupt	84	1.16
leadership	81	1.12
govt	80	1.11
malema	80	1.11
Juli	73	1.01
prison	73	1.01
Cyrilramaphosamustfal	69	0.95
eff	69	0.95
vote	64	0.89
politician	63	0.87
insurrect	62	0.86
parti	61	0.84
bail	60	0.83
concourt	56	0.77
former	55	0.76
myanc	54	0.75
tribal	56	0.77
ethnic	56	0.77
change	52	0.72

Table 8 on the theme of Violence displays 36 words with a frequency between 66 and 440. Surprisingly, the term “sandf” (440) has the second highest frequency within the documents. Other words that are associated with “sandf” are “deploy”, “armi” and “intellig”. These terms are associated with many tweets that called for the deployment of the army. However, other tweets questioned the deployment of the army. The words “durban”, “shutdowngauteng”, are indicative of the locations that were impacted. “*Arrest*” occurs with a higher frequency of 259, linked to tweets that called for the arrest of Jacob Zuma’s children as they were identified on Twitter as the instigators of the unrest. Having inspected tweets, most of the conversations are against Zuma’s arrest while other conversations call for justice for his involvement in corruption. Words like “protest” (246), “riot” (184), “war” (62) were some of the terms used in tweets to describe the July unrest. Words like “burn”, “fire”, “attack”, are indicative of what form of violence took place. Interestingly, “shoprit” appeared 66 times only and can be associated with words like “*properti*”, “damage”. “shoprit” refers to Shoprite, one of the big four supermarket giants that were targeted for looting which links to food looting, a key indicator of a food riot (Hunter et al., 2021). Terms like “violenc”, “*kill*”, “*death*”, observed were associated with tweets that focused on acts of violence that happened in phoenix. These are also linked to tweets that mentioned “phoenixmassacr”, “phoenix”, “kznviolenc”. “Indian” is linked to tweets that included “racism” “, racist” and “race”. These words were mentioned in conversations concerned with the racial attacks between Indian and black people that took place in Phoenix during the July unrest.

Table 8: Terms associated with Violence

Word	Frequency	% Percentage
sandf	440	8.93
shutdowngauteng	280	5.68
arrest	259	5.26
violenc	257	5.22
durban	232	4.71
zumaprotest	253	5.14
protest	246	4.99
burn	236	4.79
southafricaisburn	200	4.06
riot	184	3.74
kill	171	3.47
die	169	3.43
deploy	129	2.62
live	119	2.42
phoenixmassacr	117	2.38
phoenix	113	2.29
kznviolence	110	2.23
indian	107	2.17
outlust	107	2.17
onlustesa	105	2.13
destroy	91	1.85
armi	81	1.64
forc	78	1.58
community	76	1.54
intellig	76	1.54
fire	75	1.53
Properti	66	1.34
shoprit	66	1.34
war	62	1.26
damag	59	1.20
chao	58	1.18
attack	57	1.16
death	53	1.08
racism	51	1.04

Table 9 on the theme of socio-economic stressors shows the frequency of the words ranging from 67 to 302. Surprisingly, *"black"* has the highest frequency (302), there are various conversations including this word. The word "black" was commonly mentioned in broad conversations. One conversation around the word discussed black people's frustration with the government. *In other tweets, it was mentioned in conversations about racial conflict. "Level5"* with a frequency of 264 is connected to words like *"lockdown", "covid19", "level"* and *"vaccin"* and is related to tweets about COVID-19. Most of the conversations around COVID-19 were focused on restrictions related to level 5 lockdown and the decline in the

standard of living associated with the loss of jobs followed by income while prices for essentials increased. Then there are words including *"job", "unemploy", "work", "economi", and "money"* that focus on economic challenges that are mentioned alongside Covid. Words like *"food"* and *"hungri"* were mentioned with words "poor" and "poverty". Food was mentioned in various Twitter conversations, where food disturbances were related to socio-economic conditions and COVID-19. Other tweets containing the word food mentioned that they observed food and furniture as the most looted things suggesting that people took basic needs. Interestingly, food price increases were mentioned in tweets concerned with price increases as the consequence of the riot, rather than the cause. With a relatively low frequency of 58*, "land"*, was just a reference word that does not provide useful insights. Words like "*life", "need", "problem", "hope"* and *"better"* reflect people's feelings and convey a sense of urgency.

Table 9: Words associated with Socio-economic Stressors

Word	Frequency	% Percentage
black	302	10.22
level 5	264	8.93
african	231	7.82
Job	190	6.43
free	177	5.99
unemploy	145	4.91
food	111	3.76
work	103	3.49
white	100	3.38
lockdown	98	3.32
economi	96	3.25
poor	93	3.15
hungri	89	3.01
poverti	86	2.91
covid 19	81	2.74
need	76	2.57
hope	73	2.47
life	70	2.37
problem	68	2.30
vaccin	67	2.27
better	66	2.23
issu	66	2.23
money	65	2.20
citizen	62	2.10
level	61	2.06
land	58	1.96
covid	57	1.93

4.3 Topic model interpretation

This section examines the STM model, which generated 6-word clusters. See Figure 4 for a list of the top 10-word stems associated with each cluster, along with the topic labels that I assigned. Cluster 1 labelled “Riots in KZN and Gauteng”, includes words that are related to rioting action across the KZN and Gauteng. Looking at the 10 top words featured, cluster Zuma’s Support is dominated by “presid” and accounts for approximately 0.032 (3,2 %) of the topic. The term was highly circulated in conversations around the president, Ramaphosa. The most prominent word stem appears to be “peopl” as it appears as the dominant word in topics Law Enforcement, Looting Events, and Racial Conflict/Attacks. This term is considered as a general word that adds very little value to the specific word clusters. Topic two suggests that conversations were centered around the racial conflict that happened in Phoenix. Looting Events cluster shifts to describe behaviors such as looting and burning of shopping centers. Another cluster shows that conversations focused on law enforcement and the role of the police during the riot. The last two topics focus on Zuma and

Ramaphosa. The dominant word stem in Riots in KZN and Gauteng /Zuma is “zuma” accounting for approximately 0.055 (5.5%) of the topic and the highest percentage compared to the other word stems. President Address/Covid Restrictions captured words that are concerned with Ramaphosa addressing the nation amid the July unrest and level 5 COVID restrictions.

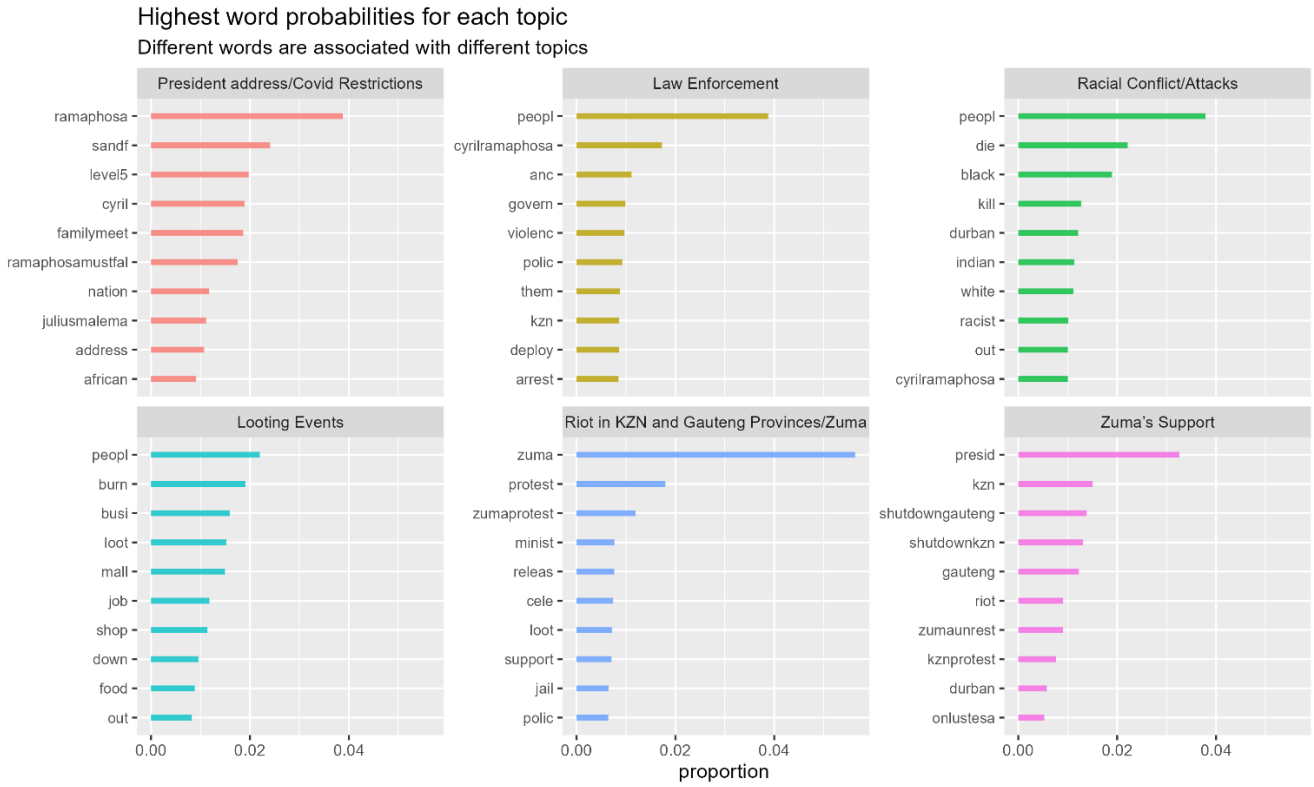

Figure 4: Top Ten-Word Clusters

4.4 Comparison of the findings

In this section of the paper, I examine the findings of the dictionary-based analysis and STM model output. For the dictionary-based approach, I predefined key themes to capture the views around the July unrest. Generally, the results of the STM model mirror those of the dictionary even though the words are distributed differently. Given that the dictionary method was predetermined, in the sense that the researcher was searching for words that are related to the key themes, it is interesting how the word clusters generated by the model correspond to the dictionary. The model identified conversations around racial conflict, an aspect of the violence theme. It has words associated with the Loot theme. This suggests that the model is equipped to pick up on obvious clusters of words. When comparing the two

approaches it can be seen from Figure 5 that the most prominent words are related to the political theme. The model did not identify terms related to collective action/ online activism.

As shown in Figure 4, the model is capable of replicating the results of the dictionary. However, as the results illustrate the model may not necessarily identify every theme specific to the interests of this study. The results suggest that the dictionary method can better handle broad complex concepts like the socio-economic stressors theme, while the model may struggle to identify these broad concepts. According to Nelson et al., (2018) topic models like STM perform best in instances where the goal is to explore textual data and see what themes emerge from the data, instead of classifying terms into predetermined themes which may result in invalid findings. Here, the results suggest the STM model is comparable to the dictionary method and adds reliability to the findings.

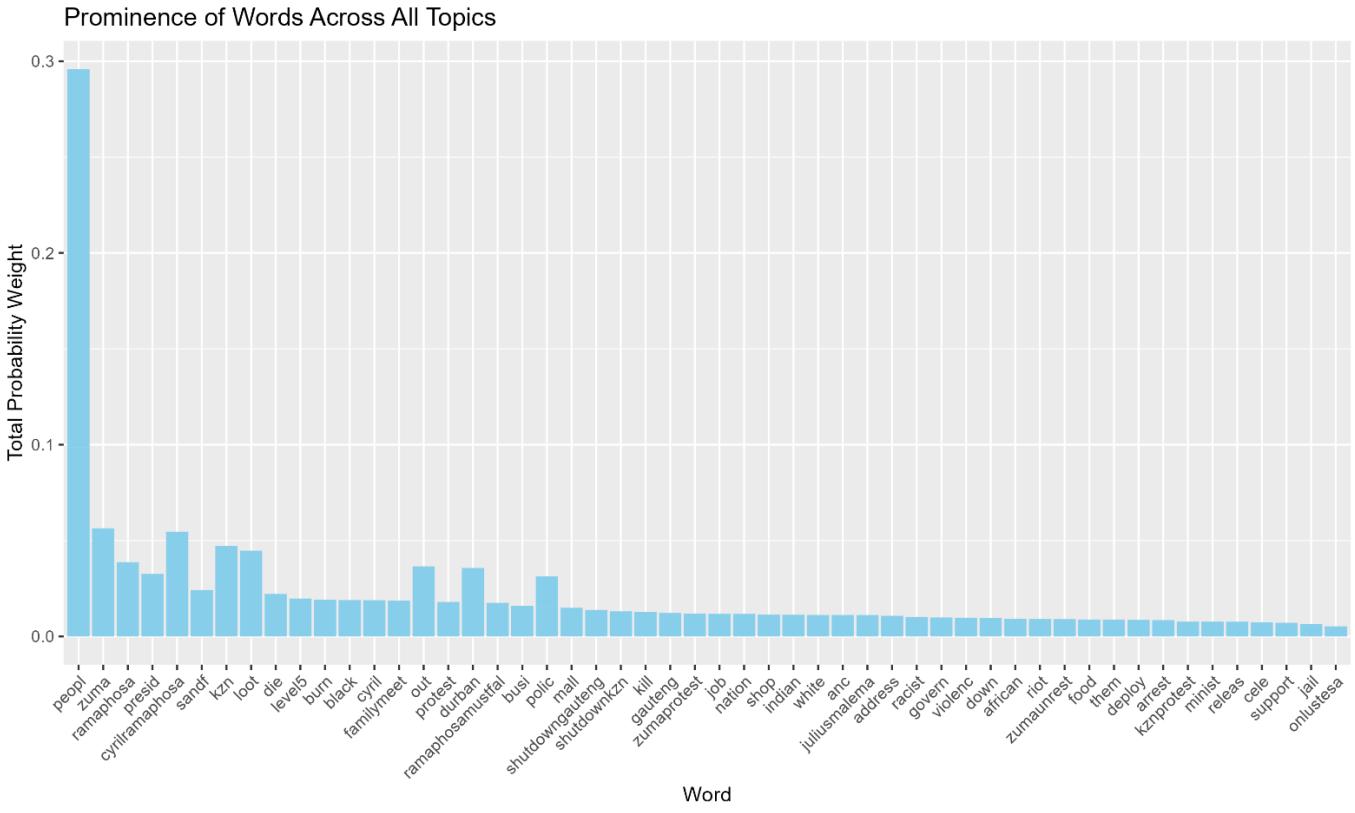

Figure 5: Word Prominence Across All Word Clusters

4.5 Conclusion

This section presented the outcomes of the methods used to explore whether the July unrest was framed as a food riot. Section 4.1 looked at the percentage of tweets across the Gauteng and KZN and shows that a higher percentage (67.5%) of tweets came from Gauteng compared to 32.5% in KZN. Moving on to the dictionary analysis, here the aim was to categorize words generated from the Twitter data corpus into the predefined themes. The first theme looked at Loot, whereby conversations that included looting were more concerned about the absence of law enforcement. Another point of interest was the media representation of the looting events. The second theme focused on politics and the results indicate that Twitter conversations were around support for Zuma. In the same breath, there were conversations around the dissatisfaction with the lack of state response, particularly Ramaphosa's views of the unrest as tribal. Then the theme of violence showed that conversations were concentrated on law enforcement, the deployment of the SANDF, and the violent racial conflict that took place in Phoenix. Table 5 examined the collective action/ online activism theme and picked on conversations about organizing in support of Zuma. Lastly, the economic threat's theme shows that there were conversations around issues of unemployment and poverty tied to the COVID-19 pandemic. As discussed in the earlier sections, a key part of the food riot definition here is food disturbances associated with economic and political threats to human security. The tweets explored implied that people looted food from supermarkets to cope with the declining conditions associated with the pandemic, job loss, and income loss while food prices increased. In other conversations, food price increases were predicted in the aftermath of the riot. As will be discussed in the following chapter, Twitter conversations show a complex mix of factors that may have contributed to the July unrest.

5 Discussion

This section of the paper discusses the findings of this study, starting with the spatial results that reveal significant under-coverage. I then go into the theme of collective action/online activism that shows that mobilizing spread online. This is followed by an examination of other themes, including political dissatisfaction, socio-economic stressors and loot. Finally, I look at food disturbances. Through this comprehensive analysis, I provide a better understanding of the interconnected themes that have emerged from this study.

5.1 Geographies of Unrest

Observing the maps presented in section 4.1, large parts of the Gauteng and KZN areas have missing Twitter data.

The spatial analysis revealed that a higher percentage (67.5%) of tweets came from Gauteng, which makes sense as the majority of Twitter users are based in Gauteng. Looking at the percentage of tweets at a subplace level, most of the tweets came from Johannesburg (56.45%) and Durban (24.88%) which are described as urban areas (Head, 2021). A large portion of the maps show an absence of Twitter data suggesting that not all people in the affected areas of Gauteng and KZN use Twitter. It's possible that in the areas where there is under-coverage, the population is not Twitter users but Whatsapp or Facebook users, or even users of both platforms. This study demonstrates an issue of under-coverage, one of the challenges that may be experienced with social media studies (Hargittai, 2015; McCormick, 2017; Vicente, 2023). In previous studies, under-coverage has been associated with demographics like age, race, and gender. As the sample of this study was tweets and not users, there is no demographic information. Therefore, I cannot say that demographics contribute to under-coverage. The findings of this study show that most of the tweets came from urban areas across Gauteng and KZN. This can be related to previous studies that have found riots to be more active in urban areas (Berazneva and Lee 2012; Mac Ginty 2004; Walton and Seddon (1994, cited in Bush 2010: 121).

5.2 Collective Action/Online Activism

Reverting to the dictionary themes mentioned earlier, collective action/online activism, the results of this study suggest that people organized under the pretext of Zuma's arrest and the collective action/online activism progressed into violent looting. By contrast, Mongale (2022) suggested that the collective action/online activism was a tribal organization as it started in

the Zulu nation, KZN. However, Twitter conversations disagreed with the President's reference to tribalism. The findings of this study suggest that the collective action/online activism mentioned in Twitter conversations demonstrates some key characteristics of a food riot, namely a violent collective action/online activism triggered by multiple factors which have been observed in contemporary food riots (Berazneva and Lee, 2012; Begwegoh, 2015; O'Brien, 2012; Sneyd et al., 2013; Reinsberg et al., 2023). The theme of 'Loot' in the results section suggests that looting events involved violent crowds triggered by grievances linked to discontent with the government, high food costs, rising unemployment, inequality, and poverty exacerbated by the COVID-19 pandemic. Similar to the studies on the Arab Spring, the results suggest that social media played a role in organising people across the two provinces (Moldovan, 2020; Smichi and Shahin, 2017; Tudoroiu, 2014).

5.3 Political Dissatisfaction

The results of this study indicate that tweets mentioned the July unrest in political conversations in two ways. One, conversations suggested intra-ANC conflict between supporters of Jacob Zuma and Ramaphosa. Two, there was public dissatisfaction with the state, which has been indicated by O'Brien (2012) and Legwegoh (2015) as one of the triggers that have led to food riots in Africa. According to Hunter et al., (2021) and Mongale (2022), the intragroup conflict is brought about by a conflicting interest. On the one hand, Jacob Zuma is perceived to be focused on economic reform that favours previously marginalized groups (Mongale 2022). On the other hand, Ramaphosa is perceived to be focused on restoring an effective state. The Twitter conversations included in this study show that there was support for Jacob Zuma across the two provinces, especially in KZN where the majority of the population is Zulu people. Tweets claimed that Ramaphosa instigated a tribal battleground by describing the unrest as a tribal, ethnic attack. A key part of a food riot definition for this study is collective action, the results indicate that people mobilized through social media. Similarly, Mongale (2022) described mobilizing as instrumentalism in the sense that people organized based on ethnic membership to undermine state leadership. These findings of this study diverge from the conclusions made by Duncun (2021) and Reddy (2021) who argued that the July unrest derived from intra-ANC factionalism, which sought to crush the weak economy, resulting in a collapsed government. The findings of this study indicate that the

state's failure to address the publics needs has eroded trust and fuelled tension, creating grounds for unrest.

The public discontent comes out in tweets that mention poverty and the government's inability to offer measures to mitigate it. In line with O'Brien's argument that when the state is unable to provide and people's needs go unmet, unrest is driven by a sense of a need for justice. To add to this discussion, Mongale (2022) describes public discontent in terms of relative deprivation. Mongale (2022) refers to relative deprivation as dissatisfaction that arises from the disparities between what social groups may believe they rightfully deserve and the reality of what they get or have. Poverty and inequality have been long-standing from racial segregation, now the ANC government is held accountable for lack of response in curbing these issues (Mongale,2022; Ngwane, 2021; Vhumbunu, 2021).

Some tweets mentioned political corruption as a contributing factor that put the state in a position of incapacity, unable to provide for the nation. According to Nkrumah (1970), political corruption has been instrumental in the rise of the national bourgeoisie. In the context of South Africa, ANC politicians have amassed wealth while poverty and inequality have increased since 1994 (*Poverty & Equity Brief*, 2020). Mongale (2022) and Hunter et al. (2021) speak of state capture in which Jacob Zuma was central in serving the interests of private capital. Thus, the state was pressured to send him to prison to show that the President was handling the issues of corruption within the ANC party (Hunter et al., 2021; Mongale, 2022). The Poverty & Equity Brief (2020) reported that about 55.5% of the population of South Africa falls below the national upper poverty line. This translates to surviving on R992 in any given month (*Poverty & Equity Brief*, 2020). Therefore, the ANC's political corruption and failure to fulfil the promises of 1994 through inclusive economic reform present political threats to human security, which may encourage unrest.

The results of this study indicate that racial violence that happened in Phoenix between Indian and Zulu groups presents a threat to political security. Twitter conversations around the Phoenix violence mentioned that residents were on the lookout for potential looters in their neighborhood. This is consistent with the arguments by Motswaledi and Marumo (2023) as they argue that this racial tension shows the flawed notion of social cohesion that was promoted by the ANC government as a way to build unity. Motswaledi and Morumo (2023) argue that the visible social gap between Indian and Zulu groups undermines social cohesion.

The Socio-Economic Review and Outlook (2022) focused on KZN indicates that 42% of African households in KZN are lower income earners compared to 3.5% of Asians commonly referred to as Indians. In addition, KZN was identified as the province with the highest percentage of people receiving social grants (*Socio-Economic Review and Outlook*, 2022). The findings of this study suggest that racial division is associated with fear as inhabitants of Phoenix sought to protect their neighbourhood from outsiders. Much of the academic literature indicates that inequality is still a critical issue in South Africa, therefore, the relation between inequality and social cohesion needs more attention to formulate policies that will speak to practical social cohesion.

5.4 Socio-economic Stressors

The Twitter conversations included in appendix (E) also reveal that interrelated economic issues stemming from COVID-19 may have contributed to the riots. Studies have indicated that before the COVID-19 pandemic, South Africa faced a challenge with pre-existing socio-economic issues that stemmed from the apartheid state (Motswaledi and Morumo, 2023; Ngwane, 2021; Vhumbunu, 2021). Post-independence, these issues are associated with ineffective governance of the ANC. Due to the struggling economy and high unemployment rate, inequality, and poverty have been on a continuous rise (Ngwane, 2021; Motswaledi and Morumo, 2023; Vhumbunu, 2021). The conversations around poverty are linked to economic threats such as high food costs, and increasing unemployment, spiked by the Covid-19 pandemic. On a global scale, Covid 19 brought about economic shock. People experienced job loss and income loss, and businesses were forced to shut down. Looking at South Africa, households did not fare well as the economy was already struggling. According to the *Quarterly Labour Survey Force Survey* (2022) published by Statistic South Africa, before COVID-19 the rate of unemployment was high at 29.1 %, and with the pandemic, it jumped to 35.3%. The South African labour force is characterized by precarious workers which means workers are more vulnerable to job loss and income loss (Brandt, 2022). *The Quarterly Labour Employment Statistics* (2022) reported that 671,000 workers became unemployed in quarter four of 2022. Full-time jobs declined by 541,000 quarter on quarter, while 107,000 part-time jobs were lost. Gross income for the June 2020 end-of-quarter declined by R 82 billion and there was a year-on-year decrease of 9% in income. Mongale (2022) and Vhumbunu (2021)

argued that lockdown restrictions implemented by the government worsened the interlinked issues of unemployment, poverty, and inequality resulting in an angry and frustrated nation.

5.5 Looting

The results of this study confirm that supermarkets were damaged by looting attacks during the unrest. Davis (2021) mentioned that 161 malls and shopping complexes, 161 liquor stores and 11 warehouses, and 8 factories were looted. Mchunu (2021) indicated that 200 Shoprite stores were looted and destroyed by fire in Gauteng and KZN. Furthermore, the looting sprees resulted in a 50-billion-rand cost from taken goods, burnt trucks, and damaged properties (Vhumbunu, 2021). The results of this study indicate that there was a lack of policing where looting took place. These observations are consistent with Mac Ginty (2004) and Auyero and Moran (2007) who mentioned that looting is stimulated by enabling conditions such absence of law enforcement. Furthermore, *The July Unrest Report Final_29 Jan 2024* (2024) reported that the government provided an inadequate and late response to looting attacks hence it was widespread. Table 4.3 indicates that the conversations around looting were more concerned with the damage and loss of looting. It does not tell us much about what was looted. However, Appendix (E) suggests that looting included more than just food, as furniture, clothes, and other items were taken.

Bakonyi's leveling looting is useful in making sense of the looting activities that happened during the July unrest. According to Bakonyi (2010), leveling looting is an attempt by marginalized members of society to level injustices or to better their socio-economic status. This form of looting tends to be directed at the socially privileged and the government. Here, white-owned supermarkets like "Shoprite" were targeted. Hunter et al., (2021) and Lamb (2021) suggest that the looters included organized criminals as well as the poor who come from around the area where looting took place. The organized criminals targeted ATMs, banks, and white-owned shops and malls. The organized criminals arrived at malls in bakkies to loot the high-value items, while the poor including more women and young boys who were taking anything that they could get their hands on (Hunter et al., 2021). Furthermore, Hunter et al., (2021) argued that the anger that was supposed to be aimed at the ANC government was directed at white-owned businesses. As much as this study has provided insight into where the tweets came from, it also indicates that the people who tweeted were observers

because they were situated around looting, and some described the scene around them or scenes they witnessed in passing.

Bakonyi's (2010) leveling looting speaks to power dynamics between the supermarkets and marginalized groups. The attack on white-owned businesses suggests grievances related to injustices in access, as people's incomes have been shrinking while prices of basic items keep rising. On the other hand, Hunter et al., (2021) and Lamb's (2021) observations of organized criminal groups involved in looting attribute looting to criminality and disorder.

5.6 Food Disturbance

The findings of this study suggest that there is food disturbances associated with the COVID-19 pandemic. Twitter conversations mentioned food disturbances related to food affordability. Studies indicate that COVID-19 was a significant contributor to food disturbances across the world as it was accompanied by a global economic downturn where people lost jobs and income and were unable to purchase food as needed. Laborda et al., (2021) argued that COVID restrictions on movement resulted in disruptions in food supply and food price increases due to the unbalanced demand and supply in food markets. According to Laborda et al., (2021), loss of income not only reduced consumption but also changed diets, high nutrient foods were substituted with less nutritious and cheaper foods like sugar. Laborda et al., (2021) mentioned that food disturbances were felt more in developing countries as many governments could not provide sufficient social protection, and unemployment increased alongside poverty affecting rural and urban populations. Similarly, Onyeaka et al., (2022) found that state intervention in terms of providing food aid was very low in Sub-Saharan Africa.

Mohamed et al., (2021) observed undesirable COVID impacts on food security in Sub-Saharan Africa. Mohamed et al., (2021) argued that measures put in place to manage COVID pushed an estimated half a billion people into poverty in Sub-Saharan Africa where the poverty rate is well above 35%. According to Mohamed et al., (2021), job losses hit informal workers the worst as they depended on daily income and had no savings to purchase food. Since COVID-19 extreme poverty increased in Africa, 24 million more people live below the international poverty line of $ 1.90 a day (Mohamed et al., 2021). Tabe-Ojong et al., (2023) argued that COVID worsened food access in African countries. Many African countries depend on imported foods and farm products, and the disruptions in the movement of goods resulted in

demand shocks and price increases. Farm products became scarce and farmers experienced production issues and low yields, affecting poorer countries that depended on cereal yields. Tabe-Ojong et al., (2023) found that in urban areas of Zimbabwe, South Africa, Tunisia, Morocco, and Egypt food stockpiling increased food prices in the early stages of COVID.

In a study conducted in urban poor areas in Ekurhuleni in South Africa and Greater Accra in Ghana between late April and May 2020, two countries that had some of the highest COVID-19 cases in sub-Saharan Africa, Durizz et al., (2021) stated that of the responders from South Africa, the majority source of income was social grants that were hardly affected by the pandemic. Meanwhile, 67% of self-employed people from South Africa and 86% of self-employed in Ghana had to close their businesses and loss lose income. According to Durizz et al., (2021), price increases affected the urban poor of Ghana more compared to South Africa. Durizz et al., (2021) found that 39% of the respondents in Ghana mentioned not being able to afford certain foods because of price increases, staple foods like beans, cassava, jam, vegetables, and fruit (Durizz et al., 2021). While in South Africa respondents mentioned the issue around lack of food to purchase, 22% reported that there was no bread or maize to buy. In another study conducted in Alexandra Township in May 2020, respondents reported stockpiling food before the lockdown noted higher food prices and experienced reduced access to food during the lockdown (Fisher 2022). Hart (2022) argued that high food prices impacted food access, with a 17% increase in the price for basic food baskets in the cities of Johannesburg, Durban, and Cape Town in 2020. Complaints about food price increases during COVID led to the development of the quarterly food price monitoring report that observed and investigated the effects of COVID-19 on the national food market (Essential Food Pricing Monitoring, 2021). The Essential Food Pricing Monitoring (2021) reported patterns of stockpiling and rising prices in the first and second wave of COVID-19. Hart (2022) argued that social protection in the form of grants had a low impact on reducing hunger and food insecurity in times of a pandemic as household hunger increased from 10% to 28% during COVID.

The findings of this study revealed an interesting conversation, people predicted that the July unrest will result in further price increases. The Essential Food Pricing Monitoring (2021) validates these predictions as they recorded 75 complaints of price increases between the 23rd and 30th of July 2021. According to the Essential Food Pricing Monitoring (2021), food

supply disruptions of the riot led to practices of price gouging of basic foods in the KZN , particularly in the areas of Phoenix and Umhlanga. Mongale (2022) and Motswaledi and Morumo, (2023) stated that the July unrest has affected food security as destroyed supermarkets and shopping complexes have left more people jobless and increased food shortages.

6 Conclusion

This study set out to explore whether the July 2021 unrest was framed as a food riot by people tweeting from affected areas across the Gauteng and Kwa-Zulu Natal. Dictionary-based analysis and STM topic modeling were used to examine 8264 geo-tagged tweets around the July 2021 unrest. Overall, the study revealed low participation in Twitter conversations across the areas of interest. High Twitter participation was identified in cities such as Johannesburg and Durban. In addition, this study lacked demographic information about the users making it difficult to understand the composition of users from the geo-tagged locations. Therefore, future research that covers the demographic aspects of users during social unrest would be worthwhile.

A notable feature of this study is the integration of computational methodology. This paper illustrates the potential of big data to be applied in food riot studies at various scales. Social media offers a way to understand unrest and people's views on a very large scale. The tweets revealed that conversations revolved around collective action, political discontent, loot, socio-economic stressors, and food disturbances during the unrest. The results of this study suggest that people organized under the guise of Zuma's arrest and then events developed into a significant riot. Social media played an important role in mobilizing people and spreading the unrest across provinces. Discussions related to politics were focused on discontent with the state's ineffective response to socio-economic issues that were worsened by the COVID-19 pandemic.

This research revealed that part of the looting involved food which may be a response to food disturbances related to income shocks and high food prices during the pandemic. The findings suggest that racial conflict resurfaced related to fears of looting. The study revealed that some conversations anticipated food price increases as a consequence of the unrest. Overall, the findings reveal that Twitter conversations mentioned an interplay between politics, pandemic's impact on livelihoods which intensified economic struggles, leading to increased frustration. These conditions make civil unrest more likely. The research captured public perceptions of the July unrest across Gauteng and KZN. The study contributes insights that can be useful for policy, as the context of the people provides a better understanding of the root causes of the riot and therefore may lead to better-informed policies. Given the growing numbers of Twitter users, there is potential for larger-scale food riot studies.

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Appendices

Appendix A: Sample of Tweets related to loot

Sample of Tweets Related to Loot
Tweet 1: As Ramaphosa speaks Dobsonville Mall is being looted. He has lost control. #GautengShutdown #ConCourt #ShutDownGauteng #ShutdownKZN #FamilyMeeting.
Tweet 2: Scenes from Alexandra right now. Boxer in 1st avenue looted #SaShutdown
Tweet 3: Bridge City Mall Bayangena, akulalwa namhlanje eKzn. #SAShutdown #KZNshutdown
Tweet 4: GautengShutdown The media have the power to control the minds of the masses... Journalists sho uld becareful with how they narrates these protests
Tweet 5: Where is Bheki Cele? #GautengShutdown #KZNshutdown
Tweet 6: Marianhill KZN. Where are the police and law enforcers. #KZNshutdown #ALERT #GautengShutdown #ZumaJudgment #ZumaArrest #FreeJacobZuma #FreeZumaNow #ConCourt.
Tweet 7: DZumaSambudla I think Majority of South Africa support & love ubaba uZuma including me. But I don't support the LOOTING and BURNING of business. I now don't have a business it was bur n down, which sponsored many people towards education and our party. Let not kill ubaba legacy # FreeZuma
Tweet 8: @DZumaSambudla I support FreeZuma, also very much in support of what Premier did. Th ese looters hijacked our support for uBaba and turned our Province into a crime scene
Tweet 9: Night shift has started. #SAShutdown
Tweet 10: Nightshift has clocked in. Azikhale!!! Day 5 of 15 Months #FreeJacobZuma #FreeZumaNow #ShutdownKZN #ShutdownSA #ShutdownGauteng #GautengShutdown #KZNshutdown

Appendix B: Sample of Tweets related Collective Action/ Online Activism

Sample of Tweets Related Collective Action/ Online Activism
Tweet 1: If you can't beat them join them #KZNshutdown #FreeJacobZuma #SAShutdown
Tweet 2: Where ever you are if it possible, join the NIGHT SHIFT (Guerilla War style). #SAShutdown
Tweet 3: @Ayandi07684809 They should learn one thing about life and that is if you can't beat them join th em. They must join the moving FreeZuma train, they will be better recognised, especially by the w orld
Tweet 4: Y'all should come to N3. #GautengShutdown
Tweet 5: Gauteng this is our chance to also protest for everything like retrenchments and poverty,let's not i gnore this.....it's time we fight for everything#GautengShutdown
Tweet 6: #GautengShutdown #level5 #SAShutdown "WE SEE YOU GAUTENG!!!! AMANDLA!!!
Tweet 7: #GautengShutdown #FreeZumaNow Let's make this Campaign trend please
Tweet 8: 99.9 % of people taking part in the #GautengShutdown protest are doing so on Twitter. Welcome t o Gauteng Actually make this 99.99999999999 percent. #KZNshutdown
Tweet 9: *#Thumamina Media WhatsApp Group instigated the #julyunrest*'
Tweet 10: Now its time for us to hold #DuduzileZuma to account for being one of the people and instigators of violence in South Africa #SAShutdown #looting

Appendix C: Sample of Tweets related Politics

Sample of Tweets Related to Politics
Tweet 1: We will defend ubaba without fear or favor, clever blacks must rest #FreeJacobZuma #SAShutdow n #
Tweet 2: Can I proudly say Zuma is South Africa, South Africa is Zuma. #FreeJacobZuma #WenzenuZuma #SA Shutdown
Tweet 3: This is for Zuma. This is for petrol hikes. This is for electricity hikes. This is for all the lost jobs. This is for Rupert running the country. This is for the bought judges. #GautengShutdown #FreeZumaNow #RamaphosaMustFall
Tweet 4: #KZNshutdown is the Big elephant in the room, the silence of politicians is deafening especially A NC leaders, Cyril in particular . Where are the vocal churches to call for calm??? It will only get wor se #FreeZuma
Tweet 5: Cyril Ramaphosa must do the right thing and resign with immediate effect! #SouthAfricaIsBurning #SAShutdown #ShutDownGauteng #NoToSoldiers
Tweet 6: # Cyril Ramaphosa’s silence is too loud the country is striking and he is not addressing us. #GautengS hutdown #FreeZumaNow
Tweet 7: Dear President Cyril Ramaphosa please we don't want to hear anything about Covid today. And be aware of ongoing protest that is taking place in two major provinces in this country. My wish today can you send someone to address us tonight. Badikiwe abantu uwena #Gautengshutdown
Tweet 8: Cyril's disconnection with black people has led him to assume that the protests are an ethnicity infi ltration. There's nothing tribalist about these protests. That will be realized when the strike is natio nwide #FreeZumaNow #SAShutdown #zumaprotests
Tweet 9: He says its "Ethnic Protests" = Zulu people are being violent just nje for nothing. Wow! "Those involved will be arrested and prosecuted" #KZNshutdown #GautengShutdown #FreeJacobZuma
Tweet 10: #GautengShutdown people are directing their anger towards innocent people. Why are they lootin g shops and burning trucks instead of burning government offices or the courts? Honestly this pro test doesn't even make sense.

Appendix D: Sample of Tweets related to Violence

Sample of Tweets Related to Violence
Tweet 1: Where is Sandf guys? #GautengShutdown #KZNshutdown
Tweet 2: Where is Bheki Cele? #GautengShutdown #KZNshutdown #
Tweet 3: So the army has been deployed... Brace yourselves people, just like the police shot at innocent people at marikana, the soldiers are n ow here to pick up where they left off The marikana killer is back. #FreeJacobZuma #RamaphosaMustFall #KZNshutdown #GautengShutdown
Tweet 4: Black people calling on government to deploy SANDF to kill black people. This is sick #GautengShut down
Tweet 5: Arrest Zuma Children #FreeZumaNow #SAShutdown #ARRESTZUMA
Tweet 6: #GautengShutdown guys they just vandalised Shoprite liquor in Jewel City
Tweet 7: DEFENDING YOUR PROPERTY ISN'T RACIST! Stop pulling the race card to get out of tight situations! Criminality and looting will be met with stern force, NO MATTER THE COLOUR OF SKIN! #RACIST #SAIsBurning #SAshutdown #NOTOLOOTING #notoviolence #Durban #IndianLivesMatter
Tweet 8: Someone’s son died at Shoprite Yarona Shopping Centre, the glass doors cut his head off. He died l ast night around 21:00 & he’s still at scene. His family covered him with a blanket & left him there. #SAShutdown
Tweet 9: IT'S NOT INDIANS AGAINST BLACKS, ITS COMMUNITIES AGAINST CRIMINALS #UnrestSA #PhoenixMassacre #zumaprotests #LootingForZuma
Tweet 10: Being from Kwazulu Natal is the pits Indians are killing black people now , brutal killing ,when I say I am embarrassed to be from Kwazul u Natal will be an understatement ,we didn’t handle this very well isehlulile lendaba , what for bre akfast isinkwa asikho #SAShutdown

Appendix E: Sample of Tweets Related to Socio-economic Stressors

Sample of Tweets Related to Socio-economic Stressors
Tweet 1: Poverty is driving people into lootings. No Jobs, No food Do you have any plans to stop poverty in our country? #FreeJacobZumaNow #SAShutdown
Tweet 2: Those who think these on going protests are only about President Zuma know nothing. Jobs were l ost, unemployment rate is spiking, food/petrol prices hiking. People are hungry. Sikhathele uhulum eni nohlohl' esakhe as people. #KZNshutdown #GautengShutdown #level5 #EndLockdownNow
Tweet 3: I feel like people are now just angry with Ramaphosa because of the worsening economic situation I mean what can justify a 2litre cooking oil bottle going for 65rand.this is not just about Zuma but people are hungry #GautengShutdown
Tweet 4: Food prices are high, people are hungry. Crime rate. Come elections vote for the same party. #SAS hutdown
Tweet 5: Yebo it's the only way we get to be heard, it only when things get out of hand then we get they att ention, we are Angry and we are Hungry due to these lockdown levels, the ANC must futsek maarn . #SAShutdown #releasezuma
Tweet 6: Looting is a result of Lockdown People are hungry!! they loot to put bread on the table!! 3Million people lost theirs jobs, SMMES will never recover because of an on going lockdown. Peopl e are hungry because government failed to rollout vaccine. #SANDF #SAShutdown #makro #EFF
Tweet 7: The food prices after all this??? That's if we'll have any food in the next few weeks. #SAShutdown
Tweet 8: Watch food prices hike up in the next few weeks. #SAShutdown
Tweet 9: Your president is quick to adjust lockdown levels but doesn't care to impose certain restrictions on businesses that will ensure that food prices (amongst other things) don't increase. #ShutdownSA # SAShutdown
Tweet 10: I saw an elderly woman coming out of one of the looted stores with a bundle of tissues and a braai pack, at the heart of these protests is poverty, and with the extension of the lockdown it's just gon na get worse #SAShutdown