

SPATIAL ANALYSIS OF INSURGENCY ACTIVITIES IN NORTH-EASTERN NIGERIA

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CERTIFICATION

We, the undersigned, certified that MUSTAFA, Ibrahim Alhaji carried out this research in partial fulfillment of the requirements for the award of Doctor of Philosophy (Ph.D.) degree in the Department of Geography and Environmental Management, Faculty of Social Sciences, University of Ilorin, Ilorin, Nigeria.

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DEDICATION

This thesis is dedicated to all military personnel who lost their lives in the fight against insurgency in the Northeastern Nigeria.

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ABSTRACT

Insurgency activities have continued to ravage the Northeastern part of Nigeria since 2009. This resulted in loss of lives and properties. Despite the military intervention, the insurgencies still occur unabated in the region. The aim of the study was to examine insurgency activities in some selected Northeastern states of Nigeria. The objectives of the study were to: (i) examine the nature of insurgency activities in the study area; (ii) establish the spatio-temporal pattern of insurgency activities over the period of 2009-2017; (iii) determine the factors responsible for the insurgency activities; (iv) examine the effects of insurgency activities in the study area; and (v) classify the intensity of insurgency activities.

Data for the study were generated from both primary and secondary sources. Primary data were collected from Internal Displaced Persons (IDP) Camps through the administration of structured questionnaire and oral interviews. Secondary data were derived from security agencies' records and insurgency data from Armed Conflicts Location and Events Data (ACLED). Purposive sampling method was adopted in the selection of IDP Camps, while random sampling technique was employed in the selection of 633 respondents. Interviews were conducted with security agencies, security personnel and IDP camp officials. The insurgency data from ACLED were used to determine the spatio-temporal changes between 2009-2017 using Geographical Information System techniques. These data were subjected to both descriptive statistics (table and graph), and inferential statistical such as Analysis of Variance (ANOVA), and hot spot analysis.

The findings of the study of the Northeastern states were that:

- i. the most prominent insurgency activity in the study area were kidnapping (25.93%); suicide bombing (16.09%); and attacks on security agencies (14.15%), citizen (13.28%), and infrastructure (11.65%);
- ii. the activity of insurgency indicated a statistically significant positive trend in insurgency for the period of the study with 38% occurrences per year and R-square of 58% variability in its frequency;
- iii. poverty level (15.62%), presence of hideouts (15.57%), unemployment (14.61%), porous border (14.42%), low educational level (13.90%); and religious extremism (13.51%) were the factors that encouraged insurgency. Incidentally, the lack of government presence was not a major factor 13.00%;
- iv. loss of lives (23.09%), displacement of people (17.51%), destruction of property (15.86%), and destruction of farm land (11.46%) were the major effects of insurgency;
- v. high-high intensity of insurgency were experienced in Gwoza, Konduga, Madagali, Michika and Gujba, while the insurgency hot spot with 99% confidence level were exhibited in Maiduguri, Jere, and Mafa within the time frame of the study.

The study concluded that insurgency activity pattern can be monitored using GIS to identify and provide an understanding of the location, intensity, and trend in the selected Northeastern states of Nigeria. The study recommended that anti-kidnapping laws should be enacted in the study area; efforts should be made by the Government in reducing poverty through the

provision of enabling environment for job creation; and provision of adequate security in the study area so that it can assist in checkmating the activities of the insurgent.

CHAPTER ONE

INTRODUCTION

1.1 Background to the Study

One of the deep seated obligations of any nation in the world is to guaranty the security of lives and property of its populace. The obligation extends to its sovereignty, territorial integrity, stabilizing the socio-economic and political situation within its geographical space. The protection of this geographical space is being threatened by both local and international insurgency in recent times. History has shown that the first known insurgency was perpetrated by a radical derivative of the Zealots, a Jewish sect active in Judea during the 1st century AD. The Zealots resisted the Roman Empire's rule through a determined campaign principally involving assassination and kidnapping of people in the area. In recent years, the activities of insurgency began to grow rapidly all over the world. The September 11, 2001 World Trade Center (WTC) bombing in the United State of America by a group known as Al-Qaeda is an example of the first worst act of terror in modern time. Amongst other attacks are the attacks in Great Britain, Spain and other places (Duru & Obonnya 2010), the Civil War in Sierra Leone, the mass killings in Darfur, paramilitary violence in the Democratic Republic of Congo (DRC) where civilians were specifically targeted (Johnston, 2008), Mali also witnessed insurgency where foreign aid had to come to their rescue due to the attack with the Tuareg fighters that resulted in the Malian coup (Raghavan, 2011). The act of this insurgency has escalated and indeed, has risen to global insurgency.

Nigeria has its share of attacks by an Islamic extremist group commonly called Boko Haram now known as the (Islamic State of West Africa). Its mission and agenda have been

stated to be: “The Eradication of Western Ideology in Nigeria and the realization of Sharia Law in the Country”. The sect was found to have emanated from an orthodox teaching slightly resembling that of the Taliban in Afghanistan and Pakistan whom considers anything western as an aberration or completely un-Islamic as such shouldn't be practiced. It was further found to believe that western education is the cause of exposure of the people, corruption, inequality and injustice bedeviling the society which must be stopped no matter the cause (Akubor, 2011; Bamigbose, 2011; Nwanegbo & Odigbo, 2013). However, the stance of Boko Haram on Western education to be hypocritical as most of their activities reveal that the sect is not completely focused with regard to Western education and technology, in view of the modern technological resources it employs in the conduct of its deadly activities, it must have close affinity with those whose educational attainment is very high (Sani, 2011). The militia group has, through its bombing operations since 2004, killed over three million Nigerians mostly in the northern region (Human Rights Watch, 2018). This deadly group has been involved in attacking international and public buildings, including the United Nations building in Abuja on 26th August, 2011, Army, Police formations, banks, churches, mosques, recreation centers, schools, motor parks, markets and residential areas in Nigeria (Idris, 2013).

In an attempt to control the activities of Boko Haram, the Federal Government declared “State of Emergency” on a few states seriously affected by the attacks of the sect including Adamawa, Borno, and Yobe states in 2013. In spite of these measures, the Boko Haram activities did not abate such efforts would appear to have been frustrated because several attacks occurred after. Such attacks have claimed lives of about 50 students and lecturers of a college in Yobe State and destruction of properties in the institution (Adeniran, *et al.*, 2013; and Chukuma & Philip, 2011). This was backed by a speech of the then Governor of Yobe State, Ibrahim Geidam

in a broadcast stated that the attack is “devastating, heinous and barbaric”. In Benishek alone, the insurgents killed about 161 people, including civilians and soldiers on 17th September, 2013. Based on this, the Federal Government of Nigeria further extended the period of “state of emergency” for another six months. Unfortunately, this further motivated the insurgents to make their presence known when on 2nd December, 2013 massive attacks on military formations, police post and Maiduguri International Airport, all in the state of Borno state. In the attacks, the military lost three decommissioned jets and two helicopters, while scores were killed with properties estimated at millions of Naira destroyed (Idris, 2013).

The location, distribution and management of insurgency is very complex and requires a systematic and structured methodology that will allow a comprehensive analysis of the modes of attack and the degree of vulnerability of specific areas. Advances in the areas of Geographic Information Systems (GIS) and other information technology such as remote sensing (RS) and Global Positioning System (GPS) have opened a new set of opportunities for its use in mapping of insurgency, control and prevention. In Iraq, GIS was used to analyze the spread of insurgency activities, and it showed the spatial distribution of where insurgency occurred (Brown et al., 2004). In Pakistan an integration of GPS and GIS were used to identify where insurgency occurred and the impact of insurgency on the environment (Chainey & Ratcliffe, 2005).

Geospatial technologies and other related systems can therefore be used for detection, monitoring, tracking, and exploration of insurgency (Cutter, et al., 2003). Hitherto, GPS and remote sensing has been applied in environmental protection and sustainable development where the technology has assisted in environmental monitoring for quite some time. The technology can also be adopted in determining potential insurgency sites by examining complex seemingly unrelated criteria and displaying them in a graphical layered, spatial interface or map for better

appreciation. Maps are the most efficient and effective means of communicating spatial information of the world to people. They reveal spatial relations and patterns, and offer the user an overview of the distribution of a particular phenomenon (Andrew & Flint, 2010).

Besides, GIS uses geography and computer-generated maps as an interface for integrating and accessing massive amounts of location-based information (Jiawei, 2003). GIS has been applied widely in the mapping of insurgency hot spots, security monitoring, and crime scenario predicting (Donald, 2004). However, Ferreira, et al., (2012) opined that GIS allows security personnel to plan effectively for emergency response, determine mitigation priorities, analyze historical events, and predict future events. GIS can therefore be used by security agencies to provide mapping solutions for insurgency and crime analysis, insurgency tracking, traffic safety, community policing, Intranet/Internet mapping, and numerous other tasks.

Furthermore, GIS can be used for search and rescue activities. The growing number of insurgency in the Northeastern part of Nigeria has calls for a new approach to its studies and the use of GIS and its analytical capabilities readily comes to mind. Reliable and up-to-date or near real time geospatial data needed by security agencies can be generated through this source. The rescue workers who save life require timely information about insurgency activities to adequately carry out their tasks. The application of GIS and remote sensing can be harnessed to help in this direction.

A practical use of GIS to assist counter insurgency operations has been done in a few northern states and discoveries on its importance includes spatial terrain visualization for battlefields in the Northeastern Nigeria where satellite images, in-situ data, previous knowledge (i.e. ground-truth) of the study area and Digital Elevation Model (DEM) were used to analyze the terrain characteristics and determine suitable locations for concealment and/or cover index in the

battlefield. The present study is an attempt aimed at applying the use of GIS in the study of insurgency in Northeastern Nigeria.

1.2 Statement of the Problem

One common issue associated with insurgency is that nobody knows when and where insurgency activities will occur within a geographical place in the space. The frequency of insurgency activities and other violent crimes committed by the Boko Haram Sect in the Northeastern part of Nigeria has become worrisome, overwhelming and difficult for government and security agencies to combat effectively because of the inadequacy of information on how, where and when these activities occur within the shortest time (Abolurin, 2011).

The analogue system of insurgency and intelligence record maintenance has failed to live up to the requirements of the existing insurgency scenario (James, 2010). Mallam (2009), had earlier observed the failure of the Nigeria security agencies to live up to expectations in arresting insurgency in the Northeastern Nigeria due to the inability of the employment of modern technologies. It has been very difficult for the security agencies to foresee where and when specific attack will take place within the geographical space because there are no databases from which analysis can be based and predictions made (Fajemirokun, *et al.*, 2006). The security agencies were known to carry out record keeping through pen and paper. This paper technique, which has been in use for over a long time, contains details of attacks, date of attack, estimated number of people wounded and killed, as well as properties destroyed among many others. Johnson (2000), is of the view that manual processes do not provide accurate, reliable, and comprehensive data of the places of insurgency round the clock nor help in trend prediction and decision support, because only little information are captured in the process. It also results in lower productivity and effective utilization of manpower. Daniel & Dogo (2011), pointed out

that the security agencies have inadequate number of communication devices. They further reiterated that the use of computers and other communication devices that will help in keeping track of insurgency activities is very minimal.

Previous studies on insurgency activities and analysis in the Northeastern Nigeria have been limited in area of geographical spread and temporal analysis of insurgency activities. Areas mostly focused on by researchers are on the psychological effects of the insurgency activities, historical analysis of insurgency, its effects on the socio-economic activities, and on educational system in the area. These researches have not been able to provide adequate information on the spatial spread of insurgency activities in the study area.

It is therefore necessary to understand the spatial pattern of occurrence and distribution of insurgence incidence in order to analyze and discover trend and frequency. This will aid in planning the strategies that can be deployed to enhance response time and evacuation of victims in the event of attacks. This can be achieved through the use of GIS and remote sensing techniques.

1.3 Research Questions

The following are the research questions identified in the study:

- i. What is the nature of insurgency activities in the selected Northeastern States of Nigeria?
- ii. What is the spatial pattern of the insurgency in the study area?
- iii. What are the factors that encourage insurgency activities in the study area?
- iv. What are the effects of insurgency in the study area?; and
- v. Where is the intensity of insurgency activities in the study area?

1.4 Aim and Objectives

The aim of this study is to examine insurgency activities in some selected Northeastern states of Nigeria with the view of developing a Decision Support System (DSS). The specific objectives are to:

- i. examine the nature of insurgency activities in the study area;
- ii. establish the spatio-temporal pattern of insurgency activity over the period of 2009-2017;
- iii. determine the factors responsible for insurgency activities in the study area;
- iv. examine the effects of insurgency in the study area; and
- v. classify the intensity of insurgency activities for decision making.

1.5 Justification for the Study

More than ever before, there is a need to understand the pattern and trend of insurgency activities in the Northeastern Nigeria. Such knowledge, does not only allow for understanding alone, but rather indicate areas that have high and low occurrences of insurgency activities. There has been continuous occurrence of insurgency in many forms in Nigeria. It has therefore become necessary to undertake a detail study of insurgency activities using insurgency mapping and factors that encourage the activities. The research will adopt modern technology for effective and efficient management.

In most security agencies stations and the study area in particular, the process of handling insurgency information has been very poor and inadequate. In most cases, information regarding insurgency is recoded in analogue format. This method of recording is haphazard and the contents are re-entered into another general situation file manually by the security agencies. Thus in the event of fire outbreak or disaster, the possibility of retrieving any information is minimal. This should not be the case in this modern Information Communication Technology (ICT) driven

world where computer (hardware and software) and internet facilities together with Global Positioning Systems (GPS) gadgets are available to do same with minimal effort. The existing manual method of documenting, filing and handling insurgency cases calls for urgent overhauling as the method and processes are currently at variance with what is obtainable in most developed world. For example, Shillingford & Groussman (2010), pointed out that when snipers terrorized the Washington, D.C., area in October 2002, police used GIS to link 13 separate attacks that occurred over the course of several weeks and in several states. Thus, it was able to indicate areas prone to attacks. Likewise, the Comp Stat program which made extensive use of GIS technology played a role in reducing crime in New York City in the 1990s and it is currently in used in Los Angeles, Baltimore and Philadelphia (Bruce & Stallo, 2009). In all the aforementioned cities in the United States, insurgency is managed using digital means such as GIS and database software methodologies.

Maps therefore offer insurgency analyst the opportunity of graphic representations of insurgency related issues. This study will provide an understanding of where and why insurgency occur, which will help the security agencies, both government and private to efficiently fight insurgency. Simple chropleth maps from this study, that displayed the location and pattern of insurgency activities, will also help the security outfits in direct patrols to places they are mostly needed. Therefore, managing insurgency with the use of GIS, remote sensing and database software methodologies is a step in the right direction in the Northeastern part of the country and Nigeria as a whole.

1.6 Significance of the Study

The significance of the study is that it will serve as a guide for early warning to the Nigerian government in their quest to quell the problem of insurgency and generate methodologies that will further be used in understanding insurgency activities. The study will enhance the existing knowledge in identifying the nature and causes of insurgency activities in the Northeastern Nigeria. Also judging from the fact that insurgency is a contemporary and topical problem, this study will help to proffer assistance to law enforcement agencies in combating insurgency by discerning pattern through GIS based analysis. Spatial data play important roles in the fight against insurgency and this can be achieved with the employment of GIS techniques which the present study utilized.

Northeastern Nigeria is a region in Nigeria where insurgency activities has almost crippled all activities in the area since its emergence over the last 10 years. The region has witness one of the most devastating consequences of the insurgency activities. This is as a result of insufficient information about where and when the insurgency activities are located. The study assisted in evaluating the spatial and temporal distribution of insurgency on a yearly basis so that adequate measures can be employed in solving the seemingly intractable problem of insurgency in Nigeria.

The study will further assist in the creation of hitherto non-existent insurgency database. Since most of the information about the insurgency are in disarray. Lastly, this study will add to the existing body of knowledge about insurgency and GIS, particularly the insurgency in the Northeastern Nigeria.

1.7 Scope of the Study

The research covered the geographical location of Adamawa, Borno, and Yobe States from the period of 1st January, 2009 to 31st December, 2017. It designed and created insurgency spatial database from which insurgency mapping and analysis were carried out. The choice of this location and time was based on the fact that most of the insurgency activities that occurred in the Northeastern part of Nigeria are within the geographical location considered for this study. The study focused on GIS techniques in insurgency management and strategic planning. The database, so created was combined with GIS and spatial statistics to map and analyze the pattern and trend of insurgency over the period 2009-2017. The technique employed in this study becomes a ready approach for insurgency studies in Nigeria.

1.8 Study Area

1.8.1 Location, Position and Size

The study area is located between Latitude 06°00'00"N to 14°00'00"N of the Equator and Longitude 10°00'00"E to 14°00'00"E of the Greenwich Meridian (Figure 1.1). It covers the three states of Adamawa, Borno, and Yobe in the Northeastern geo-political zone of Nigeria. It shares international boundaries with three countries, the Niger Republic to the North, the Republic of Chad to the Northeast and Cameroun to the East. The study area shares internal boundaries with Jigawa, Bauchi, Gombe and Taraba States to the west (Figure 1.2). It has a total land mass of about 153,317 Km² (Rayar, 1996) and 65 Local Government Areas (Table 1.1).

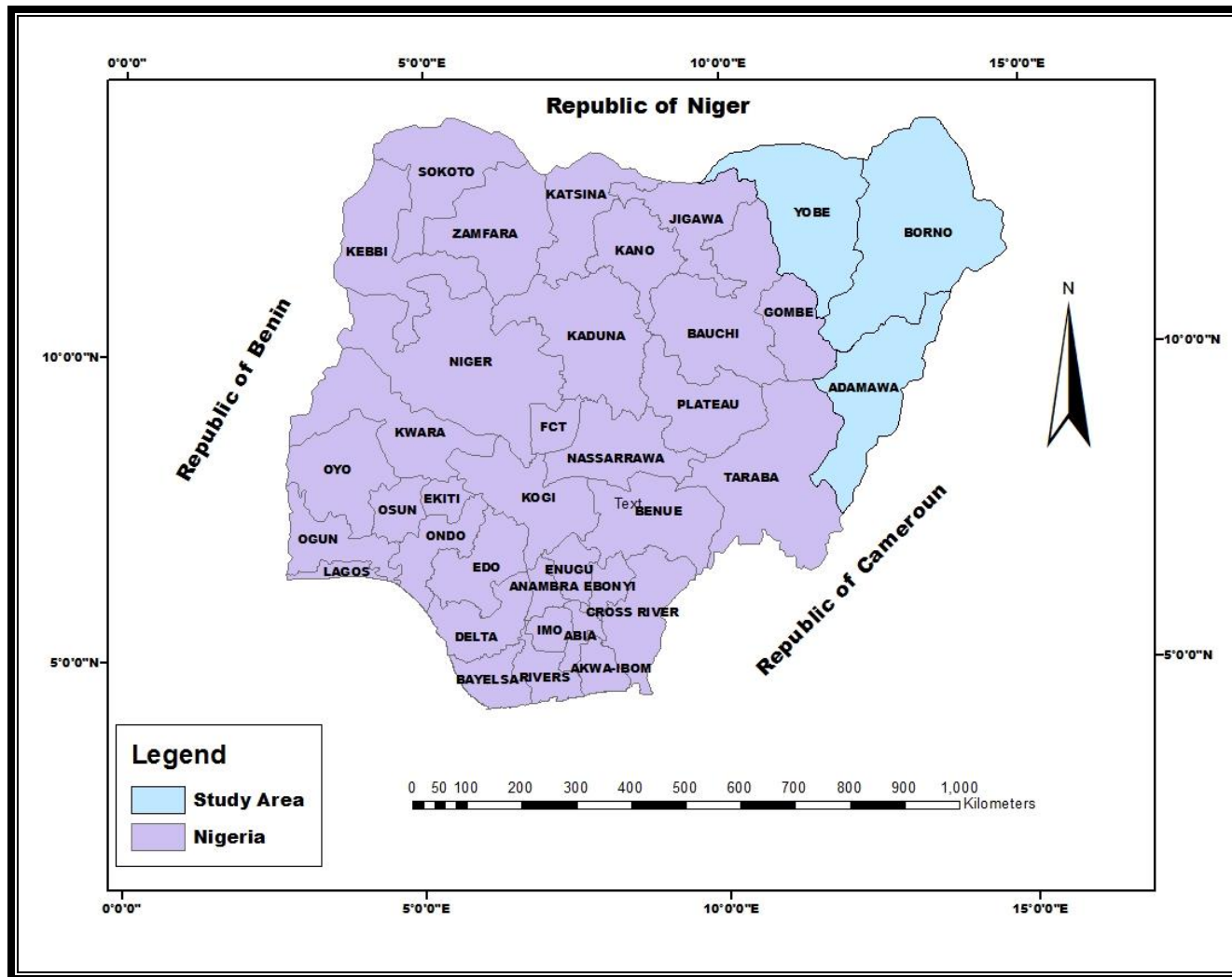


Figure 1.1: Map of Nigeria showing the Study Area

Source: Department of Geography, NDA, Kaduna, 2018

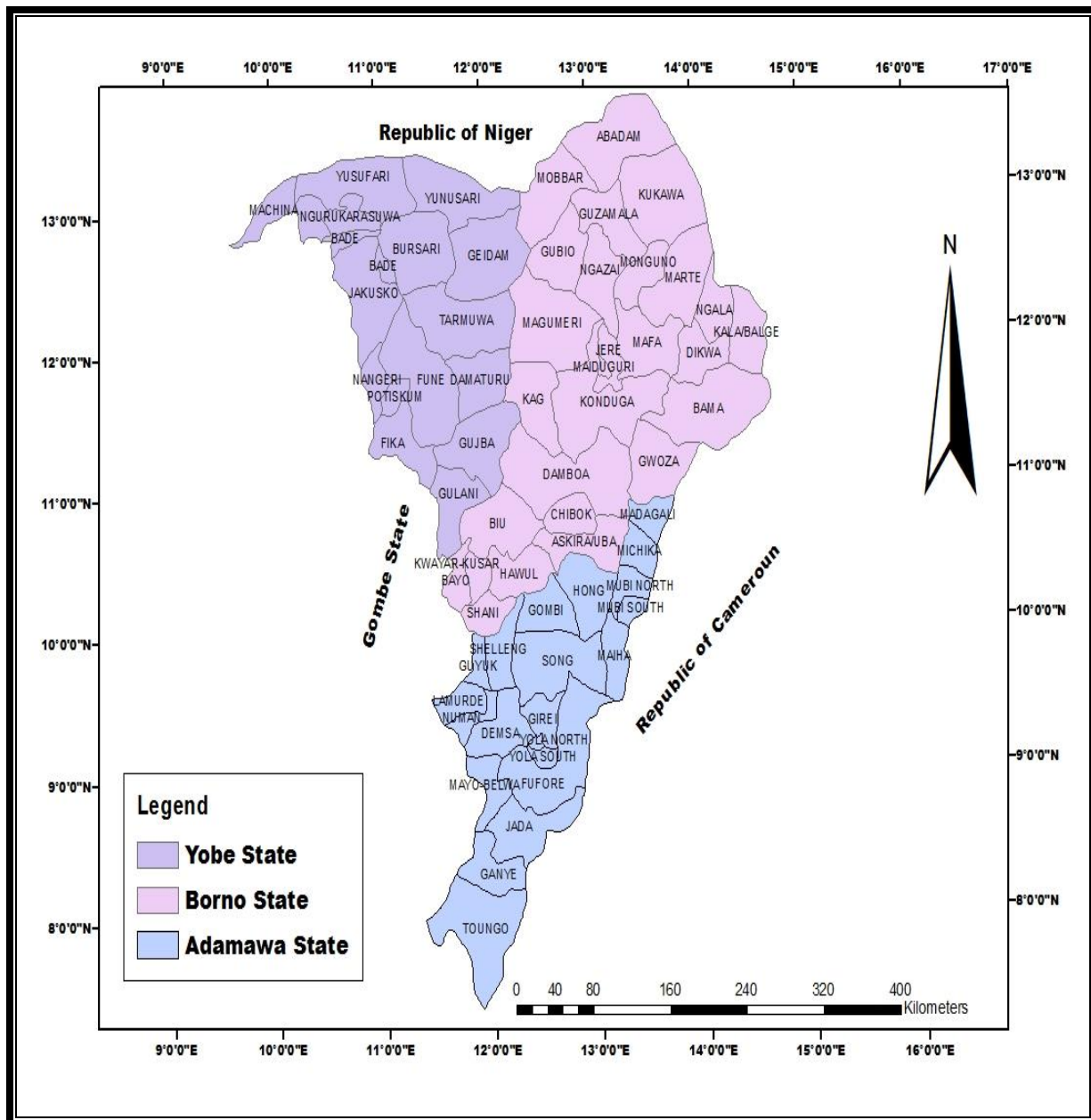


Figure 1.2: Map of Study Area

Source: Department of Geography, NDA, Kaduna, 2018

Table 1.1: List of States and Local Government Areas in the Study Area

S/NO	ADAMAWA STATE	BORNO STATE	YOBE STATE
1.	Fofore	Abadam	Bade
2.	Ganye	Askira-Uba	Busari
3.	Gombi	Bama	Damaturu
4.	Guyuk	Bayo	Fika
5.	Hong	Biu	Fune
6.	Jada	Chibok	Geidam
7.	Shelleng	Damboa	Guja
8.	Demsa	Dikwa	Gulani
9.	Madagali	Gubio	Jakusko
10.	Maiha	Guzamala	Karasuwa
11.	Mayo-Belwa	Gwoza	Machina
12.	Michika	Hawul	Nangere
13.	Mubi	Jere	Nguru
14.	Numan	Kaga	Potiskum
15.	Song	Kala-Balge	Tarmuwa
16.	Yola	Konduga	Yunusari
17.	Mubi-south	Kukawa	Yusufari
18.	Jimeta	Kwaya Kusar	
19.	Girei	Mafa	
20.	Toungo	Magumeri	
21.	Lamurde	Maiduguri	
22.		Mobbar	
23.		Monguno	
24.		Marte	
25.		Ngala	
26.		Nganzai	
27.		Shani	

Source: (NPC, 2017)

1.8.2 Climate

The climate of the study area falls within the Warm desert and the Semi arid climatic regions. The extreme North of Abadam, Mobbar, and Yunusari Local Government Areas falls within the Warm desert and the remaining part of the area is in the Semi-arid climate region. According to Ijere (1993), three seasons have been identified in the study area. These are the cool dry (harmattan) season between October and March; the hot dry season from April to June; and the rainy season between July and September of each year. Temperatures are high throughout the year. The highest temperature is usually in the month of April, while the lowest is in January. However, the seasonal temperature ranges from 39°C – 40°C in Borno to 35°C – 37°C in Yobe, and 31°C – 36°C in Adamawa state (Bibi, 2013). There are contrasts between diurnal and night temperature especially in the northern fringes of the study area (Waziri, 2007). Night temperatures could be very low due to radiation cooling at night while the skies could be misty with poor visibility at day time.

The rainfall of the study area is influenced by the West African Monsoon (WAM). During the summer, the air mass dominates the region in response to a low pressure belt developing in North Africa with a parallel high pressure belt that originates from the Gulf of Guinea (Lamb, 1983). Once the monsoon has commenced, rainfall events are mostly a product of instability and convection cells developing in the lower atmosphere influenced by the nature and characteristics of the land surface. The amount and frequency of rainfall in the study area generally decreases from the South to the North-east with some variations over short distances (Hess, *et al.*, 1995). In the southernmost part of the region, the wet season commences in late April, while the onset of rains is delayed northwards with rainfall commencing in July in the northern most part (Ijere & Daura, 2000). The mean annual rainfall in the study area ranges from

1600mm in the south to about 500mm in the north (Waziri, 2007; Binbol & Zemba, 2007). However, rainfall pattern fluctuates periodically, increasing from 40.59 to 132.67 mm/month in the wet season, and to between 2.918 and 9.673 mm/month in the dry season (Dammo, *et al.*, 2015).

1.8.3 Vegetation

The vegetation of the study area is basically of three types. These are the Sahel, Sudan, and Guinea Savanna. The vegetation types ranges from the Sahel in the extreme Northern part around the Lake Chad Basin to the Sudan in the central part, and the Guinea Savanna in the southern part. The Sudan vegetation type covers the largest part of the study area from latitude 9°00'N to 13°00'N. However, patches of Guinea Savanna can be found within the Sudan Savanna Zone in places like Damboa, Chibok, etc. The semi-arid nature of the Sahel found in the northern part of the study area consists of open acacia trees. The Sudan Savanna found in the southern part of Borno, Yobe; and the northern part of Adamawa state is made up of short grass vegetation interspersed with tall trees. The Guinea Savannah found only at the southern part of the study area to be characterized with short grasses, thick vegetation around hills and mountain ranges, interspersed by short trees and shrubs. Some of the trees found in the area include Baobab, Locust bean, Tamarind (Adefolalu, 2002). In the wet season, however, the vegetation becomes green with fresh leaves and tall grasses that extend to the Sambisa forest (Akinola, 2015). Parts of the study area that comprises of shrubs interspersed with occasional trees and parches of woodland are fast disappearing. The characteristics of the desert are becoming pronounced in the study area stretching from the north towards the south (Waziri, 2007). This is an indication that desert encroachment is advancing southwards in areas hitherto, under Guinea Savanna in the study area.

1.8.4 Population

The 2006 population of the study area was 8,660,544 and the projected population for 2011 account to 11,261,067. The annual growth rate for Adamawa (2.4%), Borno (2.7%), and Yobe State (2.8%) was used to project the population of the study area to be 12, 921,338 in 2017. The population was made up of 51.1% Male and 49.9% Female (Table 1.2). Borno has the highest population out of the three States, while Yobe has the lowest population. The population distribution pattern of the study area is quite uneven. Although, larger population are concentrated in the state capitals, majority of the population are found in the rural communities.

Table 1.2: Projected population of 2017

State	Male's	Female's	Total
Adamawa	1,992,487	2,049,581	4,042,068
Borno	2,948,714	2,736,612	5,685,327
Yobe	1,658,013	1,535,929	3,193,943
Total	6,599,214	6,322,122	12,921,338

Source: Projected NPC, 2017

1.8.5 Ethnic Composition

The area is mostly populated by the Kanuri in the north; Margi, Higgi in the south; Ngizim and Kare-Kare in the west; and Fulani in the east of the study area. Apart from these indigenous inhabitants, other minor ethnic groups such as Bachama, and Hausas are found in the area as well (Ijere, 1993).

1.8.6 Socio-economic Activities

The study area is accessible by rail, road, and air transportation from all parts of the country. Improvements in transportation networks have made the area more attractive as a centre for the location of agricultural and non-agricultural activities over the years. Their economy is agro-based and rests on communal land ownership, distributed among the rural farming households. These farming households practice agriculture for subsistence and commercial purposes. The most common types of crops grown include sorghum, millet, maize, beans, groundnut, cotton, tomatoes, *bambara* nut, indigo and tobacco. Livestock-raising is also practiced in the study area. It is carried out by the Fulani and Shuwa tribesmen (Ijere, 1993). Cattle, sheep and goats are reared in commercial quantities and they are mostly found in the western part of the area especially in Potiskum. Donkeys, horses, and camel are reared for transportation and work purposes. Birds such as chicken, ducks and guinea fowls are also kept for consumption and for sale. Non-agricultural activities in the study area include distribution of goods, artisanal activities and craftworks. These include blacksmithing occupation where hunting and farming implements are locally fabricated; trade is also common as products are exchanged in the periodic markets found throughout the study area (Ijere, 1993; & Ndirmbith, 2000).

However, insurgency has over the years greatly affected the socio-economic situation of the study area. This can be seen in the regular attacks on the cattle markets, farmlands and even the farmers which have brought untold hardship on the majority of the people, hence significantly affecting their socio economic status.

1.8.7 Educational Level

The literacy level varies from one part of the study area to another. According to National Bureau of Statistic (NBS) (2010), the literacy level is highest in Adamawa (58.4%), followed by Borno (38.1%) and lowest in Yobe (24.2%). and NPC (2017) reported that 38.6% of the total population in the study area had no formal education. Meanwhile, Olowoselu (2014), had observed that nearly 6.3 million, amounting to 60%, of the 10.5 million people that are out-of-school children in Nigeria are found in the North. As much as 45% of this number is from the Northeastern part of Nigeria. One-third of primary-school children and one-quarter of junior secondary school children are out of school. In the study area girls have limited opportunities to access education and livelihoods outside of the home or marketplace. In addition, the study area is one of the areas in Nigeria where majority of the people can neither read nor write (NBC, 2010).

Even with the low level of educational attainment in the study area, the insurgents still attack schools around the area. For example, over 250 secondary school students were kidnapped in Federal Government Girls College, Chibok on 14th April, 2014 (Human Right Watch, 2015). The continuous activities of the insurgency if not curtailed may negatively affect and undermine the educational situation of the Northeastern Nigeria.

1.9 Definition of Terms

Insurgents: refers to a person, possibly part of a group, who rebels against a recognized authority such as a Government.

Insurgency: is a protracted political military struggle directed toward subverting or displacing the legitimacy of a constituted government or occupying power and completely or partially controlling the resources of a territory through the use of irregular military forces.

Insurgency activities: refers to as the various categories of actions carried out during the process of insurgency by the insurgents who includes but not limited to suicide bombing, kidnapping, robbery, and attacks.

1.10 Conclusion

The background to insurgency studies were examined in this chapter. Statement of the problem was provided. The need for this study properly justified, the various features of the study area were analyzed and various operational terms in the study are defined. This chapter serves as the stepping stone for the reminder of the chapters this doctoral thesis.

CHAPTER TWO

CONCEPTUAL/THEORETICAL FRAMEWORK AND LITERATURE REVIEW

2.1 Introduction

This chapter reviewed literatures by various scholars in areas of space, place, insurgency, insurgency mapping and analysis using GIS. It reviewed the various causes and effects of insurgency. This process is geared towards understanding insurgency management through mapping and analysis, and also to identify the gaps in the literature requiring research as well as to develop the research design and questions. The chapter is divided into three parts: the first section deals with the conceptual clarification; the second part deals with the theoretical framework that explain the research; and lastly the literature review which deals with the empirical studies carried out in the past and in accordance with the variables presented in the research design.

2.2 Conceptual Clarification

The conceptual clarification is focused on the review of the relationship between space, place, and insurgency.

2.2.1 The Concept of Space

Space is one of the most fundamental geographical concepts. However, geography is yet to formulate an explicit and unambiguous definition of geographical space and this has negative consequences for geographical theory, methodology and application. In the effort of contributing to its exclusion, researchers in the field of geography have tried to outline the basic connotations of the concept. The concept of space is relational which acquires meaning and sense when related to other concepts. Space may be conceived as a supplement to things, for example, substantively conceived objects. Space conceived in this way is the synonym of emptiness (Soja,

2002). The concept of space may also be conceived in relation to individual landscape elements as environments. Space conceived in this way has the character of a field of force.

Miller (2003), pointed out that space may be conceived also with respect to the totality of landscape elements, such as, the system expressed by the term "synergic". It is this variant of space that should be understood as the geographical space in the full meaning of the term. It is only this conception of geographical space as the space filled with qualities in relations and proportions that is considered as one of the basic prerequisites for the formulation of the theory of geography as a science capable of prediction and thus also of practical utilization. In broad terms, Hubbard, *et al.*, (2004), posits that space can be seen in five main ways:

- i. definite but open space, particularly a bounded, open space within a city or town;
- ii. more generalized sense, extension, dimensionality or room;
- iii. location or position within some order (whether it be a spatial or some other kind of ordering, hierarchical or not);
- iv. particular locale or environment that has a character of its own; and
- v. abode or that within which something exists or within which it dwells.

According to Sheppard (2002), space can be described as a location which has no social connections for a human being. Consequently, it is an open space, with mark off and defended against intruders. Researches like giving that kind of space a meaning. It is more or less abstract. Broadly speaking, there are two distinctive views of space in geography: first, as a fundamental attribute of reality, the mathematically describable context for natural phenomena; second, as a count noun standing for human conceptual constructs borne of individual experience and societal factors such as power relations. Within the first view, there are distinctive conceptual frames: that of an absolute, Newtonian space as “container,” normally associated with Euclidean

geometry, and that of relative space within which distance may be geometric or derived from other relations. The term “place” is often used to refer particularly to the human experience of space.

Knox & Marston (2007), described three ways of measuring space in terms of absolute, relative and cognitive terms. Absolute space is a mathematical space described through points, lines, areas, planes and configurations whose relationships can be fixed precisely through mathematical reasoning which are described in kilometers or miles. There is also another mathematical space referred to as the topological space and defined as the connections or connectivity between points in space. The relative measurements of space can take the form of socio-economic or experiential or cultural space. The socio-economic space consists of sites, situations, routes, regions, and patterns while the experiential or cultural space consists of a space where groups live and interact. The cognitive space is defined and measured in terms of values, feelings, beliefs and perceptions. Therefore it is described in terms of behavioral space, like landmarks, paths and environments.

2.2.2 The Concept of Place

The most fundamental of spatial concepts for geographers is place, and like many spatial terms, its definition is problematic. The terms location, position, and place are often used interchangeably, along with site and locale. They are near-synonyms, as each commonly appears in definitions of others. Each can be viewed as one kind of answer to the question, “where?”. Geography seeks to explain the why of where, which requires first establishing location, as much as it is practicable, by means of spatial descriptions. Geospatial data describe at the minimum the location of some phenomenon and its class or category. As noted earlier, whereas all entities

with spatial extent also have temporal extent, many geospatial data sets are either encompassed within a single temporal frame or divided into time-indexed snapshots.

Place as location or a site in space where an activity (Insurgency) or object is located and which relates to other sites or locations, because of interaction and movement between them. A city or other settlement is thought of in this way. Somewhere in between, is the view of place as locale or setting where everyday-life activities take place. Here, the location is no mere address, but the where of social life and environmental transformation. Examples would be such settings from everyday life as workplaces, homes, shopping malls, churches, etc. The third is the sense of place or identification with place as a unique community, landscape, and moral order. In this construction, every place is particular, and thus, singular (Agnew, 2004).

Italian geographer Farinelli (2003), argued that two meanings of place can be clearly distinguished among the ancient Greeks:

“Place ... is a part of the terrestrial surface that is not equivalent to any other, that cannot be exchanged with any other without everything changing. Instead with space (place as location) each part can be substituted for another without anything being altered, precisely how when two things that have the same weight are moved from one side of a scale to another without compromising the balance” (Farinelli, 2003:76).

The terms location and place in geography are used to identify a point or an area on the earth's surface or elsewhere. This can be linked to areas where insurgency activities are located. Location generally implies a higher degree of certainty than place, the latter often indicating an

entity with an ambiguous boundary, relying more on human or social attributes of place identity and sense of place than on geometry.

According to Mackey (2015), place is space (or site) animated through operations and actions and made personal. Place is geographically located, that which is inhabited briefly or over a longer period, constructed through a range of operations, actions and behaviors, through these, a psychological relationship is developed with place. The latter may not necessarily be a positive relationship, although place is frequently associated with 'attachment. That is to say that place is seen as when there is an interaction within the features in the space. For example, there has been an increased consideration of virtual place, as that connected through global communities of interest, quasi-inhabited places through avatar manipulation or a range of GPS-located games and activities.

2.2.2.1 Types of place

Yuen (2005), categorized place into three viz:

- i. Relative location: A relative location is described as a displacement from another site. An example is "3 miles northwest of Seattle" or 300kms southeast of Lagos.
- i. Locality: A locality, settlement, or populated place is likely to have a well-defined name but a boundary which is not well defined and varies by context. Lagos for instance, has a legal boundary, but this is unlikely to completely match with general usage. An area within a town, such as Ikeja in Lagos, also almost always has some ambiguity as to its extent.
- ii. Absolute location: An absolute location is designated using a specific pairing of latitude and longitude in a Cartesian coordinate grid. A good example is a spherical coordinate

system or an ellipsoid-based system such as the World Geodetic System or similar methods. Again, the position of Sambisa Forest can be expressed approximately in WGS84 coordinate system as the location 11°15'00''N (latitude), 13°25'00''E (longitude).

Strictly speaking, absolute location has little real meaning, since any location must be expressed relative to something else. For example, longitude is the number of degrees east or west of the Prime Meridian, a line arbitrarily chosen to pass through Greenwich. Similarly, latitude is the number of degrees north or south of the Equator. Thus, latitude and longitude are expressed relative to these lines. In other words, a position expressed in latitude and longitude is actually a relative location.

Massey (2005), described a place as globally connected and diverse, as well as comprising of a range of people and their stories or narratives collecting in one place at one time and then potentially moving on. Thus, a place includes mobility, based on their philosophical thinking about nomadism and migration (Cresswell, 2006). Ingold (2000) emphasized the role of dwelling in the conceptualization of place and at the same time recognized mobility when he related nature and culture to where people live. The importance of place in everyday life has been demonstrated by many researchers and Livingstone (2011), provided a good review on this.

The neo-Marxist perspective on space and place is best presented in the writings of Lefebvre (1991). Lefebvre focused on the social production of the spaces within which social life takes place (Lefebvre, 2009). Under capitalism, “abstract space” (the space produced by economic transactions and state policies) has “colonized” everyday life by means of both spatial practices (commoditization and bureaucratization) and representations of space (discourses of

planning and surveillance). Lefebvre (1991), looked for a movement against this colonization of concrete space (or place) to reclaim the spaces of everyday life. This could be accomplished by insurgency “counter-discourses” based on spaces of representation that build on memories and residues of an older “authentic” existence and new practices in concrete space.

Another perspective of space and place, drawing most obviously from the pioneering writing of Yuen (1974), was provided by Sack (1997), when he wrote that the geographical experiences of “place, space, home, and world which people use in their lives to integrate forces, perspectives, and selves.” From this point of view, place implies space, and each home is a place in space. Space is a property of the natural world that can be experienced. From the perspective of experience, place differs from space in terms of familiarity and time.

“A place requires human agency, it is something that may take time to know. As we move round the space, we pass from one place to another. But if we move quickly the places becomes blurred because we lose track of their qualities, and they may coalesce into the sense that we are moving through space” (Sack, 1997:69).

In this frame, places are woven together through space by movement and the network ties that produce places as changing constellations of human commitments, capacities, and strategies. Places are invariably parts of spaces and spaces provide the resources and the frame of reference in which places are made. However, how individual persons are free to make and miss opportunities in place making is far from clear.

2.2.3 The Concept of Insurgency

Insurgency is a protracted political military struggle directed toward subverting or displacing the legitimacy of a constituted government or occupying power and completely or partially controlling the resources of a territory through the use of irregular military forces (Madunagu, 2001). The insurgents have interest in gaining control of the population and resources of the territory of interest. The U.S Counter-Insurgency Initiative (2009), described insurgency as “the organized use of subversion and violence to seize, nullify, or confront political control of a region”. Insurgents seek to subvert or displace a government entirely or partially and aim to be in command of the resources and the people of a given territory.

Insurgent group's fights government forces to achieve their political aim, so as to exercise a viable system of power over the populace, making it impossible for the legitimate government to administer its territory and people. Their activities therefore, are designed to weaken government control and legitimacy. Insurgency therefore is seen as a strategy adopted by groups used to attain their political objectives through conventional means. It is often characterized by battle space avoidance because they think they are weak against the conventional military force of the country. Thus, they focus on those areas where they can operate. These radical groups tend to postpone significant action, avoid defeat, sustain themselves, expand their support, and hope that, over time, the power balance will change in their favor. This behaviour and tactics is also sometimes categorized as asymmetric warfare.

Furthermore, insurgency involves “the unlawful use of threat, use of force, or violence by a person (at an instance of a group agenda) or organized group against people or governments, often for ideological or political reasons” (Awake, 2008). This definition of insurgency best suits the purpose of our discourse, to the extent that it is perpetrated by groups who believe in the use

of insurgency tactics as a means of advancing their cause. Insurgency can be discussed in terms of their form and life cycle.

2.2.3.1 Forms of insurgency

According to U.S Counter-Insurgency Initiative (2009), insurgency can be categorized into two groups, namely:

- i. National insurgency: it is a type of insurgency that occurs between a group and a national government which has at least some degree of authority and support. The distinctions between the group and the regime are based on economic class, ideology, identity (ethnicity, race, religion), or some other political factor. The government may have external supporters to fight along with the insurgents, but the conflict is clearly between the insurgents and an endogenous regime. The Boko Haram insurgency in Nigeria can be seen as a national insurgency because they are of the view that their own ideology must be imposed on that of the constituted authority of the country.
- ii. Liberation insurgency: this can be seen as those that are against a ruling group that is seen as outside occupiers (even though they might not actually be) by virtue of race, ethnicity, or culture. The goal of this form of insurgency is to “liberate” their nation from alien occupation. Examples include the insurgency in Rhodesia that fought against the white minority government in South Africa; the Palestinian insurgency against Israel, Vietnam after 1965 against America; the Afghan insurgency against the Soviet occupation; Chechnya against Russian; the current Taleban and Al- Qaeda insurgency in Afghanistan; and in Iraq.

2.2.3.2 Life cycle of insurgency

Each form of insurgency has different life cycle putting in mind that insurgency has stages. Not every insurgency passes through each stage or all of the stages. Some skip stages; others revisit earlier stages, while some die out before reaching the later stages. The stages of insurgency are given by Kautt (1999), as follows:

- i. Pre-insurgency stage: The pre-insurgency stage is seen as the first stage of insurgency. This stage is difficult to detect, because most operations are underground and the insurgents are yet to make their activities felt through the use of violence. At this stage, the insurgents begin to organize, and its leadership trying to establish a grievance and with group identity. Also they begin to recruit and train members, stockpiling of arms and supplies.
- ii. Incipient insurgency stage: Incipient insurgency stage is seen as the most dangerous stage, because they begin to use violence. Often, these initial attacks provide analysts the first sign of the existence of the potential insurgency. Meanwhile, government frequently disregards this stage terming such actions as the work of bandits or criminals. It is at this stage that insurgents make their appearance felt through initial attacks, but they are usually still weak.
- iii. Open insurgency stage: is a situation where the attacks by the insurgents become more frequent. Politically, the group are overtly challenging the state authority and attempting to exert control over a territory. Militarily, they stage more frequent attacks, become more aggressive, violent, and sophisticated and involve larger numbers of fighters. As the insurgents become more active, external support for the belligerents probably becomes more apparent, where such exists.

- iv. Resolution stage: is a stage where either an insurgency victory has been made; or a government victory has been achieved. In which case a negotiated settlement is being sorted. Insurgencies progress steadily through these life cycle stages; but many grow in fits and starts, occasionally regressing to earlier stages; while, others remain caught up in one stage for decades.

Furthermore, the concept of insurgency cannot be complete without understanding the actors involved in the act who are the insurgents. Insurgents as pointed out by Johnston (2008) is a person or group of persons who rises in forcible opposition to lawful authority, especially a person who engages in armed resistance to a government or to the execution of its laws. It can also be seen as when a member or section of a political party that revolts against the methods or policies of the party.

2.2.4 The Relevance of Space and Place in the Study of Insurgency

Space and place are vital components of insurgency studies, not only in planning and training, but also in the execution of insurgency activities. Space is the boundless three dimensional extend in which objects and event have relative position and direction. Physical space is often conceived in three linear dimensions. Space and place are considered to be of fundamental importance to the understanding of the physical universe since insurgency occurs within the physical environment of the space (Bruzewicz, 2003). Space is more than the collection of spatial relations between objects in the world, but also it is that in which results occur.

Flint (2005), pointed out that places or environments where most insurgency and control occur such as profiling of insurgents as well as victims, both occur within the sphere of space. Thus, early criminologists focused on these issues as far back as in the 1970s, building on the

Chicago School of thought about the location of insurgency. Securities agencies now make routine use of insurgency mapping to allow them observe spatial patterns. In other word how places can be altered such that it will reduce the rate of insurgency. The process can involve a number of factors that ranges from definitions of what makes a particular location insurgency prone or safe to the arrangement and purpose of buildings to local beliefs or memories about a place. It can also involve a number of agents, such as planners, developers and politicians, who have the power to change spaces, to ordinary people who have the everyday task of negotiating existing spaces.

Wright, *et al.*, (2003), argued that both space and place allows a greater understanding of not only the locations of insurgency activities, but also the spatial processes, social network connections, social systemic operations, as well as changes in space and time. Social, political, and other systems, as well as their agents, operate in specific places and spaces where the influences of these places and spaces on insurgency become clearer.

Space and place has therefore contributed to the study of insurgency through knowledge derived from geography with regard to issues of territories and borders and perhaps broadly geopolitics. Insurgency is highly political and it is inherently spatial. It has to happen in a place under some conditions. Therefore, to understand insurgency, one has to have a good understanding of the contexts regarding politics and culture within space (Flint, 2003). Experts in the spatial organization of space and place have relevance in the study of insurgency through the use of how phenomena are organized within the space. Space in this context deals with spatial relations and the consequences of how places, people, and network work together in trying to understand and rethink relationships and networks (Ettlinger & Bosco, 2004); attacks on critical infrastructure (Goodchild, 2003); emergency response networks (Bruzewicz, 2003); or in disaster

hazard mitigation (Galloway, 2003; Wright, *et al.*, 2003; Mustafa 2005). These geographers have uniquely contributed to the study of insurgency by providing an explanation of the complicated notion of space. It is in the understanding of this complexity of space that geography stands to add value to the study of insurgency.

Insurgency has hitherto been understood to be spectacular violence, targeting an audience and directed toward place destruction and place alienation. Place, if understood to be where human emotions, experiences, and life, worlds intersect within specific locations, becomes inseparable. Insurgency is, consequently a type of spectacular violence (made more potent by the almost globalized reach of the modern media) that destroys either places of everyday existence, such as religion centers, markets, recreational centers, and transportation networks, or monumental places holding historical, cultural, or political significance for the targeted audience (Kwan, 2003; Murray & Grubestic 2007).

The relevance of space and place in the study of insurgency can further be seen through geographical scale. According to Wilbanks (2003), geographical scale becomes the local, state, regional, national and global levels that are all levels within which geographers conduct research. An inquiry of the effects of local settings of a place and relating that within a global scale, for instance, an example of a research focus for geographers, because the issues of insurgency occur at all levels of geographic scale, thus bringing scale to the forefront of scholarly conversations about insurgency. Geographers are better positioned to add to the growing body of knowledge about insurgency through a discussion of scale.

2.3 Theoretical Framework

Various theories have been formulated in explaining insurgency activities. These theories are not all-inclusive; they explain activities from a particular point of view. Robert, (1981) had this to say “Theory is always for someone and for some purpose.” (as cited in Devetak, 2005) Therefore, there is no single theory that can wholly explain insurgency activities. Some theories highlighted are provided below.

The weak/failed state theory argues that a weak or failed state provides an arena for insurgency to thrive and grow. Weak or failed states are those states which lack full control over their territory. The Nigerian state has vigorously contested the notion that it is a failed state, but indicators have shown, it is close to a failed state. Economic sabotage of the Nigerian state through oil bunkering, destruction of oil pipelines, the existence of ethnic militias, the lack of legitimacy from the Nigerian people are indicators that the Nigerian state, though not a failed state, but can be characterized as a weak state. Alozieuwa (2012), further argued that this theory offers some explanation, but fails to show why people join insurgent’s groups.

The theocratic state theory argument is solely related to the insurgency in Nigeria for example the Boko Haram insurgency. Its central focus is that Boko Haram seeks the establishment of an Islamic state. The theocratic state theory of insurgency is not only shared by Boko Haram, but by other Salafi-Jihadist groups around the world, like *al Qaeda*, *al Shabab*, and recently *ISIS*. The rejection of the offer from the then Nigerian president (President Goodluck Jonathan) for dialogue by Boko Haram on the grounds that he is a *kafir* and he should convert to Islam before any dialogue points to the theocratic theory of Boko Haram. Alozieuwa (2012), reported that the theory is useful to some extent, but failed to offer explanations on why other Salafi groups that have been in existence prior to Boko Haram have not threaded the same path.

The criticisms of Boko Haram from these Salafi groups have been the loudest within the Islamic community and the fact that majority of Nigerian Muslims condemn Boko Haram and its activities.

Some have also used political, sociological and psychological variables to explain insurgency activities. The key point is that an insurgency is not a mono-contributory phenomenon; rather, it is multi-contributory in nature. In the case of Nigeria, the Boko Haram insurgency was theoretically presented by Onuoha (2010), based on three contending schools of thought viz:

- i. The religious school;
 - ii. The political school; and
 - iii. The terrorist schools
- i. The religious school: The religious school of thought argued that Boko Haram insurgency is planned to impose the religion of Islam on Nigerian especially in the nineteen northern states. Johnson (2011), and Adetoro (2010), had argued that Boko Haram members are Islamic fundamentalists who have the intention to powerfully impose the religion of Islam on all Nigerians. This is even more self-evident and logical considering the official name of the sect *Jama'atu Ahlis Sunna Lidda'awati Wal Jihad* which simply means "People Committed to the Propagation of the Prophet's Teachings and Jihad". This motive even dated back to the era of Jihad of Usman Dan Fodio. Indeed, Adetoro (1982) had alluded to the fact that islamization of Nigeria had been the motive behind the Jihad of Usman Dan Fodio in 1804. He further reported that it was only the Ibadan warriors (south western Nigeria warriors) that stopped the rampaging Fodio Jihad conquest under the Jalumi war in 1878 around Ikirun-a south western Nigeria town.

In support of this claim, Suleiman (2011) reported that their objectives were to abolish democracy and institute sharia law throughout Nigeria. Accordingly, one of the groups' spokesmen Alzawahiri stated that the group was contented with preaching islamization of Nigeria until 2009 when it took arms against the state because some unnamed Muslim clerics and ward heads in the North were conniving with the government to attack them following the Maiduguri crisis in July, 2009. For this reason, the spokesman submitted that:

“we would continue to fight until Islam is well established and the Muslims regain their freedom all over Nigeria. We would never be ready to compromise and we don't need amnesty. The only solution to what is happening is for the government to repent, jettison democracy, drop the constitution and adopt the laws in the Holy Qur'an (Suleiman, 2011:50).

Ngex (2013) maintains that Boko Haram as a religious group believes that Nigeria is ruled by non-believers and it is therefore incumbent on the sect to establish full Islamization of the country including the implementation of criminal Sharia courts across the country.

- ii. The political school: The political school argued that Boko Haram insurgency is a political strategy planned to achieve northern governance in the politics of Nigeria including the unseating of President Goodluck Jonathan (Sani, 2011). According to Johnson (2011), many northern Nigerians viewed the presidency of Goodluck Jonathan, a Christian, as illegitimate having ignored the ruling party's (Peoples Democratic Party – PDP) informal power rotation plan that power should have remained a northern Muslim

till 2015. This was even attested to by the former National Security Adviser to President Jonathan who said that the root cause of Boko Haram was the rocking of the zoning arrangement by the PDP itself. According to the National Security Adviser, Rtd. General Andrew Owoye Azazi, and the policies of the country's ruling party created a climate for what is happening and manifesting in the country today. Consequently, the National Security Adviser was sacked as a result of pressures from the top echelon of PDP members from Northern Nigeria and replaced by a Northerner named Sambo Dasuki.

Others who subscribe to the political school similarly argued that the sect members were political thugs who were used and dumped by past political leaders without being properly taken care of after election. And that this resulted in their taking up of arms against the state as a means of expressing their grievance (Usigbe, 2012).

- iii. The terrorist school: The third school of thought sees the Boko Haram sect as a terrorist group largely made of religious and political schools with an additional element of economic deprivation. According to (USAID, 2012) poverty is responsible for the insurgence of Boko Haram. Other scholars like Mudasiru (2011), believed that poverty is obviously one of the most important factors of terrorism when he wrote:

“When you have millions of young boys, as is the case in northern Nigeria, for example, that are part of a largely unregulated educational system where all they learn is Arabic language, Qur’an recitation from Islamic scholars, whose credentials and loyalties may be dubious, it can make those boys more susceptible to violent interpretations of the Qur’an that Boko Hara endorses... without financial or families support, these boys in the al-majiri system

might find even the small amount of financial support or camaraderie that Boko Haram offers to be enticing” (Mudasiru, 2011:73).

2.4 Literature Review

The rise in insurgency activities across the globe cannot be solely explained by conflicts in the Middle East and South-Asia alone, but by the surge in insurgency attacks, such as attacks by al Shabab in Kenya, Somalia and the Boko Haram bombings in Nigeria. These and many other attacks highlight a growing trend of insurgency activities in Africa (Wali, 2014). The likelihood of an African variant of insurgency cannot be ruled out due to a number of factors that provided the necessary ingredients for breeding insurgency. The lack of economic prosperity, deprivation, political repression, loss of cultural identity and dysfunctional states that characterize many African states gave a gloomy picture and became a unifying factor towards direct violence (Mair, 2003).

The complex nature of insurgency in space has led to the development of various investigative methods in order to apprehend the assailants. Criminologists, forensic scientists, psychologists, anthropologists, and geographers continue to develop new techniques and refine existing methods in the pursuit of the understanding and capturing of insurgency. In this review, the global perspective is first considered before focusing on the Nigeria case, and lastly the origin of Boko haram insurgency.

2.4.1 Global Studies on Insurgency

Insurgency has attracted considerable global attention as a result of the havoc caused. Consequently, there exists a large volume of literature on insurgency around the globe (Asal, *et al.*, 2008; Looney, 2003; Stern, 2000; Schaffer, 2008; Grare, 2007; Suleiman, 2011; Usigbe 2012; Johnson 2011 among others).

Many researchers have established causal relationships between historical, cultural and socio-political characteristics of larger society with the occurrence of insurgency. At the international level, explanations were been offered to link ‘States’ with the occurrence of international insurgency (Albini, 2001). One common thing to insurgency is that there is some type of conflict at the base of every insurgency movement. Some researchers have confined themselves to explaining what generates this situation; while others explained how such situation have turned into acts of insurgency. Hence, there is a strong need for further research on insurgency studies so as to synthesize the scattered facts, in a way that it could offer explanations on its causation, dynamics, escalation and deescalation (Tukur, 2004). Insurgency, though is the peak of a conflict process, it should be noted that not all conflicts develop into insurgency usually requires some other conditions.

Black (2004), viewed insurgency as the unilateral self-help by organized civilians who covertly inflict mass violence on other civilians. Unilateral self-help, means the one-sided handling of grievance with aggression. Insurgency is seen as a means of social control resulting in deviant behavior. In other words, insurgency is an instance of social control of justice. On the other hand, Rosenfeld (2004) in his criticism of Black’s work observed the neglect of greed and institutional environment. He opined that Black’s view emphasized structures, while ignoring free thoughts, feelings, goals, purposes, psychology and ideology. Black’s explanation of

insurgency is limited not only in conception, but also by the motivation of insurgents. According, to Brynjar and Katja (2000),

“insurgency occurs in rich as well as poor countries; in the modern industrialized world and in less developed areas; during a process of transition and development, prior to or after such a process; in former colonial states and in independent ones; and, in established democracies as well in less democratic regimes. As a matter of fact, many rival explanations have been advanced but none has managed to command widespread respect” (Brynjar and Katja, 2000:113)

Insurgency is highly violent, well-organized and involves covert operations. It is quasi-warfare that targets civilians and military forces and obeys no rules. It is different from crime because it is moralistic in character with regards to social control. Insurgency is an act always perpetrated against superior forces, usually caused by chronic grievance, and it is an offense of the collective. If this argument subsists, insurgency as a crime and a form of social control is difficult to deter with punishment like other forms of crime and social control. Thus, insurgency is not merely a form of crime or social control that is amenable to criminal justice. Meanwhile, existing explanations suggests that insurgency may be effectively controlled in a kind of policy of “tit for tat” with equal violence against civilians associated with the terrorists (Schmid, 1992; Looney 2003).

Different scholars have attributed the causes of insurgency to social inequality, unsolved ethnic demand, frustration, and religion (Engene, 1998; Smelser & Mitchell, 2002; Krueger & Maleckova, 2003; Stern, 2003; Ruvalcaba, 2004; Crenshaw, 2009; Brock, 2011; Olubode, 2011;

Campbell, 2013). For example, Holmes, *et al.*, (2005), observed that insurgency seems to be high in areas of low and negative growths, where the presence of the central authority is perceived as weak. However, the causes, character and controls of insurgency remain highly subjective, sensational, and emotional, surrounded by polemics, double standards, and hypocrisy. Therefore, government who are the chief security officers, leaders, and policymakers perceive the motives of insurgent's organizations are paramount to their understanding and response to the act of insurgency Kegley (2003).

2.4.2 Studies on Insurgency in Nigeria

Several studies have presented the activities of insurgency in Nigeria on the basis of origin, structure, organization, humanitarian impacts, and distribution. These include that of the Oduduwa People Congress (OPC) in the South west (The Weekly Trust Magazine February, 2002; Faseun, 2005), Niger Delta Militant in the South south, Movement for the Emancipation of the Niger Delta (MEND), as well as Niger Delta Vigilante force (NDVF) (Ikpeze, 2000); Maitasine group in the North (Falola, 1998; Haruna, 2002); and Boko Haram insurgency (Akinfala, *et al.*, 2014; Chukuma & Philip, (2014). The Bandura's observation learning theory and Maslow's theory of hierarchy of needs were used to explain insurgency occurrence and proliferation in northern Nigeria (Akinfala, *et al.*, 2014). Indeed, low level of human mind and need can make man a potential tool for insurgency activity.

Shettima (2012), had earlier warned that the Almajiri system of education (Qur'anic education combined with alms begging by boys of ages 7 to 15 in northern Nigeria under half baked Mallams) could become a potential threat to Nigeria's national security, if it not harmonized with the Universal Basic Education (UBE) program of the country. Child that grows under the concept of Almajiri is likely to become unstable because such children are usually

exposed to different forms of pressure, problems, hunger and odd jobs beyond their age (Olagundu, 2012). The low standard of the Almajiri system of education and the needs of these students makes them vulnerable and easily recruitable by the perpetrators of insurgent attacks. The Almajiri are so numerous to the extent that as many as 4,000 of such students could be in the command of one Muslim cleric (Bwala, 2011; Mohammed, 2012). Thus, it is easier to recruit from this group and be used for insurgency activities like suicide bombing.

Other studies have identified the high rate of unemployment, poverty, weak Government as the major causes of insurgency in the North-east (Abimbola & Adesote, 2012) and that this has significantly affected the socio-economic situation in the North-eastern Nigeria (Ovaga, 2013). For instance, commercial banks have been forced to review their operational hours from 9.00am-12.00 noon as against the normal operational period of 8.00am to 4.00pm in 2012 to 2014. This scenario has further strained the existing socio economic imbalance of the region.

The level of school attendance by boys and girls, rural and urban school were evaluated in areas prone to Boko Haram attacks by (Patrick & Felix, 2013). The humanitarian consequences of insurgency in Nigeria include human casualties/and fatalities, population displacement and refugee debacle, human rights abuses, livelihood crisis, as well as public insecurity (Chukuma & Philip, 2014). Insurgency constitutes veritable threat to national security in Nigeria, hence the need for further studies of this nature.

2.4.3 Studies of Insurgency Using GIS

Geographic Information Systems (GIS) refers to geographic information systems in the plural, yet it is often used as an acronym for a single system. These system is a special case of information systems in general and in which information is derived from the interpretation of data “which are symbolic representations of features (Clarke 1986; Maguire et al., 1991;

Heywood, et al., 1998) The designation GIS is also “frequently applied to geographically oriented computer technology, integrated systems used in substantive applications and, more recently, a new discipline”.

For the purpose of this research, Geographical Information System will be considered as *“a computer system capable of assembling, storing, manipulating, and displaying geographically referenced information, data identified according to their locations”*. It is normally used to explain, analyze systems that handle geographically related data.

As much as eighty percent of information used during insurgency is spatial in nature, such as an address of information or a map reference of a location in space, the use of GIS to manage complex spatial information on the environment, infrastructure and operational matters is becoming prevalent. In recent years, it has played significant roles in studying bushfires, counter insurgency, animal disease outbreaks, floods, accessibility, environmental management, severe storms and earthquakes.

Approaching a socio-political problem, such as insurgency, through a geographic approach may lead to a greater understanding of not only the locations of insurgency activities, but also the spatial processes, social network connections, social systemic operations, and changes in space and time can be better understood. Since social, political, and other systems, and their agents operate in specific geographical location, their studies can be undertaken with the socio-spatial or geopolitical realms. Influences of place and location on activities become quite clear in these types of research. For instance, traditional statistical analysis attempts to identify cause-effect relationships, but assumes that hold true across space and time. Considerations of location and temporal contexts allow these relationships to vary. A variable may have a strong effect on another variable in one area of the world, but non-existent

elsewhere. Geo-statistical tools have been developed to identify this context-dependent spatial variation in cause-effect relationships (Andrew & Flint, 2010).

Geographical perspectives on insurgency do not attempt to rival or substitute other explanations; they are simply means by which phenomena can be explained. It is therefore crucial that geographic perspectives be considered in insurgency studies (Caplan, 2006). The locations of insurgency activities and the groups they identify with have specific narratives behind their motivations which are related to cultures, ethnicities, and the historical situations of the insurgents and their constituencies. Their choices and strategies may be based on spatial considerations and attacks usually result in locations. Even the impacts of insurgency attacks may be highly dependent on the geographic context in which these occur. Understanding these geographical aspects has the potential of providing advance knowledge of potential or future operations, supportive populations, the strengths and or weaknesses in the insurgent's system.

In addition, GIS technologies have become increasingly integrated with a number of allied hardware and software technologies such as remote sensing, the Global Positioning Systems (GPS) and hand held computers. These intelligent mapping systems have become flexible and widespread in use. However, many aspects of insurgency studies in Nigeria are yet to derive full benefits from these technologies. It requires a significant investment in money, capacity building and cooperation from government and private institutions. GIS as an interactive atlas on a computer, with all the possibilities that it entails can communicate with other programs such as web-browsers; spreadsheet database systems, etc., thus, making it a powerful tool in studies with geographic dimensions just like the one at hand.

GIS approach in the study of insurgency includes the monitoring of insurgency action on the transportation system (Guseppa, et al., 2012); efficient response time of security operatives to

places of attacks by identifying shortest route (Adeniran, *et al.*, 2013); mapping of insurgency clusters for identification of hotspots (Loughlin, *et al.*, 2012); mapping of the spatio-temporal pattern of incidence (Richard, *et al.*, 2011); and planning of emergency evacuation before, during and after insurgency attacks (Yuenting, 2008), *Medina et al.*, (2011) also on their part employed the use of GIS approach to advance the understanding of spatial, social, political, and cultural triggers that influence insurgency incidents to examine spatial, temporal, and spatiotemporal patterns of insurgency attacks.

2.5 Conclusion

The review of relevant research on space, place, insurgency, insurgency mapping and analysis using GIS was undertaken. In particular, the relevance of space and place in insurgency studies, theories explaining the causes of insurgency as well as the effects of insurgency activities have been examined. It is against this background that the researcher identified the following gaps in the studies examined:

- i. need to understand the nature, and causes of insurgency in the north-eastern Nigeria
- ii. need to recognize the effects of insurgency activities in the north-eastern Nigeria
- iii. data on insurgency activities in Nigeria are scattered;
- iv. need for the creation of a database (central Information) on insurgency;
- v. most studies in Nigeria lack the application of GIS technology;
- vi. most studies focused on historical aspect of insurgency rather than on the spread and clusters of the activities;
- vii. most of the studies failed to indicate which of the areas in the north-eastern Nigeria has the highest vulnerability of insurgency activities, rather general conclusions are made on the study area.

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction

This chapter discussed the methods used in carrying out the study in order to achieve the stated objectives of the study. The types and sources of data, sample and sampling techniques and methods of data analysis employed in the study are contained in this chapter.

3.2 Types and Sources of Data Used

The types and sources of data that were used in the study are presented in Table 3.1:

Table 3.1: Types and Sources of Data Used

Objectives	Nature of Data	Types of Data	Sources of Data
1.	i. Primary data ii. Secondary data	i. Activities of the insurgency	i. Questionnaire administration to IDPs ii. Security agencies record, media and media records, published and unpublished records.
2.	i. Primary data	i. Factors that encourage insurgencies	i. Questionnaire administration at IDPs camps, interview with the security agencies, and those in IDPs camps
3.	i. Primary data	i. Effects of insurgency activities in the study area	i. Questionnaire administration, interview with relevant security agencies, people in IDPs camps.
4.	i. Secondary data	i. Yearly insurgency data	i. Armed Conflict Location and Event Data (ACLED). ii. Security agencies record, non-governmental organization record, media records, among others.
5.	i. Secondary data	i. Number of incidence per LGA. ii. insurgency data per states on yearly basis	i. Security agencies, Counter Insurgency Unit, media and newspaper records. ii. Armed Conflict Location and Event Data (ACLED)

Source: Researcher's Computation, 2018

3.3 Instrument of Data Collection

A structured questionnaire was utilized for the study. This became necessary in order to understand both the nature of insurgencies, factors generating the insurgency activities, and effects of insurgency in the study area. The questionnaire was divided into two sections. The first section deals with the personal data of the respondent while the second section deals with the questions relating to the subject matter. Prominence among the questions is the nature of the insurgency activities, factors that generate insurgency in study area and the effects of insurgency. See Appendix I for the questionnaire.

3.4 Armed Conflict Location and Event Dataset (ACLED)

Armed Conflict Location and Event Dataset (ACLED) is one of the most widespread geospatial conflict datasets available in the world. It draws from an extensive range of media sources, legal documents, prior data sets supported by country specific studies with through coverage of all African countries from 1997 to Date. ACLED captured events on the cusp of conflicts, and insurgency making it more inclusive than civil war datasets and thus an excellent place to begin analyzing insurgency activities. All data collected provides information on event characteristics, including locations, dates, attack types, and responsible groups (Forest, 2012). This was used to analyze the spatial pattern and temporal trend of insurgency activities to show its increase or decrease over time within the period considered for the study. This was also utilized in analyzing the hot spot and cluster location of insurgency activities.

3.5 Variables and attribute of interest

The ACLED provides detailed information of each event captured in the database. This information includes States, LGAs, Date, Month, year, event types, target types, and outcome information. Location information is also captured, and the latitude and longitude of the event is

included at the LGAs level where possible. Event type, location, and incident date are the most critical attributes in this study. Insurgency events in the study area are aggregated on a yearly basis since that is the focus of the study.

3.6 Data limitation

The ACLED is widely used in studies of insurgency (forest, 2012). This data however has some weaknesses which should be acknowledged. The database relies on open source reporting, including news sources, books, and legal articles. These reports at times may be erroneous, as information provided via these medium may lack details or be twisted by individuals without appropriate training or background knowledge.

The location information captured in the ACLED is also limited. There are several levels of geo-coding specificity included in the database, from the country level down to the specific latitude and longitude of an event. A majority of the insurgency events in the study area included in the ACLED are geo-coded to the Local level. This level of accuracy restricts analysis to those boundaries, or a coarser aggregation scheme, which is why the Local polygons are used as the method of aggregation in this study.

This level of spatial accuracy does impact the results. Incident data at a better spatial resolution (i.e. the city, town, or incident location) would provide more impactful analysis. Even with these biases and weaknesses, the ACLED remains one of the largest and widely used open source databases available in the study of insurgency. No other unclassified dataset was identified that included Nigeria insurgency events.

3.7 Data Acquisition

Data selected for inclusion in this study was extracted from the ACLED based on the event code criteria. To obtain this, the entire ACLED was downloaded in MS Excel format from (<http://www.acleddata.com>). The June 2018 version was used, which includes all ACLED incidents from 1970 to 2017. Data were also acquired from the process of questionnaire administration in the IDPs which includes the nature of insurgency activities, factors encouraging and effects of insurgency activities in the study area. Others include the effectiveness of the available measures put in place by the government and ways of combating insurgency activities.

3.8 Methodological framework

A high-level methodological framework followed in the study is showed in figure 3.1. The methodology involves a series of steps for data acquisition, preparation, and processing. The flowchart also outlines the executed process. These approaches include aggregating summaries of insurgency data by LGAs and states, and calculating rates of change by state.

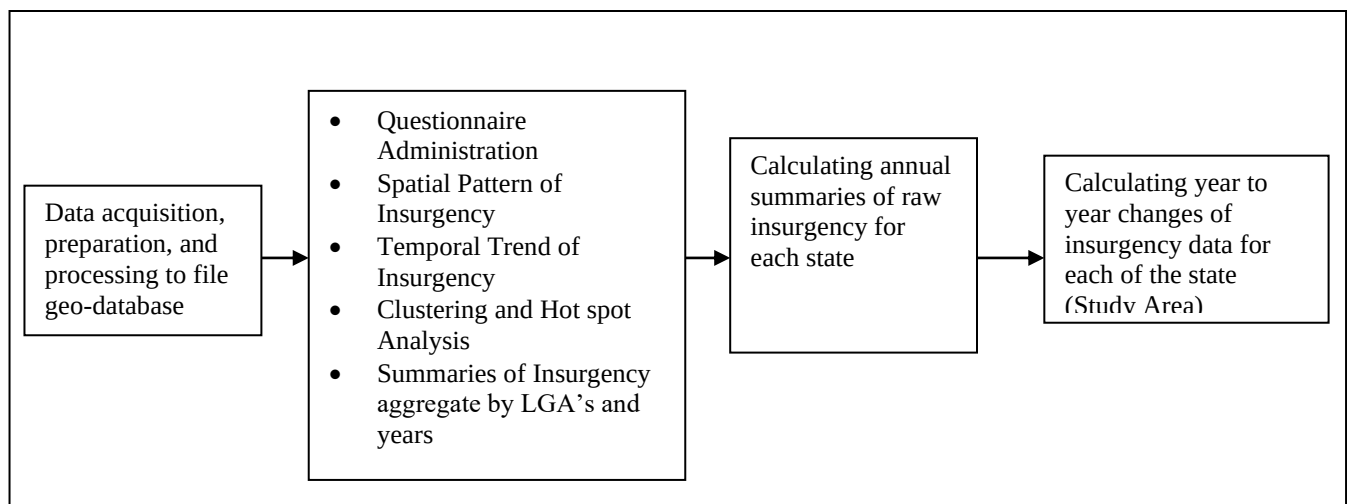


Figure 3.1: High Level Methodological Framework

Source: Modified from Robert. J. Franssem Jr

3.9 Sampling Frame and Technique

The sampling frame is the population in IDPs Camps in the selected states. Purposive sampling was used in the selection of IDPs Camps. This method was employed due to the fact that not all the IDPs Camps in the study area is meant to accommodate insurgency victims.

The sample size for questionnaire administration was determined based on the number of population in the IDPs. The number of IDPs Camps enumerated was 17 Camps with a total population of 922,174 in the three states that make up the study area (Table 3.2). The level of significance set for the research was at 0.05. A total number of six hundred and thirty- three (633) copies of a structured questionnaire were administered in the seventeen (17) IDPs Camps in the study area. However, only five hundred and seventy (570) copies were returned adequately completed. This is about 91% of the total respondents. The researcher adopted Naing, et al., (2006) sample size formula in the selection of the sample size, which is shown as follows.

$$\text{Sample size} = \frac{Z^2(1-p)}{d^2}$$

where:

Z = the expected confidence interval (95% adopted and 'Z' table value =1.96)

P= the expected response (50%)

d= the tolerable limits of error (taken to be 5% or 0.05)

Table 3.2: Table for determining sample size

S/no	States	Number of IDPs Camps	Number of IDPs Camps selected	Population of IDPs	Number of questionnaire administered	Number of questionnaire returned
1	Adamawa	4	2	96,205	160	146
2	Borno	19	10	750,546	301	272
3	Yobe	9	5	75,423	172	152
	Total	32	17	922,174	633	570

Source: Displacement Tracking Matrix XIX (2017)

3.10 Data Preparation

The data collected from ACLED for the study was Sorted in MS Excel to display only events from 2009-2017 with the “Attack Type” code as “Boko Haram Attack.” A manual review of the event description column was provided to summarize all events of the insurgency, and also ensures that events included were properly coded to avoid duplication. Events without the necessary details on location were eliminated because events with no associated location or with a level of geo-coding are inappropriate for this study. The incident data was then imported into ArcGIS using the Local Government Area (LGA) import feature.

After all the aforementioned processes, the data was incorporated into a GIS environment in other to show the clear picture of the steps involved in the research. This enables the researcher overlay the different layers of data shape files. In order to have a clear data for each layer of information in a GIS format, it has to be stored in the same geographical projected and co-ordinate system. Therefore, all data involved was stored in different shape files of same geographical coordinate system, so that it can further be accessed for easy analysis.

ArcCatalog was used to structure and prepare data for this study. Data was transformed to WGS 1984 UTM Zone 33N (SRID 32633) and imported into a single file geo-database. The data set for the area of interest was extracted which cover Adamawa, Borno and Yobe State in North-eastern Nigeria.

3.11 Aggregate Event Data

The insurgency data was aggregated into yearly: January-December for all the years considered from 2009-2017. This was done in order to conduct a basic spatial pattern and temporal trend analysis. Similar aggregation schemes have been used in analysis of insurgency and terrorism (O'Loughlin (2002); *Witmer et al.*, 2010).

3.12 Method of Data Analysis

The method of data and statistical analysis employed are those of SPSS, and GIS techniques using choropleth mapping, cluster and hot spot analysis. The objectives and the procedures are as detailed in subsections sections.

3.11.1 Nature of Insurgency Activities in the Study Area

The following descriptive and inferential statistical methods were employed to tackle the nature of insurgency activities.

3.11.1.1 Descriptive Statistics: mean, standard deviation, and simple percentage were used in summarizing the nature of insurgency in the study area and the three states selected for the study area.

3.11.1.2 Inferential Statistics: Likert scale and Analysis of variance (ANOVA) were used to rank the data of insurgency activities and ANOVA to determine the nature of insurgency activities in the study area.

3.11.2 Spatio-temporal and Trend Analysis of Insurgency Activities in the Study Area

The following methods were carried out to determine the spatio-temporal analysis of insurgency activities.

3.11.2.1 Spatio-temporal Pattern Analysis: the insurgency data collected were interpolated using universal Poisson distribution method in ArcGIS 10.3 to determine the spatial distribution of the insurgency activities. The Poisson distribution was selected because studies by (Wayne, 2000; Monestiez, et al., 2006; & Witmer et al., 2010) have proved the reliability of the technique.

3.11.2.2 Trend analysis: Linear regression analysis was adopted to examine the temporal trend of insurgency activities (See Ratcliffe and McCullagh, 1998; Ratcliffe, 2000; Lersch (2004)

3.11.3 Factors That Encourage Insurgency Activities in the Study Area

Descriptive and inferential statistics were employed for analyzing the factors responsible for insurgency activities.

3.11.3.1 Descriptive Statistics: Mean, standard deviation, and simple percentage were used to summarize the data on the factors that encourage insurgency activities in the study area and the three states selected for the study.

3.11.3.2 Inferential statistics: likert scale rating to derive the scores on each of the factors responsible for insurgency activities, ANOVA was used to examine the variation in the factors encouraging insurgency between the three states. Also, Pearson Moment Correlation was carried out between the factors to determine their relationships and the correlation matrix was presented and discussed.

3.11.4 Effects of Insurgency Activities in the Study Area

The following descriptive and inferential statistical methods were employed to understand the effects of insurgency activities.

3.11.4.1 Descriptive Statistics: mean, standard deviation, and simple percentage were used in summarizing the effects of insurgency in the study area and the three states selected for the study area.

3.11.4.2 Inferential Statistics: Likert scale and Analysis of variance (ANOVA) were used to rank the data of insurgency activities and ANOVA to test to determine the effects of insurgency activities in the study area.

3.11.5 Classify the Intensity of Insurgency Activities

The following procedures were carried out to classify the intensity of insurgency activities.

3.11.5.1 Cluster/outlier Analysis (Anselin Local Moran's I): Anselin Local Moran's I is another LISA statistic. Like Getis Ord G_i^* , the statistic was used to identify clusters of high or low insurgency activities in the study area and for each of the selected states. Local Moran's I also identify outliers (areas where high insurgency activities may be surrounded by low insurgency activities and vice versa). The analysis was used to show area of High-High (HH) cluster, Low-Low (LL) cluster, High-Low outlier, and Low-High outlier. The High-High cluster are areas with high value of insurgency values is surrounded by areas with high values. Low-Low cluster are areas with low insurgency values is surrounded by low insurgency values. High-Low outlier are areas of high insurgency values is surrounded by low insurgency values. And Low-High outlier are areas of low insurgency values is surrounded by high values (See Chainey & Uhlig, 2008). This statistic was adapted in the study to show if any cluster and outlier existed in the area:

The Global Moran's I equation is as...

$$I = \frac{N}{\sum_i \sum_j \omega_{ij}} \frac{\sum_i \sum_j \omega_{ij} (X_i - \bar{X})(X_j - \bar{X})}{\sum_i (X_i - \bar{X})^2}$$

Where:

N = is the number of spatial units indexed by i and j;

X = is the variable of interest,

$\bar{X}$ = is the mean of X; and

W_{ij} = is an element of a matrix of spatial weights.

The Global Moran's *I* test was carried out under different assumptions: under randomization, normality and Monte Carlo simulation (Brunsdon & Comber, 2015).

Anselin Local Moran's I was calculated in ArcGIS using the Cluster and Outlier Analysis tool, which is found in the spatial statistics toolbox. The tool calculates a Local Moran's Index, Z-score, P-value, and cluster or outlier type ID for each insurgency activities in the states to show the variation and later for the entire study area.

3.11.5.2 Hot Spot Analysis (Getis Ord Gi*): This is a Local Indicator of Spatial Autocorrelation (LISA) statistic (O'Loughlin 2002). LISA statistics was used to identify the location of insurgency activities of hotspots, and cold spots for each of the state and later for the entire study area (see, O'Loughlin 2002; Medina et. al., 2011). This method has been widely applied in the detection of local clusters, hotspot. This statistic examines each event or feature within the context of its neighbors (LGAs), and calculates z-scores and p-values for each area

examined in the study area. The measurement provides an indication of whether values are clustered around a single observation (O'Loughlin 2002).

Getis-Ord G_i^* was computed in ArcGIS using the Hot Spot Analysis tool. This tool outputs a Z score, p-value, and a confidence level for each insurgency feature.

$$G_i^*(d) = \frac{\sum_j w_{ij}(d)x_j - W_i^* \bar{x}^*}{s^* \{[(nS_{ii}^*) - W_i^{*2}]/(n-1)\}^{1/2}}, \quad \text{for all } j, x_j \neq 0$$

Where:

G_i = is the z-score

W_j = is the spatial weight between feature i and j

X_j = the attribute value for feature j

N = the total number of features

Source: Esri 2015, p.163

Using this equation, the analysis defines Local Government Areas (LGAs) as high value cluster, low value clusters, or insignificant (non) cluster with respect to a weighted area. Each area been analyzed is assigned a z score based on whether spatial clustering of either high or low values is more pronounced than random. Areas will a hot spot when it has a value and /or it is surrounded with other areas of high value regarding the variable of interest. Areas will be referred to cold spot when it has a low value and /or it is surrounded with other areas of low values regarding the variable of interest.

3.13 Conclusion

It is based on the steps and procedures adopted in this chapter that chapter four and five were developed in response to each of the objectives of the study. The next chapter examines the nature, factors and effects of insurgency in the study area (2009-2017) using the responds from the questionnaire administration.

CHAPTER FOUR

NATURE, FACTORS, AND EFFECTS OF INSURGENCY ACTIVITIES IN THE NORTH-EASTERN STATES OF NIGERIA

4.1 Introduction

This chapter examines the nature of insurgency activities, the factors encouraging it, and its effects on the Northeastern States of Nigeria. The nature of insurgency in the study area were presented using the one-way Analysis of Variance (ANOVA); this was then followed by the analysis of the three selected states (Adamawa, Borno, and Yobe State) to test the variation in insurgency activities among the three states. The Likert Scale rating method was employed to achieve this. In addition, the factors encouraging insurgency in the study area were analyzed using correlation analysis and correlation matrix to show the degree of variance among the states. And lastly, the effects of insurgency activities in the study area were also analyzed using ANOVA to reveal the variation from state to state employing the Likert Scale method and correlation analysis.

4.2 Nature of Insurgency Activities in the Study Area

The nature of insurgency activities in the study area is presented in Figure 4.1. Kidnapping is the most prevalent accounting for 25.93% of the total number of insurgency. This is followed by suicide bombing with 16.09%, attacks on security agencies (14.15%), citizens (13.28%), infrastructures (11.65%), while foreigners accounted for less than 10% of insurgency activities in the study area. In other words the insurgents are more interested in kidnapping and suicide bombing. This can be attributed to the fact that kidnapping normally results in the payment of ransom and that those kidnapped were used for suicide missions. An instance lending

credence to this assertion was the kidnapping of the former Local Council Chairman of Kukawa Local Government Area (LGA) named Alhaji Bukar Abacha on 12th March, 2012. A ransom was paid before his release after spending two weeks in the hands of insurgents. In the same vein, on 1st September, 2012, six policemen were kidnapped in Marte and later found dead (Interview with security operative, 2017). Similarly, attacks on security agencies, though daring appeared to guarantee access to military equipment, while at the same time it results to weakening the capacities of security agencies in performing their primary responsibility of securing life and properties. The attack on Giwa Barracks on 14th March, 2014 where detainees suspected to be Boko Haram were kept was yet another devastating occurrence. The detainees were released and lots of properties such as Armour tanks, Anti Tank trucks, Anti Personnel Carriers (APC), buildings and personnel cars were destroyed (Interview with security operatives, 2017). This incident left security agencies with no option than to re-strategies in order to combat the situation.

Earlier works (Abimbola, and Adesote 2012; Akinfala *et al.*, 2014; Sadiya *et al.*, 2016, among others) had similarly identified kidnapping and suicide bombing in the North-east as the prominent types of insurgency activities.

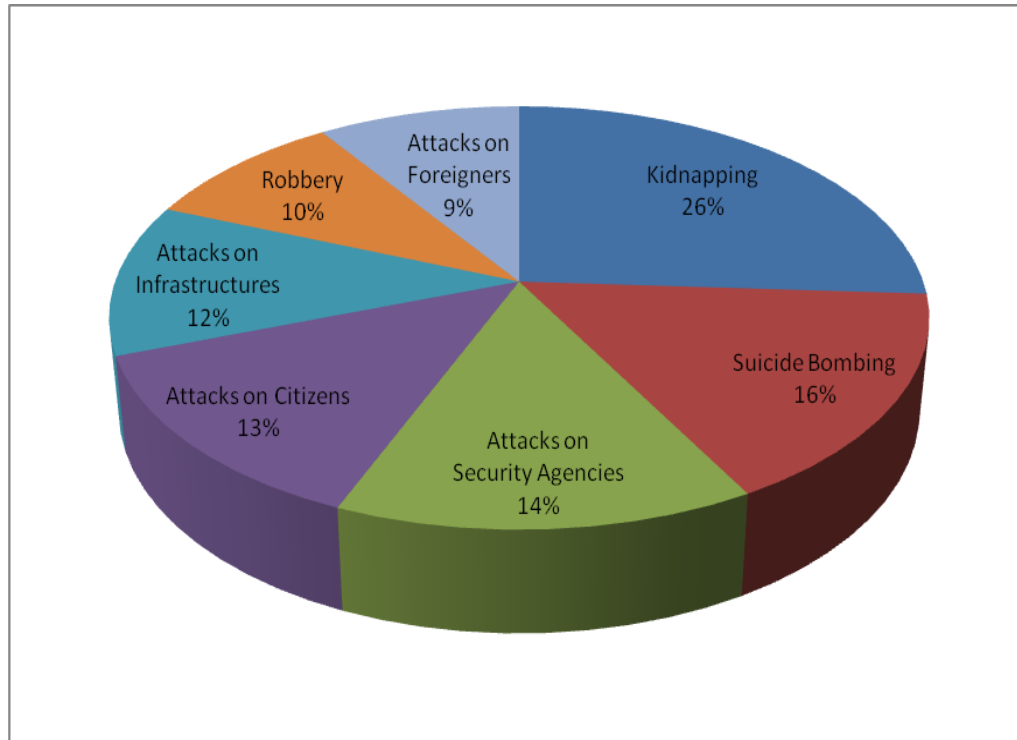


Figure 4.1: Nature of Insurgency in the Study Area

Source: Researcher's Fieldwork, 2018

4.3 Spatial Variation of the Nature of Insurgency Activities

The analysis in section 4.2 was on the entire study area, which is the Northeastern Nigeria. A detailed analysis of insurgency activities was considered necessary such that possible spatial variation among the component states of Adamawa, Borno and Yobe States could be detected. This allowed for the development of appropriate strategies to address this seemingly intractable Boko Haram insurgency in the study area.

4.3.1 Adamawa State

The nature of insurgency activities in Adamawa State was described in Table 4.2. Kidnapping has the highest occurrence (22.37%) having both children and adults as victims. A

detailed analysis showed that kidnapping of children accounts for 12.68%, while adult accounted for 12.59%. Suicide bombing was responsible for 16.26% of insurgency activities, followed by attacks on security agencies (14.34%). Attacks on securities agencies are usually carried out through ambushing of patrol vans and security bases (Alao *et al.*, 2012). Evidence from field observation indicated that several attacks had occurred in the state. The attack on a military base in Mubi where military equipment was carted away by the insurgents on 28th October, 2014 readily comes to mind. Attacks on citizens recorded 13.12%. This had been a frequent activity where villages were being attacked. For example, the attacks on 29th October, 2014 in Mubi, over 200 deaths were recorded and over 50 houses razed with fire. Incidentally, robbery accounted for less than 10% of insurgency activities. It would appear therefore that robbery may not be the main objective of the insurgents. Perhaps, a way of raising funds to finance their operations. To buttress this tendency was the incident of 25th August, 2011 when two banks in Gombi were robbed in which Millions of naira cartered away without any incidence of death.

Table 4.1: Nature of Insurgency Activities in Adamawa State

<i>Nature of Insurgency in the Adamawa</i>				
Sn	State	Total Score	Mean Score	Percent
1.	Kidnapping	859	5.96	25.27
2.	Suicide Bombing	559	3.83	16.26
3.	Attacks on Security Agencies	493	3.38	14.34
4.	Attacks on Citizen	451	3.09	13.12
5.	Attacks on Infrastructures	404	2.77	11.75
6.	Attacks on Foreigners	339	2.32	9.86
7.	Robbery	323	2.21	9.39
	Total	3438	23.56	100

Source: Researcher's Fieldwork, 2018

The high percentage recorded under kidnapping in Adamawa State may not be unconnected with the fact that insurgents are after cheap blackmail and unnecessary popularity which is best sustained by outrageous kidnapping of school girls in secondary schools and prominent people in the society. This might have accounted for the kidnapping of over 50 women and children in Gulak on 14th September, 2013, and over 60 people kidnapped in Mangoro in Madagali on 18th October, 2014.

4.3.2 Borno State

The nature of insurgency activities in Borno State is similar to what is obtained in Adamawa State. In Table 4.3 kidnapping (26.15%) topped the list of insurgency activities in Borno state. A case in point was Dr. Shettima Ali Monguno, a Borno Elder state man and a onetime Minister of Petroleum who was kidnapped on 3rd May, 2013. There was also the carting away of over 250 children of Government Girls Secondary School, Chibok that occurred on 14th April, 2014. This incidence attracted worldwide condemnation. Next to kidnapping was suicide bombing which had 15.94%. Bombing activity is common in crowded parts of the city such as in the popular Monday market in Maiduguri; Yerwa; Rann; mosques and churches. Other areas that has witnessed suicide bombing include Barwati, Pulka, Gasigar villages, Ladi-kayamula, and Tashon Alade. About 264 incidences of suicide bombing were recorded in different parts of Maiduguri from 2009 to 2013. Other activities such as attacks on security agencies (14.01%). This attack has drawn so much attention from security experts because of its frequency. Prominent cases are the attacks on an Army Patrol Van in Gwage on 15th May, 2011 and on a police station in Dandal on 12th July, 2012. Other areas affected by the attacks include Giwa Military Barrack in Maiduguri on 31st March, 2014, Kangarwa on 23rd June, 2014, while attacks

on foreigners were the least activity within the period of study with 9.30%, unlike in Adamawa State where Robbery was the least activity by the insurgents.

Table 4.2: Nature of Insurgency Activities in Borno State

Sn	<i>Nature of Insurgency in the Borno State</i>		<i>Mean</i>	
	<i>State</i>	<i>Total Score</i>	<i>Score</i>	<i>Percent</i>
1.	Kidnapping	1670	6.14	26.15
2.	Suicide Bombing	1018	3.74	15.94
3.	Attacks on Security Agencies	895	3.29	14.01
4.	Attacks on Citizen	855	3.14	13.39
5.	Attacks on Infrastructures	758	2.79	11.87
6.	Robbery	597	2.19	9.35
7.	Attacks on Foreigners	594	2.18	9.30
	Total	6387	23.47	100

Source: Researcher's Fieldwork, 2018

4.3.3 Yobe State

In Yobe State, kidnapping also topped the list of insurgency activities (26.2%) as seen in Table 4.3. The States had witnessed so many daring incidences of kidnapping, many of which were unrecorded. Bara, Bade, Jajimari, Potiskum, Nangere and Damaturu are some of the areas that witnessed frequent kidnapping. Other activities by the insurgents include, suicide bombing (16.19%). This activity has caused loss of lives and tensions over the years due to its frequent occurrences in Fune, Dogon Kuka, Gulani, Ngurotungowa, Buni Yadi, and Metele. Information from field observation indicates that about 93 suicide bombing incidences were recorded from 2009 to 2014 in the State. Attacks on security agencies (14.21%) of the total insurgency activities, attacks on security agencies has affected the operations of the security such as the

attacks on the military base in Musari, Babban Gida where several military equipment such as Rocket Propeller Guns (RPG), Armour Personnel Carrier vehicles, weapons like Anti aircraft, and General Purpose Machine guns among others were catered away by the insurgents. Meanwhile, attack on foreigners (9.16%) is the least activity by the insurgents in Yobe State. This is similar with Borno and unlike in Adamawa where robbery was the least.

Table 4.3: Nature of Insurgency Activities in Yobe State

<i>Nature of Insurgency in the Yobe</i>				
Sn	State	Total Score	Mean Score	Percent
1.	Kidnapping	927	6.1	26.2
2.	Suicide Bombing	573	3.77	16.19
3.	Attacks on Security Agencies	503	3.31	14.21
4.	Attacks on Citizen	469	3.09	13.25
5.	Attacks on Infrastructures	395	2.60	11.16
6.	Robbery	348	2.29	9.83
7.	Attacks on Foreigners	324	2.13	9.16
	Total	3539	23.29	100

Source: Researcher's Fieldwork, 2018

Kidnapping appeared to be the insurgency activity with the highest frequency. This was widely perpetrated in the 3 states. Reasons for its prominence may include a bid to generate money through ransom, need for popularity; it also appears to be a means of negotiation and bargaining by the insurgents and to acquire technical know how. Moreover, the attacks on foreigners which was seen as the least in Borno and Yobe states were done in order to draw the attention of the international communities. Field observations indicates that an incident of

kidnapping which occurred in Abadam involving a Chadian nationality was carried out mainly to attract international communities and also to derive the knowledge of operating heavy equipment from foreigners.

4.3.4 Differences in the Nature of Insurgency Among the States in the Study Area

The results presented in Table 4.4 showed that there was no statistically significant difference in the nature of insurgency activities in Adamawa, Borno, and Yobe states, despite the slight differences in the level of intensity of insurgency. This shows that the three states experienced the same nature of insurgency activities throughout the period of 2009-2017. The between group mean square of attacks on citizens (the variation explained by the model) is 0.225, while the F-ratio is 0.154 and the p-value (0.858) > 0.05. This indicates that the percentages of attacks on citizens across the three States (Adamawa, Borno and Yobe) are not significantly different from one state to another. Also, the attacks on the security agencies in the three states are not significantly different with the model explaining the variation at 0.36 and p-value of 0.679 is greater than 0.05. This suggested that the three states experienced similar percentages of attacks on the security agencies often times, these attacks on the security agencies are coordinated attacks in the states.

Table 4.4: Variation in the Nature of Insurgency Activities between Adamawa, Borno and Yobe State

		Sum of Squares	Df	Mean Square	F	Sig.
Robbery	Between Groups	.902	2	.451	.342	.711
	Within Groups	748.354	567	1.320		
	Total	749.256	569			
Attack on Infrastructures	Between Groups	3.697	2	1.849	1.405	.246
	Within Groups	746.234	567	1.316		
	Total	749.932	569			
Attacks on Citizen	Between Groups	.449	2	.225	.154	.858
	Within Groups	829.139	567	1.462		
	Total	829.588	569			
Attack on Security Agencies	Between Groups	.721	2	.361	.387	.679
	Within Groups	528.803	567	.933		
	Total	529.525	569			
Suicide bombing	Between Groups	.706	2	.353	.317	.729
	Within Groups	631.645	567	1.114		
	Total	632.351	569			
Attacks on Foreigners	Between Groups	2.937	2	1.469	1.258	.285
	Within Groups	662.047	567	1.168		
	Total	664.984	569			
Kidnapping	Between Groups	3.412	2	1.706	.744	.476
	Within Groups	1300.875	567	2.294		
	Total	1304.288	569			

Source: Researcher's Fieldwork, 2018

Figure 4.5 shows the differences in the level of the insurgency activities between Adamawa, Borno, and Yobe states. Even with the no statistically significant difference observed in the nature of insurgency in Adamawa, Borno and Yobe State. There is still slight variation in the nature of insurgency between the states. The three states had almost the same percentages on the rate of kidnapping with Yobe having the highest (25.2%). Interview with security agencies indicated that the high rate of kidnapping may have been due to the numerous enclaves that provided hideouts where those kidnapped are usually kept. The enclaves where the victims are kept include the famous Sambisa forest and the mountainous areas found in Abadam, Gwoza, and Fika. This clearly shows that kidnapping, suicide bombing, attacks on security agencies and on citizens are high in all the states considered, while attacks on foreigners and robbery are very low with less than 10% each. This was so because little attention was placed on robbery and attacks on foreigners by the insurgents at the time of this research. It can thus be deduced that the insurgents in the Northeast are not interested in ransom like other groups of bandits, but their main focus is to institute their religious ideology in the study area.

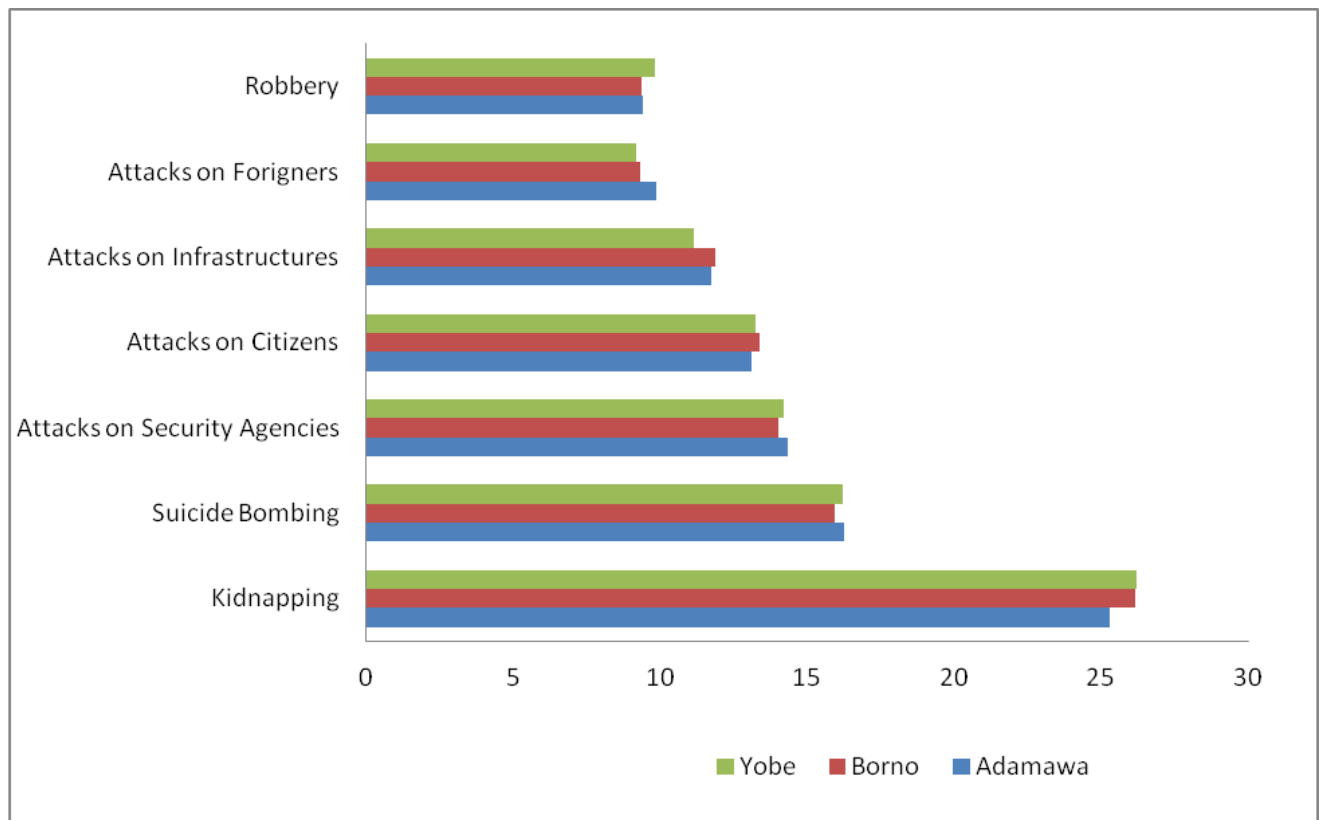


Figure 4.2: Differences in the Nature of Insurgency in the Selected States

Source: Researcher's Field Work, 2018

Having examined the nature of insurgency in the Northeast, it becomes imperative for us to look at the factors responsible for the insurgency activities in the study area. This will give us an insight into what are the rational for insurgent's attacks in the study area, and also understand the motivation behind the insurgents attacks from one state to another.

4.4 The Factors Responsible for Insurgency in the Study Area

The factors responsible for insurgency in the study area are presented in Table 4.6. Poverty (15.62%) appeared to be the leading reason for engaging in insurgency in the area, closely followed by the abundant of hideout (15.57%); unemployment (14.61%); porous borders (14.42%); low educational level (13.90%); religion extremism (13.51%), while lack of government presence accounted for less than 13% of the total factors responsible for insurgency in the study area. The poverty level in the area appears to have made people to be easily recruited into the terror group to carry out different form of attacks. Evidence from the report indicates that the insurgents induce people with little money to carry out the task of detonating Improvised Explosive Device (IED); planting of land mines; as well as providing information to the insurgents. An example was the case of a watermelon seller, who was caught with IED on 18th September, 2014, who confessed that he was paid 500 Naira by the insurgents to detonate the IED in a Mosque in Maiduguri (Akintola, 2015).

The physical features of the study area such as mountain ranges and forest reserves provide natural hideouts for the insurgents. This can be the reason the presence of hideouts ranked second with 15.57% on the list of factors responsible for insurgency in the study area (Table 4.5). As a matter of fact, most camps of the insurgents are located in the hidden areas of Gwoza Mountain, forested areas in Pulka, Abadam, Bama and Sambisa forest all of which extend to the neighboring countries of Chad and Niger. These areas have been widely used by the insurgents in planning and coordinating their activities, as well as keeping their victims. These hideouts made it difficult for the security agencies to curb or flush out the insurgents from the Northeastern Nigeria. The low level of education also contributed to the emergence of insurgency in the study area due to the fact that most people recruited are either school dropouts

or illiterates who do not have the knowledge of the consequences of insurgency. It is often said that knowledge is power; however the low level of education has probably denied the recruits the poor and will to reject the act of insurgency in its totality. Hence, they found a purpose in committing terror attacks against the society. The findings are in line with the studies of Samuel (2006) and Omoh (2012) who pointed out that the rate of poverty, presence of hideout and illiterate in the Northeastern states are high and can lead to several criminal incidences.

Table 4.5: Factors Responsible for Insurgency in the Study Area

Sn	<i>Factors Responsible of Insurgency in</i>	Total	Mean Score	Percent
	<i>the Study Area</i>			
1.	Poverty Level	1667	2.92	15.62
2.	Presence of Hideout	1661	2.91	15.57
3.	Unemployment	1559	2.74	14.61
4.	Porous Borders	1539	2.7	14.42
5.	Low Educational Level	1483	2.6	13.9
6.	Religion Extremism	1442	2.53	13.51
7.	Lack of Government Presence	1319	2.31	12.36
	Total	10670	18.71	100

Source: Researcher's Fieldwork, 2018

4.5 Spatial Variation of Factors Responsible of Insurgency

Several factors have encouraged insurgency activities in Northeastern Nigeria. A detailed analysis of these factors become essential such that possible variation can be detected among the three states of Adamawa, Borno, and Yobe State can be discovered in order to provide adequate solutions to curb insurgency activities.

4.5.1 Adamawa State

The factors responsible for insurgency in Adamawa State are presented in Table 4.7. Poverty level was the predominant factor associated with insurgency in Adamawa State (16%). The level of poverty level in the state has forced many people into insurgency, since most of them have no sustainable means of livelihood. In other words, where there is poverty, all manners of social vices and illegal activities tend to be present (Abimbola & Adesote, 2012). The fact that the people in this place are poor must have made the area a fertile ground for recruitment into insurgency within Nigeria. Information from the field indicates that incidence involving a child of about 9 years was caught with a bag containing IED near a mosque in Demsa on 30th June, 2013. After series of investigations, the boy was found to be innocent of the content. He explained that he was paid 50 Naira to carry out the act. Similar incident was recorded in Jimeta, Gaanda and Gombi where innocent people were used for this purpose.

Next to poverty is the presence of hideouts (15%); followed closely by porous borders (14.98%). The presence of hideout has encouraged this illegal act because it was easy to plan attacks in hideouts without being noticed and at the same time returned back into these same hideouts after various attacks. Insurgency in Adamawa State recorded the highest incidents in areas close to borders like Michika, Njoddomo, Gaanda, and Madagali. About 73% of insurgency activities in Adamawa State occurred in these boarders towns. In fact, some of the insurgents are from the neighboring countries like chad, and Niger from where they come to plan attacks and escaped back as the Nigeria Borders along this axis are not properly mined by the security operatives. Lastly, the lack of government presence accounted for less than 13% of insurgency in Adamawa State. This implies that the lack of presence of government presence has less contribution to the insurgency activities in the state (Alao, et al., 2012).

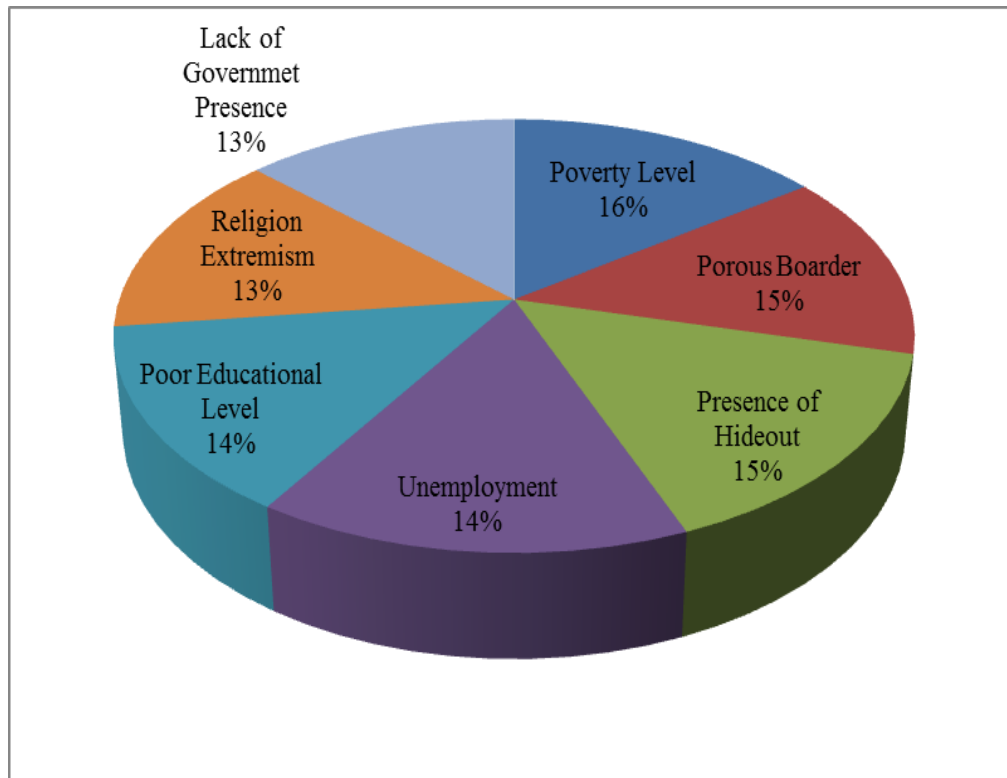


Figure 4.3: Factors Responsible for Insurgency in Adamawa State

Source: Researcher's Field Works, 2018

4.5.2 Borno State

Among the factors identified by the respondents that have encouraged insurgency in Borno State is presented in Figure 4.8. Presence of hideouts (15.99%) topped the list of the factors that encouraged insurgency activities. This is followed by poverty level (15.66%); unemployment (14.79%); low educational level (13.71%); religion extremism (13.35%); and the least was the lack of government presence (12.05%). The presence of so many hideouts in forested and mountainous of Borno State had worsened insurgency activities in the area. The Sambisa forest in the State is regarded as the home of the insurgents, where most of their activities are coordinated and planned. The presence of hideouts in this forest gave the insurgents

an upper hand. It makes it easier for them to ambush the security operatives that tried to access the forest, thereby making it inaccessible over the years. A good example is the inability of the security operatives to locate the kidnapped Chibok girls despite the available information on that they were in Sambisa forest. The findings in Borno State agrees with the studies of Chinwokwu (2013); Mu'azu (2011); and Sani, (2011) who identified that insurgency activities in Borno had a direct link with poverty level, presence of hidout and porous borders.

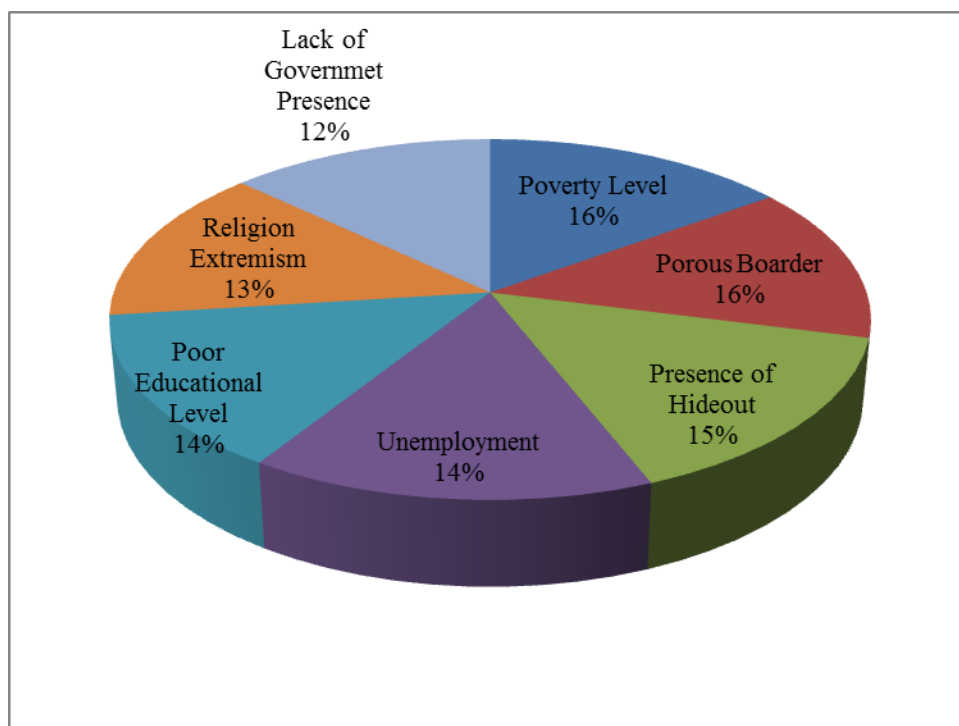


Figure 4.4: Factors Responsible for Insurgency in Borno State

Source: Researcher's Field Works, 2018

4.5.3 Yobe State

The factor responsible for insurgency in Yobe State is depicted in Figure 4.5. The presence of hideouts (15.30%) topped the list of factors; low religion background (14.03%); porous borders (13.85%). The rugged mountainous terrain in Potiskum, Fune and Damaturu provide natural hideouts for the insurgents in the state. Religious extremism has also made insurgency to thrive in the State. This is because most of the people involved in the act of insurgency had no in-depth knowledge of the Islamic religion, so it is easier for them to be brainwashed. Infact, evidence from the field interactions shows that they were made to believe that the act of insurgency is synonymous to an act of worship to Allah (God), with tremendous reward in heaven. Similar to Adamawa and Borno States, the lack of government presence was the least and accounted for 12.69% of insurgency activities in Yobe State.

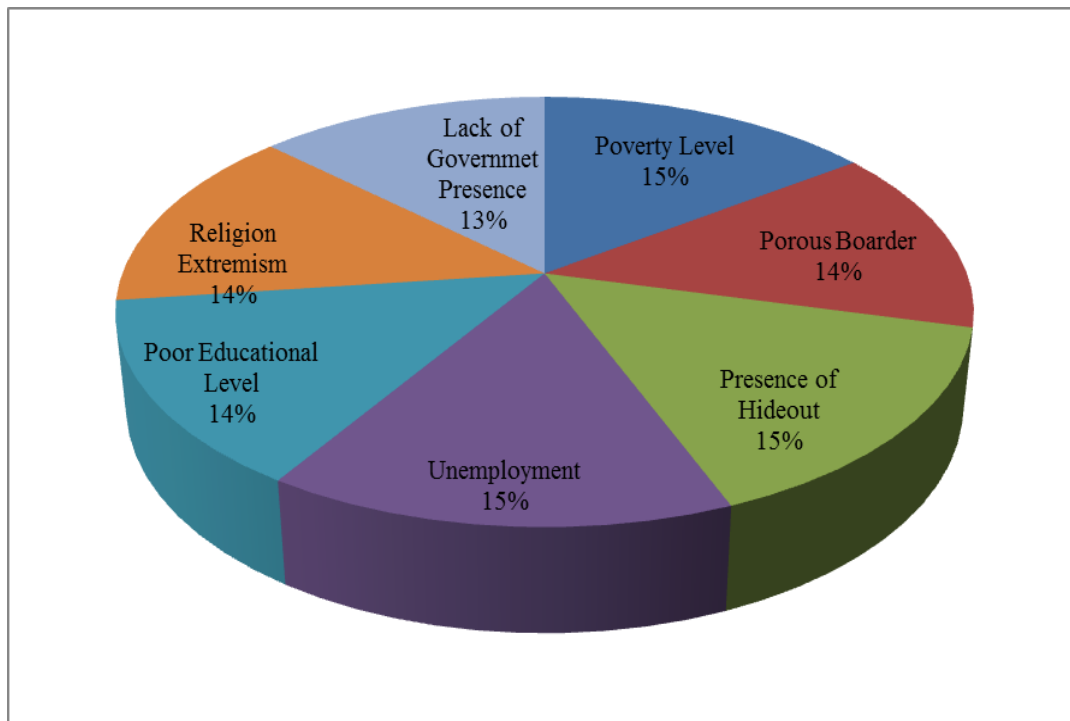


Figure 4.5: Factors Responsible for Insurgency in Yobe State

Source: Researcher's Field Works, 2018

4.5.4 Differences in the Factors of Insurgency among the States in the Study Area

The variation in the factors responsible for insurgency between Adamawa, Borno and Yobe State is presented in Table 4.6. The between group mean square of poor educational level (the variation explained by the model) is 0.493, while the F-ratio is 047.4 and the p-value (0.623) > 0.05 . This suggests that the variation in the percentage contribution of low educational level to insurgency is not statistically significant across the three States (Admawa, Borno and Yobe) at 95% confidence level. For example, the percentage contribution of education level to insurgency was: Adamawa (14.01%), Borno (13.71%) and Yobe (14.13%). This shows that level of education contributed similar percentage to insurgency in the three states. The variation in the contribution of high poverty level to insurgency explained by the model is 1.467 with F-ratio of 1.54 and p-value of 0.214. The p-value is greater than 0.05, which shows that the percentage contribution of poverty level to insurgency activities is not significantly different between the three selected states in the north-eastern Nigeria. Also, the contribution of religion extremism across the three states is not statistically different. The model explanation for religion extremism in the three states is 0.72 with F-ratio of 0.59 and p-value of 0.553 which is greater than 0.05.

Table 4.6: Variation in the Factors Responsible for Insurgency between Adamawa, Borno and Yobe State

		<i>Sum of Squares</i>	<i>df</i>	<i>Mean Square</i>	<i>F</i>	<i>Sig.</i>
Poor Educational Level	Between Groups	.986	2	.493	.474	.623
	Within Groups	589.612	567	1.040		
	Total	590.598	569			
High Poverty Level	Between Groups	2.934	2	1.467	1.544	.214
	Within Groups	538.822	567	.950		
	Total	541.756	569			
Religion Extremism	Between Groups	1.436	2	.718	.593	.553
	Within Groups	686.557	567	1.211		
	Total	687.993	569			
Porous Boarder	Between Groups	4.920	2	2.460	2.240	.107
	Within Groups	622.780	567	1.098		
	Total	627.700	569			
Unemployment	Between Groups	.983	2	.492	.576	.563
	Within Groups	484.015	567	.854		
	Total	484.998	569			
Presence of Hideouts	Between Groups	2.633	2	1.317	1.315	.269
	Within Groups	567.804	567	1.001		
	Total	570.437	569			
Lack of Government Presence	Between Groups	2.168	2	1.084	1.027	.359
	Within Groups	598.619	567	1.056		
	Total	600.788	569			

Source: Researcher's Fieldwork, 2018

The percentage contributions of other factors such as porous borders, unemployment, and presence of hideouts and lack of Government presence are not significantly different across the three states at 95% confidence level. Looking closely at figure 4.3, 4.4 and 4.5, one can easily see that the percentage contributions of each of these factors in the three states are similar. This might not be unconnected to the fact that socio-economic characteristics, physical and natural environments of these states are similar.

Notwithstanding this conclusion, there existed some differences worthy of note. For example, poverty level and presence of hideouts were seen as the highest factors that encouraged insurgency with over 15% in all the states. This had worsened insurgency activities in the three states where people involved in the activities were either enticed with little money or left with promises of providing them with food materials. A case in point was a man caught in Gwoza with weapons. After thorough investigation it was revealed that the insurgents had been using his house as armory. In turn, he had been receiving payment weekly from the insurgents. Porous borders in Adamawa and Borno accounted for about 14%. In Yobe it was less than 14%. The presence of these porous borders around Abadam, Gwoza, Michika, and Madagali made it easy for the activities of insurgency to thrive in those areas where they create easy route of escape after any incident of insurgency. Moreover, unemployment in the three states was about 14% in each. Similarly, low level of education in Adamawa and Yobe were more than 14%, while in Borno it was less than 14%. Other factors considered were the religious extremism. The low level of religious knowledge in Yobe accounted for more than 14%, while in Adamawa and Borno it was less than 14%. Lastly is the lack of government presence which was about 12% in all the states. This had fuelled the activities of insurgency within the time of the study in a low level. For instance, if there was adequate presence of government in the area, the poverty level

will decrease; most of the areas used for hideouts could be transformed into tourist areas and other infrastructure will be provided.

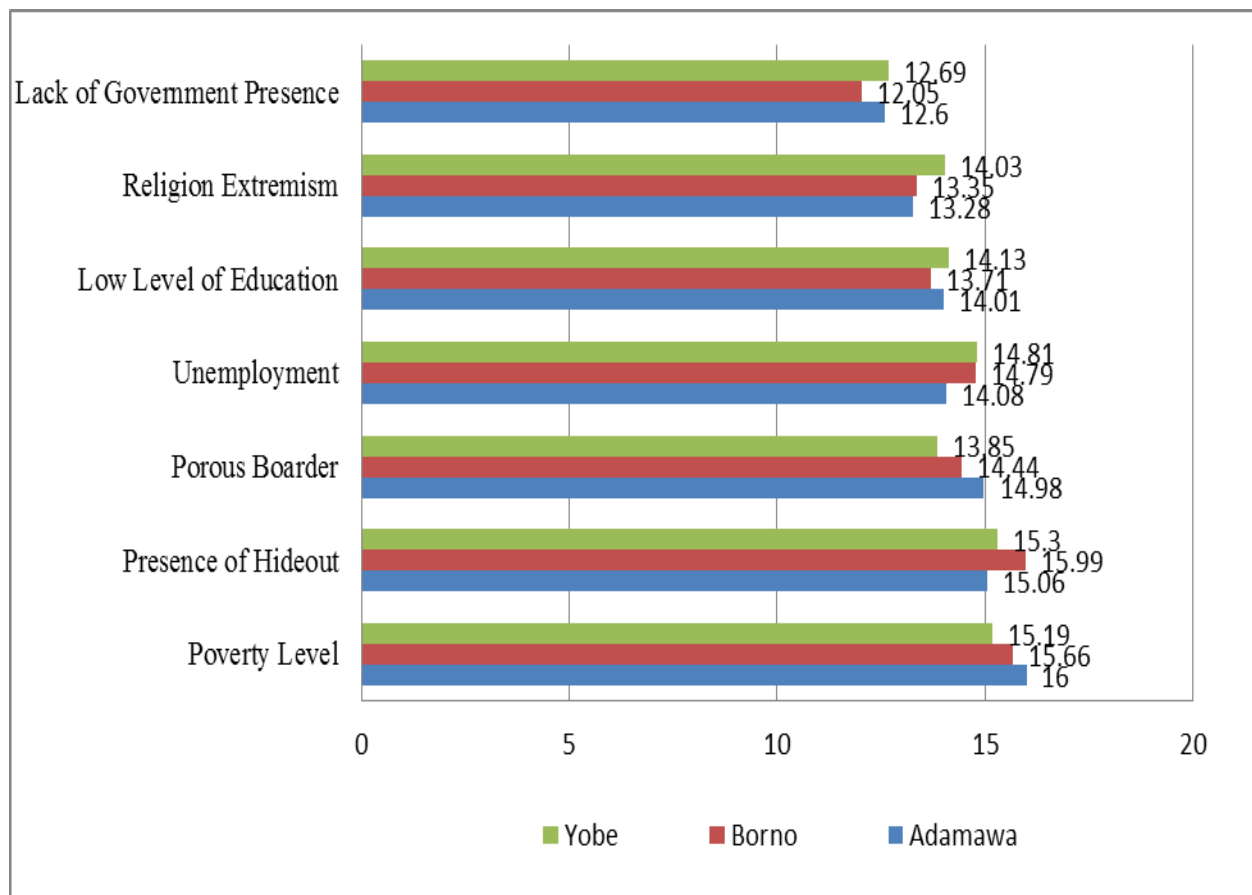


Figure 4.6: Variation in the factors for insurgency in the selected states

Source: Researcher's Field Work, 2018

4.5.5 Relationships between the Factors Responsible for Insurgency in the Study Area

A correlation analysis was carried out to understand the links and interactions between the identified factors responsible for insurgency activities in the study area. The association between the factors responsible for insurgency in the study area is presented in Table 4.7. Poor educational level exhibits a negative relationship with religion extremism ($r = -.316$) at 99% confidence level. The implication of the result is that as poor educational level deteriorates in the

study area, religion extremism increases. Meanwhile if the poor educational background improves, the religion extremism reduces. Poor educational level exhibits strong positive relationship with porous border ($r = .095$) at 95% confidence level. This indicates that as poor educational level increases, the border becomes more porous, and vice versa.

Table 4.7: Relationship between the Factors Responsible for Insurgency in the Study Area

	<i>Poverty Level</i>	<i>Poor Religion Background/ Knowledge</i>	<i>Porous Border</i>	<i>Unemployment</i>	<i>Presence of Hideouts</i>	<i>Lack of Government Presence</i>
<i>Poor Educational Level</i>	-0.051	-.316**	.095*	-.116**	-.207**	-.124**
<i>Poverty Level</i>		.249**	.228**	-.416**	0.018	0.034
<i>Religion Extremism</i>			-	-.147**	.107*	.241**
<i>Porous Border</i>				.290**		
<i>Unemployment</i>				-0.011	-.117**	0.013
<i>Presence of Hideouts</i>					.134**	.105*
						0.036

** Correlation is significant at the 0.01 level (2-tailed).

* Correlation is significant at the 0.05 level (2-tailed).

Also, there is a negative relationship between poor educational level and unemployment ($r = -.116$), presence of hideouts ($r = -.207$), and lack of government presence ($r = -.124$) at 99% confidence level. These results suggest that as the poor educational level improves, unemployment reduces. On the other hand, if the poor educational level keeps deteriorating, unemployment will keep increasing. The increasing level of unemployment as a result of deteriorating educational level explains the reason why it is easier for the Boko Haram recruiters to get new recruits with the promise of employment and livelihood. The relationship between

poor educational level and presence of hideouts ($r = -.116$) suggested that if the educational level improves, the number of hideouts will be reduced, and vice versa. This is so because if educational level increase their will be improvement in the utilization of hideout of insurgents for other purposes like provision of tourist centers, and other uses. The association between poor level of education and lack of government presence ($r = -.124$) indicates that if the level of poor educational level continues to decrease, the lack of government presence will be on the high rate. It can be inferred that the poor educational level is the reason for the lack of government presence in the study area.

There is a positive relationship between high poverty level and religion extremism ($r = .249$) at 99% confidence level. The result shows that as the poverty level keep rising, low religion knowledge will also keep rising. High poverty level exhibits a positive relationship with porous border ($r = .229$) at 99% confidence level. The result implies that as the poverty level is on the rise, the border will become more porous, and vice versa. This can be viewed from the angle that high poverty rate encouraged the inhabitants of the study area to engage in all form of illegal activities that made the border to become porous. Based on the interview conducted, some of the government representatives at the border are believed to turn blind eyes to illegal activities of their kinsmen such as smuggling which made the border to be more porous and the importation of the religion extremist fighters easier. Meanwhile, high poverty level shows negative relationship with unemployment ($r = -.416$) at 99% confidence level. The result implies that an improvement in the level of unemployment will reduces the high poverty level, while an increase in the level of unemployment will keep deteriorating the poverty level in the study area.

There is a negative relationship between understanding of religion knowledge and porous border ($r = -.290$) at 99% confidence level. The fact that a larger number of the people in the

study area have low religion knowledge made them to have empathy on foreign nationals that tries to cross the border all in the name of religion to carry out insurgency activities. In fact, some of the inhabitants' aid in the smuggling of fighters across the border. Low religion knowledge exhibits negative relationship with unemployment ($r = -.147$) at 99% confidence level. The implication of the result is that an improvement in religion knowledge will definitely reduce unemployment in the area and, further reduces the rate of insurgency in the study area. Also, there is a positive relationship between religion extremism and presence of hideouts ($r = .107$) and lack of government presence ($r = .241$) at 95% and 99% confidence level, respectively. These results suggest that as the low religion knowledge increases, presence of hideouts and lack of government presence increase and vice versa. Also, presence of hideouts and porous border have a negative relationship ($r = -.117$) at 95% confidence level. This result indicates that as the presence of hideouts increase, the border becomes more porous and vice versa. Unemployment show a positive relationship with presence of hideouts ($r = .134$) and lack of government presence ($r = .105$) at 99% and 95% confidence level, respectively. The results imply that as unemployment rate increases, there will be an increase in the number of hideouts, and the lack of government presence will become worse in the study area.

At this junction, the nature and factors responsible for insurgency have been discussed. It is paramount to look at the effects of insurgency in the study areas.

4.6 Effects of Insurgency in the Study Area

The effects of insurgency activities in the study area are depicted in Figure 4.7. The loss of lives (23.09%) is the most widespread effects of insurgency in the study area. Since the inception of the insurgency activities in 2009 more than three million people had lost their lives (Human Right Watch, 2017). Displacement of people (17.51%) was the second highest effect of insurgency in the study area. On 12th October, 2014, the whole of kanumbari village were displaced leaving over 500 people homeless. Similar incidents were experienced in Bama, Damasak, Michika, Baza, Gwoza villages where houses were set ablaze by the insurgents leading to the displacement of over 3,500 people (Internal Displaced Monitoring Center, 2016). Other effects include the destruction of property (15.86%); farm lands (11.46%); negative effect on the international community's (11.32%); and lack of trust (11.22%). The result of insurgency activities have destroyed so many property worth millions of naira which include buildings located at FGGC Buni Yadi, College of Agriculture in Yobe and several markets to mention but few. The telecommunication masks in Potiskum, Fune, Bama, Biu, and Yunusafari were also destroyed in 2013. Negative effect on socio-economic activities (9.55%) was the least effect of insurgency in the study area. These results reinforced the findings of Mohammed (2012) and Imam (2004) who reported that the effects of insurgency activities in the North-eastern Nigeria had caused loss of lives, lack of trust, as well as displacement of people.

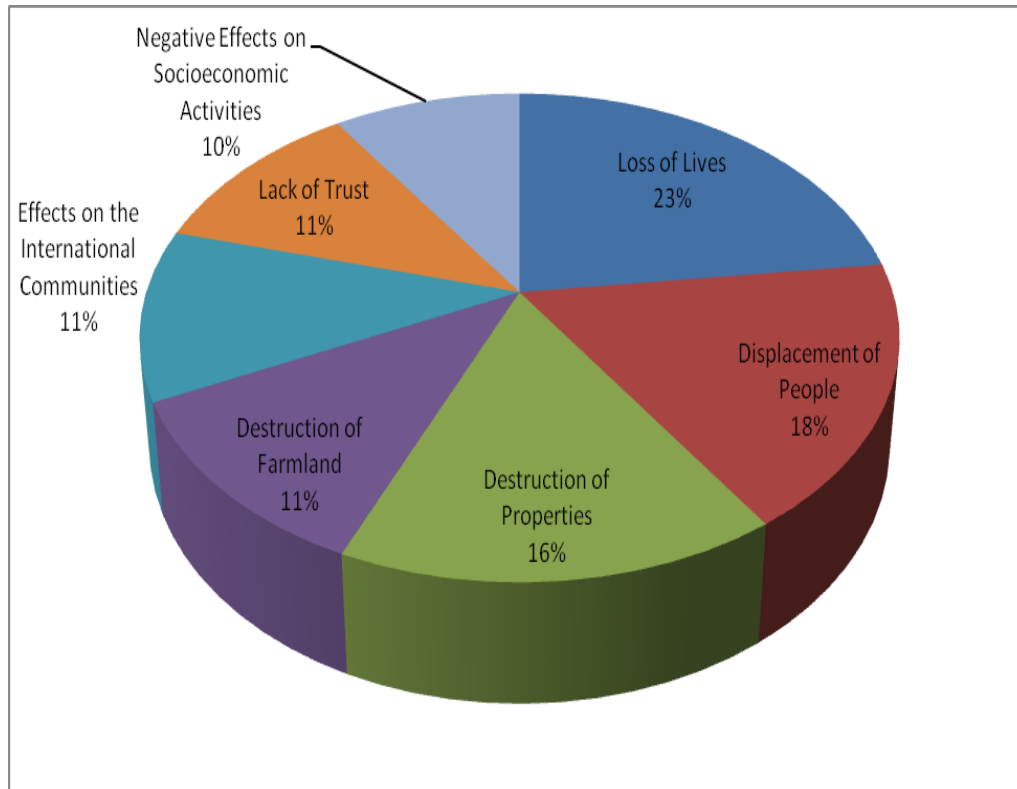


Figure 4. 7: Effects of Insurgency in the Study Area

Source: Reseracher's Field Work, 2018

4.7 Spatial Variation of the Effects of Insurgency Activities

The analysis of the effects of insurgency in the study area comprises Adamawa, Borno and Yobe States. A comprehensive analysis of the effects of insurgency activities in the individual states was considered necessary. This will allow for easy understanding of the effects of insurgency activities in each of the states so that necessary actions can be taken in terms of the levels of the effects.

4.7.1 Adamawa State

The effect of insurgency in Adamawa State was aggregated into seven effects as shown in Figure 4.13. Loss of lives (23.26%) topped the list of effects of insurgency in Adamawa State. The state had witness numerous insurgency activities which had resulted in the killing of so

many people in the State. An instance was the insurgency incident that occurred in Midlu in Madagali LGA where about 500 people were killed and about 150 houses were burned down on 28th August, 2013. Other areas where insurgency activities had caused loss of lives included Lamurde on 7th September, 2012 where about 217 people murdered in a night attack. Similar incident was experienced in Sabon Gari in Madagali on 31st January, 2014. This was followed by the displacement of people (17.10%). The activities of insurgency in the state had made lots of people to abandon their original homes either as a result of fear of being killed or kidnapped. An instance was an incidence that recorded in 2014 where the whole of Wada Chakawa village, Mubi, and Sabon Garin Yamdula Village were displaced, Destruction of property (16.56%), lack of trust (11.28%). This had made people not to trust each other due to the frequent incidences of insurgency in the area as nobody can tell who is an insurgent or who is not in the area. Destruction of farmland (11.15%). Lots of farmland were destroyed including the biggest fish market in the state as a result of the insurgency activities. An instance was the Madagali experience where about 20 hectares of farmland was destroyed in 2013. Furthermore, effects on the international communities (11.08%) where foreign countries found it difficult to rely on the people from the region. The North entirely was tagged with insurgency activities. Lastly, negative effects on livelihood/socioeconomic activities accounted for less than 10% in all the effects of insurgency in Adamawa State. The insurgency activities had affected the livelihood/socioeconomic activities in Adamawa where most of the markets were destroyed. Hence and banks had to reduce their working hours in the year 2011 up to 2014.

Table 4.8: Effects of Insurgency in Adamawa State

<i>Effects of Insurgency in Adamawa State</i>	<i>Total Score</i>	<i>Mean Score</i>	<i>Percent</i>
1. Loss of Lives	951	6.51	23.26
2. Displacement of People	699	4.79	17.10
3. Destruction of Property	677	4.64	16.56
4. Lack of Trust	461	3.16	11.28
5. Destruction of Farmland	456	3.12	11.15
6. Effects on the International Communities	453	3.10	11.08
7. Negative Effects on Socioeconomic Activities	391	2.68	9.56
Total	4088	28	100

Source: Researcher's Fieldwork, 2018

4.7.2 Borno State

The effects of insurgency in Borno State are as contained in Table 4.8. Loss of lives has the highest with 22.93%. This is closely similar to that of Adamawa State which recorded 23.26%. A case in point was an incidence of insurgency that occurred in Bulunkutu where about 700 people lost their lives in a night attack on 29th March, 2013. Other areas where lives were lost from insurgents attacks include Alau on 17th June, 2013, Mainuk on 27th June 2013, and Ngala on 21st August, 2013. Other effects of insurgency in the state include the displacement of people (17.70%); destruction of property (15.65%); destruction of farm land (11.69%); effects on international communities (11.50%); lack of trust (11.17%); and effects on the socio-economic activities (9.36%). Displacement of people was among the most devastating effects of insurgency in the state as most people are left homeless as a result of the destruction of their villages. An incidence that readily comes to mind was the burning of the entire Dandal on 12th April, 2012, part of Gubio on 25th July, 2012 where about 150 houses were burnt down. The result is similar

to the findings of Okpaga, Chijioke, and Eme (2012) who pointed out that insurgency activities had affected the lives of the people in Borno and had caused people to abandoned their farms due to fear of being killed or kidnapped.

Table 4.9: Effects of Insurgency in Borno State

<i>Sn</i>	<i>Effects of Insurgency in Borno State</i>	<i>Total</i>		
		<i>Score</i>	<i>Mean Score</i>	<i>Percent</i>
1.	Loss of Lives	1746	6.42	22.93
2.	Displacement of People	1348	4.96	17.70
3.	Destruction of Property	1192	4.38	15.65
4.	Destruction of Farmland	890	3.27	11.69
5.	Effects on the International Communities	876	3.22	11.50
6.	Lack of Trust	851	3.13	11.17
7.	Negative Effects on Socioeconomic Activities	713	2.62	9.36
<i>Total</i>		7616	28	100.00

Source: Researcher's Fieldwork, 2018

4.7.3 Yobe State

Loss of lives (23.21%) topped the list of effects of insurgency in Yobe State (Table 4.9). The attacks on beer parlors in Potiskum, Geidam, Bade and Damaturu have claimed lots of lives in Yobe state. Evidence from the security record shows that the attack on a Church in Geidam on 27th November, 2012 killed more than fourth-five people. In a similar vein, an attack by the group on 28th March, 2013 in Fune claimed about 60 people's lives. Displacement of people (17.55%) was the second highest effect of insurgency in Yobe State. For example, about 50,000 people were displaced in Potiskum, Bade, Gujba, Fika, Machini and Yunusari in Yobe State during this period. This incidence prompted NEMA to provide more IDPs Camp in the state in 2014. Meanwhile, negative effect on socio-economic activities (9.87%) was the least. This is

similar with Adamawa and Borno State where negative effects on socio-economic activities are the least effects of insurgency.

Table 4.10: Effects of Insurgency in Yobe State

<i>Sn</i>	<i>Effects of Insurgency in Yobe State</i>	<i>Total Score</i>	<i>Mean Score</i>	<i>Percent</i>
1.	Loss of lives	988	6.50	23.21
2.	Displacement of people	747	4.91	17.55
3.	Destruction of Property	663	4.36	15.58
4.	Destruction of farmland	483	3.18	11.35
5.	Lack of trust	478	3.14	11.23
6.	Effects on the international communities	477	3.14	11.21
7.	Negative effects on socioeconomic activities	420	2.76	9.87
	<i>Total</i>	4256	27.99	100

Source: Researcher's Fieldwork, 2018

4.7.4 Differences in the Effects of Insurgency among the States in the Study Area

The variation in the effects of insurgency between Adamawa, Borno and Yobe States is presented in Table 4.10. The result showed that there was no statistically significant difference in the magnitude of effects of insurgency activities in the three states of Adamawa, Borno and Yobe, at 95% confidence level. This was because all the p-values were greater than 0.05. The results suggested that the three states considered in the study experienced the same effects of the insurgency. Although, there were variations among the states, the variations that existed were not significant in the effects of insurgency in the study area (Figure 4.8). These results might not be unconnected to the fact that the nature and factors responsible for insurgency are similar in the selected states, hence, the not significantly difference in the effects.

Figure 4.8 shows the variation in the effects of insurgency activities in each of the states. The loss of lives accounted for more than (20%) in each of the states. This was so due to the fact that in each of the activities of insurgency, a live was lost in the process. Displacement of people is next to loss of lives in the three states with more than (70%) in all. The high figure in displacement of people in the states was as a result of the capturing of most villages in the study area by the insurgents, or where residence left their permanent homes as a result of fear of being killed or kidnapped by the insurgents. Negative effects on the socio-economic activities were the least in the study area with the states having less than (10%) effects on the socio-economic activities.

Table 4.11: Variation in the Effects of Insurgency between Adamawa, Borno and Yobe State

		<i>Sum of Squares</i>	<i>Df</i>	<i>Mean Square</i>	<i>F</i>	<i>Sig.</i>
Loss of lives	Between Groups	1.105	2	.553	1.132	.323
	Within Groups	276.693	567	.488		
	Total	277.798	569			
Destruction of property	Between Groups	7.495	2	3.748	1.050	.351
	Within Groups	2023.094	567	3.568		
	Total	2030.589	569			
Displacement of people	Between Groups	2.722	2	1.361	.361	.697
	Within Groups	2137.777	567	3.770		
	Total	2140.498	569			
Destruction of farmland	Between Groups	2.304	2	1.152	.335	.715
	Within Groups	1947.852	567	3.435		
	Total	1950.156	569			
Negative effects on socioeconomic activities	Between Groups	1.965	2	.983	.491	.612
	Within Groups	1135.340	567	2.002		
	Total	1137.305	569			
Lack of trust	Between Groups	.083	2	.042	.021	.980
	Within Groups	1142.689	567	2.015		
	Total	1142.772	569			
Effects on the international communities	Between Groups	1.509	2	.755	.401	.670
	Within Groups	1066.322	567	1.881		
	Total	1067.832	569			

Source: Researcher's Fieldwork, 2018

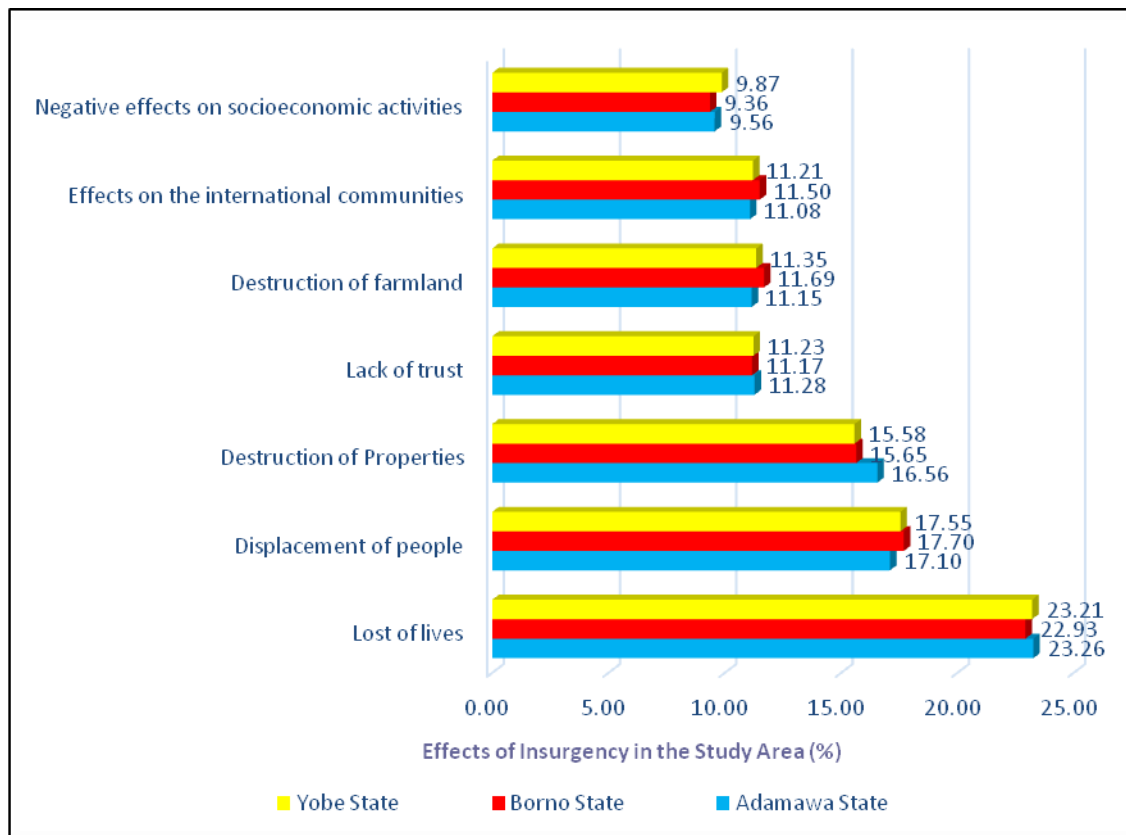


Figure 4.8 Variations in the Effects of Insurgency in the Selected States

Source: Researcher's Field Work, 2018

4.8 Conclusion

This chapter examined the nature and factors that encouraged insurgency. It has investigated its effects in the Northeastern State of Nigeria (2009-2017) using primary data derived from a questionnaire survey. The result of the analysis indicated that kidnapping which accounted for 26% of the insurgency activity was the most prevalent. Other insurgency activities include suicide bombing, attacks on security agencies, foreigners, infrastructures, citizens and outright robbery. Furthermore, the study revealed that poverty level was the highest amongst the factors that encouraged insurgency. The presence of hideouts was another factor (15.57%) that made insurgency a thriving activity in Northeastern Nigeria. Other factors that encouraged

insurgency in the study area include, but not limited to, unemployment, porous borders, poor educational level, religion extremism and lack of government presence. Insurgency resulted in the loss of lives more than anything else as it accounted for (23%) in the study area. Other effects included displacement of people, destruction of property, destruction of farmland, effects on the international community's among others. The effect on livelihood/socioeconomic activities surprisingly ranked the least (9.5%) thus giving the impression that the people were probably going about their normal daily activities with or without the activities of the insurgency. This is certainly a cause for concern as to the emphasis and prominence given to Boko Haram.

The spatio-temporal activity of insurgency and classification of intensity of insurgency activities is the focus of the next chapter.

CHAPTER FIVE

SPATIO-TEMPORAL AND CLASSIFICATION OF INTENSITY OF INSURGENCY ACTIVITIES

5.1 Introduction

This chapter presents the spatio-temporal analysis and classification of insurgency activities in the study area. The spatio-temporal analysis of insurgency activities in the study area and for each of the states considered (Adamawa, Borno, and Yobe State) were discussed and analyzed using Geographical Information System (GIS) techniques. Choropleth mapping method was employed to show the spatial pattern of insurgency activities in each of the states. This depicts the type of pattern of insurgency activities in each of the years under review in the states considered. GIS mapping techniques can help to identify spatial patterns visually but not statistically (Zhang et al., 2008). The trend analyses were discussed using linear regression analysis. Hot spot and cluster analysis were performed using Getis Ord Gi* (Hot Spot Analysis) and Anselin Local Moran's I (Cluster and Outlier Analysis) tool in ArcGIS for each year aggregate period considered for the study.

5.2 Spatial Pattern of Insurgency Activities in the Study Area

The pattern of insurgency activities in the study area from 2009-2017 is presented in Figure 5.1. This was achieved using the frequency of insurgency in each of the LGAs in the study area (See Table 5.1) and the Coefficient of variance of insurgency activities in Table 5.2. . The analysis revealed that Maiduguri experienced the highest incidence of insurgency with 146-413 incidence. Perhaps this may not be surprising because Maiduguri has been regarded as the birth place of insurgency in the Northeast (Onuoha, 2012). The high rate of the activities within

Maiduguri was as a result of the daily frequencies of insurgency activities earlier recorded from the inception of the activity to 2012. At that time, the insurgents were operating as a religion fundamentalist seeking people support and sympathy as well as causing crisis with those that goes against their ideology. Bama, Damboa, Gwoza. Konduga, Damaturu, Potiskum, and Madagali were next with 83-145 incidence of insurgecny. The high rate of insurgency activities recorded was as a result of the numerous geographical features present in the study area to include the sand dunes, hill shade in areas like Gujba, Gwoza, Madagali, Tarmuwa, Mubi North, and Michika. The insurgency in these areas were also supported by the presence of high elevation from the hill/mountains. Biu recored 47-82 incidence of insurgency activities. Also included in the areas of insurgency activities were those areas located at the North-eastern part of the study area with 17-46 incidence. The analysis further revealed that the pattern of insurgency activities in the study area was at the Eastern and Northeastern part of the area. The concentration of this activities was as a result of the closness of the areas to the international borders between Nigeria and Chad which provided an easy excape route for the insurgents after any incidence, presence of hideouts for insurgents also encouraged the high concentration of insurgency activities in those areas. This analsysis was closely linked to the works of Sadiya et al. (2016); Richard at al. (2011); and Ratcliffe (2000) who pointed out that insurgency activities tend to be concentrated in an area that provided hiding place for insurgents, and closness to borders.

Table 5.1: Frequency of Insurgency Activities in the Study Area (2009-2017)

ADAMAWA STATE			BORNO STATE			YOBE STATE		
S/no	LGA	Frequency	S/no	LGA	Frequency	S/no	LGA	Frequency
1	Fufure	0	1	Abadam	23	1	Bade	3
2	Ganye	2	2	Askira-Uba	45	2	Bursari	0
3	Gombi	15	3	Bama	143	3	Damaturu	72
4	Guyuk	0	4	Bayo	0	4	Fika	5
5	Hong	36	5	Biu	54	5	Fune	6
6	Jada	0	6	Chibok	29	6	Geidam	12
7	Shelleng	1	7	Damboa	108	7	Gujba	36
8	Demsa	2	8	Dikwa	29	8	Gulani	11
9	Madagali	82	9	Gubio	5	9	Jakusko	4
10	Maiha	6	10	Guzamala	21	10	Karasuwa	1
11	Mayo-Belwa	0	11	Gwoza	145	11	Machina	0
12	Michika	23	12	Hawul	35	12	Nangeri	5
13	Mubi-North	16	13	Jere	19	13	Nguru	0
14	Numan	0	14	Kaga	28	14	Potiskum	62
15	Song	2	15	Kala/balge	24	15	Tarmuwa	4
16	Yola-South	20	16	Konduga	76	16	Yunusari	1
17	Mubi-south	2	17	Kukawa	38	17	Yusufari	2
18	Yola-North	6	18	Kwayar-Kusa	1			
19	Girei	3	19	Mafa	42			
20	Toungo	3	20	Magumeri	34			
21	Lamurde	1	21	Maiduguri	413			
			22	Mobbar	26			
			23	Monguno	22			
			24	Marte	24			
			25	Ngala	46			
			26	Ngazai	24			
			27	Shani	7			
	TOTAL	220		TOTAL	1,461		TOTAL	224

Source: ACLED 2018 version

Table 5.2: Coefficient of variance of Insurgency Activities

S/No	State	Frequency of insurgency	Average	STDEV	CV
1.	Study Area	1905	211.67	137.54	64.977
2.	Adamawa	220	24.4444	26.42857	108.12
3.	Borno	1461	162.333	100.865	62.13
4.	Yobe	224	24.8889	24.441	98.2

Source: Author's Computation, 2018

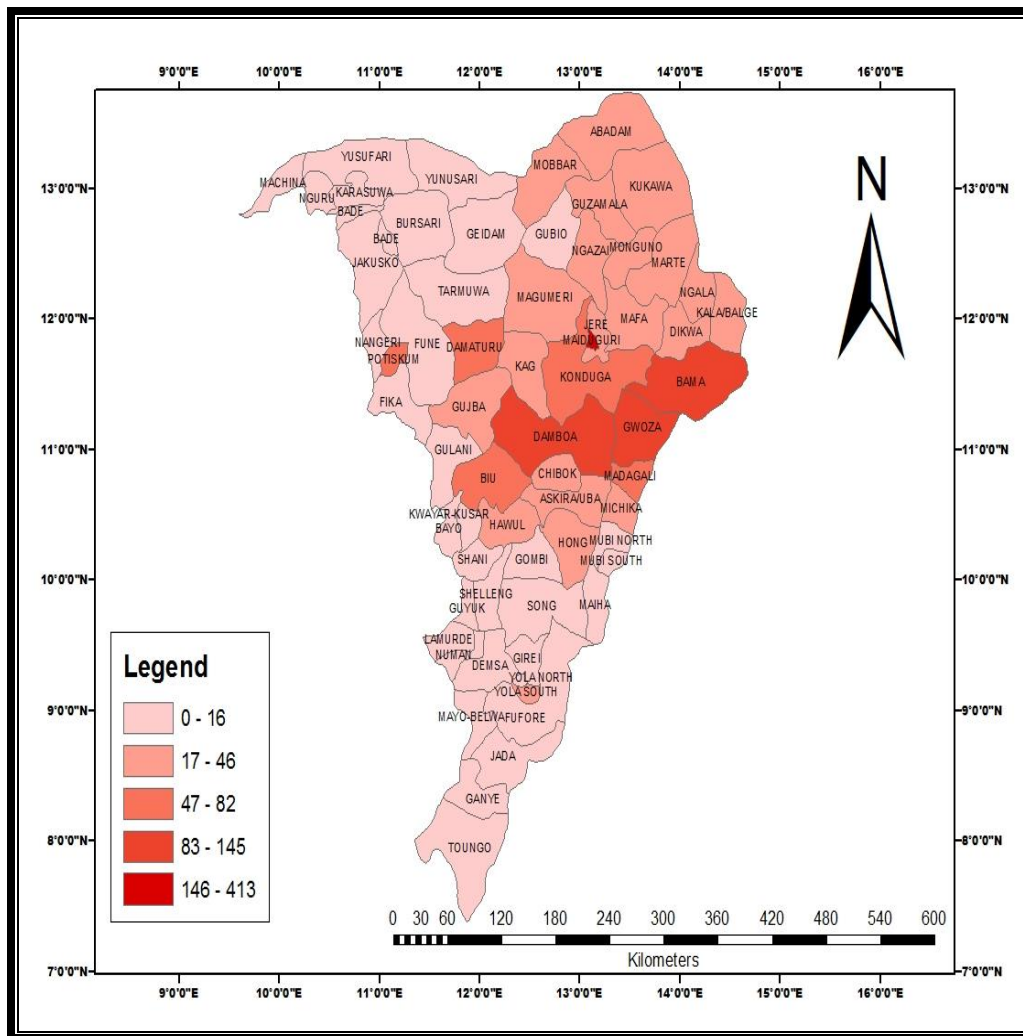


Figure 5.1: Spatial Pattern of Insurgency Activities in the Study Area (2009-2017)

Source: Author's Computation, 2018

5.3 Variation in the Spatial Pattern of Insurgency Activities

A detailed annual analysis was embarked on the states considered to show the spatial pattern of insurgency from 2009-2017. This was done in order to detect the various patterns that existed in the states considered so that adequate measures could be taken to counter the spread of insurgency activities in the area.

5.3.1 Adamawa State

The frequency of insurgency activities is presented in Table 5.3 which was used to analyze the spatial pattern of insurgence activities in Adamawa State from 2009-2017 as depicted in Figure 5.2 to Figure 5.8. The Northeastern part of the state experienced the highest insurgency activities in 2014 that ranges between 10-23 incidence. These are in places that include Hong, Madagali, and Michika. The lowest insurgency activities were in the central to the southern part of the state with between 0-3 incidence. These are in settlement like Numan, Demsa, Jada, Gieri, and Lamurde among others. The state exhibited the same spatial pattern throughout the period of the study with the exception of 2009 and 2010 which had no incidence of insurgency. However, the spatial distribution of insurgency in the state from the lowest to the highest varies from year to year. The high rate of insurgency activities within the Northeastern part of the state is attributed to its closeness to the border, which gave the insurgents easy escape route. These regions at that time (2013-2015) were under the control of insurgents which increases the incidence of insurgency activities. This indicates that areas in the Northeastern part of Adamawa State will experience more effects of insurgency like loss of lives and displacement of people than other parts of the state. The year 2016 and 2017 witnessed a low incidence in Adamawa State as a result of the movement of the Service Chief to the Northeastern Nigeria, coupled with the several Anti insurgency operations that took place during this period. Even with

the decline in insurgency in several other places, Madagali, Michika, and Hong still experienced high incidence. The computed insurgency pattern of Adamawa also agrees with the earlier study which revealed that insurgency activities in Adamawa State were mostly concentrated in the border towns (Ani, 2014).

Table 5.3: Frequency of Insurgency in Adamawa State (2009-2017)

<i>S/No</i>	<i>LGA</i>	<i>2009</i>	<i>2010</i>	<i>2011</i>	<i>2012</i>	<i>2013</i>	<i>2014</i>	<i>2015</i>	<i>2016</i>	<i>2017</i>	<i>Total</i>
1.	FUFORE	0	0	0	0	0	0	0	0	0	0
2.	GANYE	0	0	1	0	1	0	0	0	0	2
3.	GOMBI	0	0	2	0	0	6	5	1	1	15
4.	GUYUK	0	0	0	0	0	0	0	0	0	0
5.	HONG	0	0	0	11	2	12	9	0	2	36
6.	JADA	0	0	0	0	0	0	0	0	0	0
7.	SHELLENG	0	0	0	0	0	0	1	0	0	1
8.	DEMSA	0	0	0	0	0	0	0	1	1	2
9.	MADAGALI	0	0	0	1	1	29	21	7	23	82
10.	MAIHA	0	0	0	2	1	2	1	0	0	6
11.	MAYO-BELWA	0	0	0	0	0	0	0	0	0	0
12.	MICHIKA	0	0	0	0	1	13	9	0	0	23
13.	MUBI NORTH	0	0	0	2	0	11	2	0	1	16
14.	NUMAN	0	0	0	0	0	0	0	0	0	0
15.	SONG	0	0	0	0	2	0	0	0	0	2
16.	YOLA SOUTH	0	0	0	7	2	3	7	0	1	20
17.	MUBI SOUTH	0	0	0	0	0	1	1	0	0	2
18.	YOLA NORTH	0	0	0	2	2	0	1	1	0	6
19.	GIREI	0	0	0	0	1	2	0	0	0	3
20.	TOUNGO	0	0	0	0	0	2	0	0	1	3
21.	LAMURDE	0	0	0	1	0	0	0	0	0	1
	TOTAL	0	0	3	26	13	81	57	10	30	220

Source: ACLED 2018 version

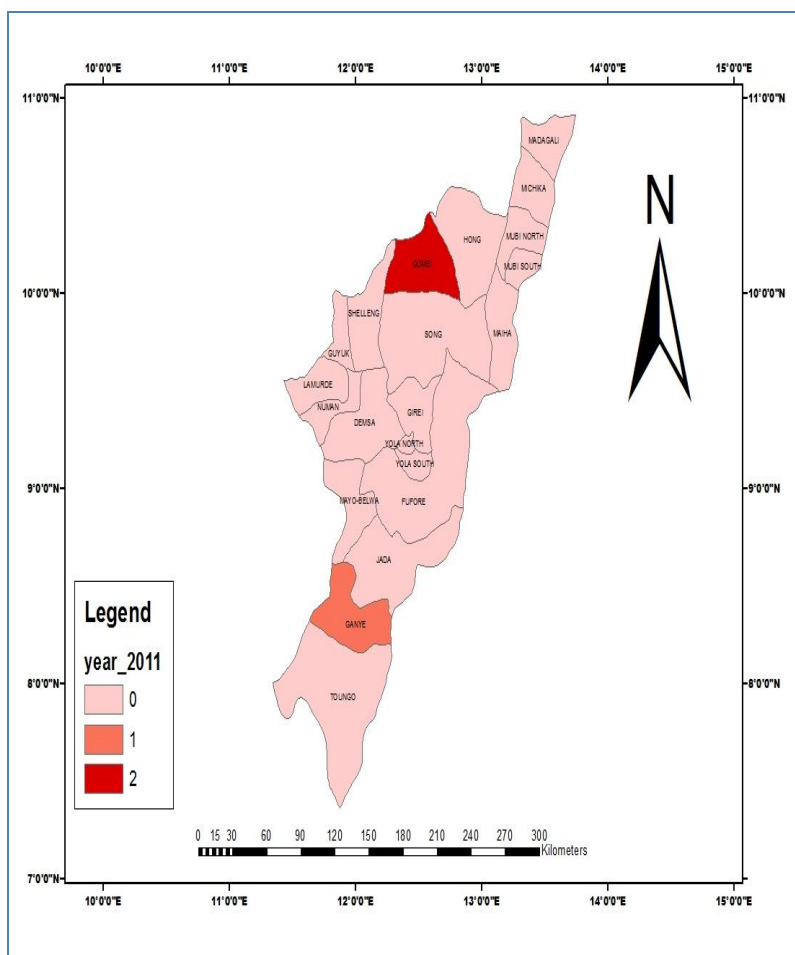


Figure 5.2: Intensity of Insurgency in Adamawa State (2011)

Source: Author's Computation, 2018

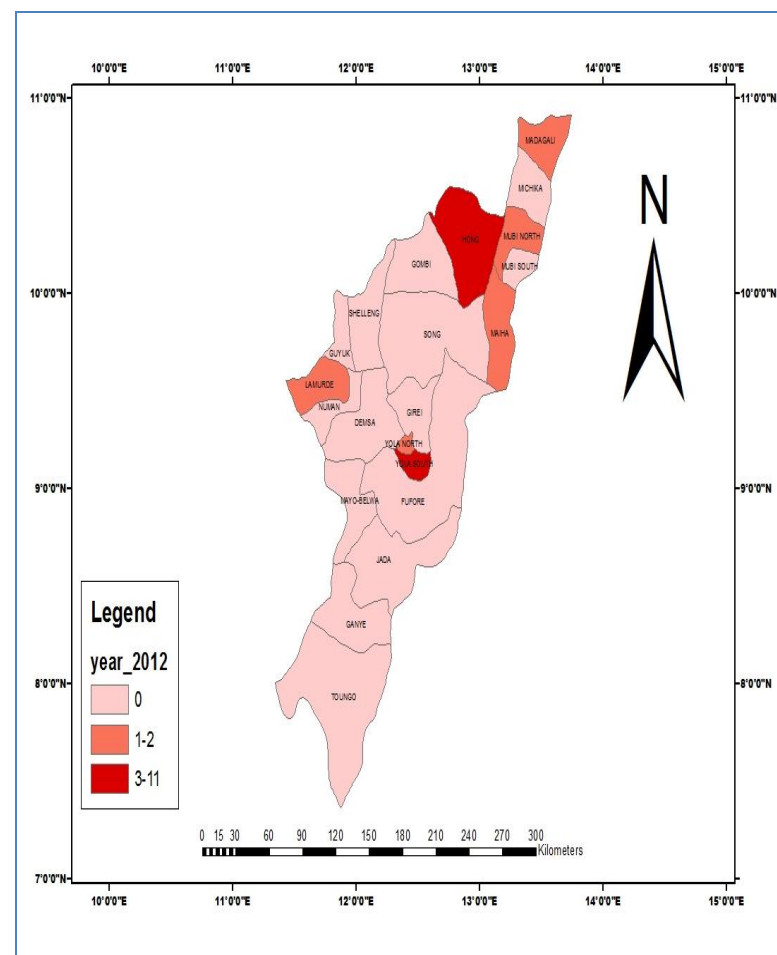


Figure 5.3: Intensity of Insurgency in Adamawa State (2012)

Source: Author's Computation, 2018

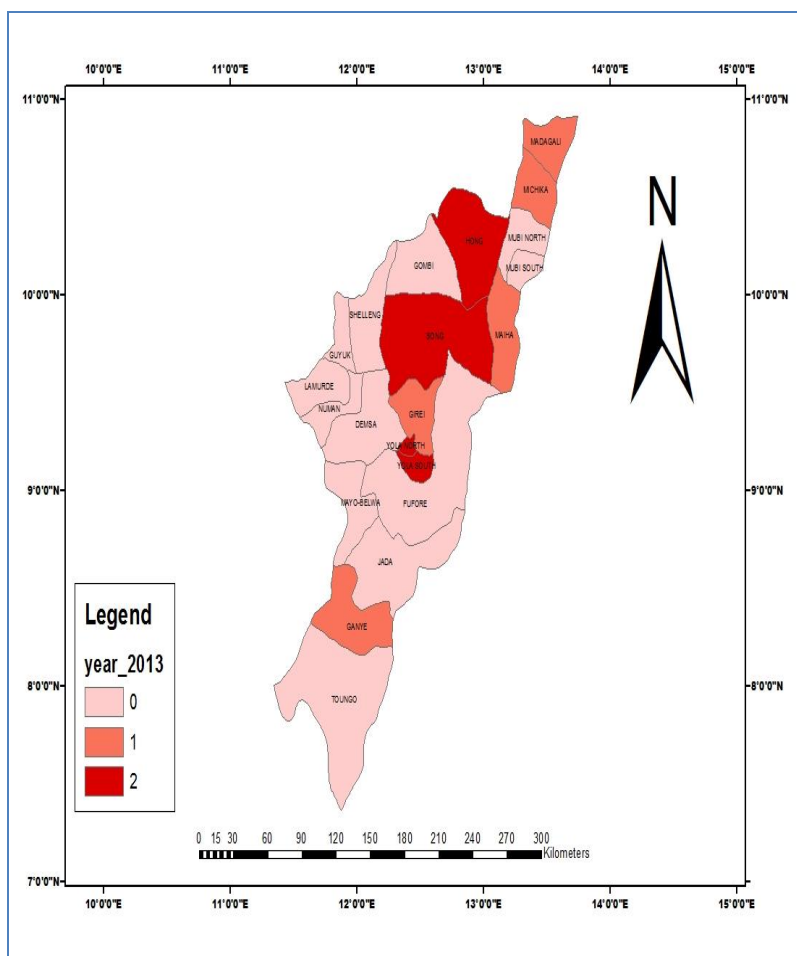


Figure 5.4: Intensity of Insurgency in Adamawa State (2013)

Source: Author's Computation, 2018

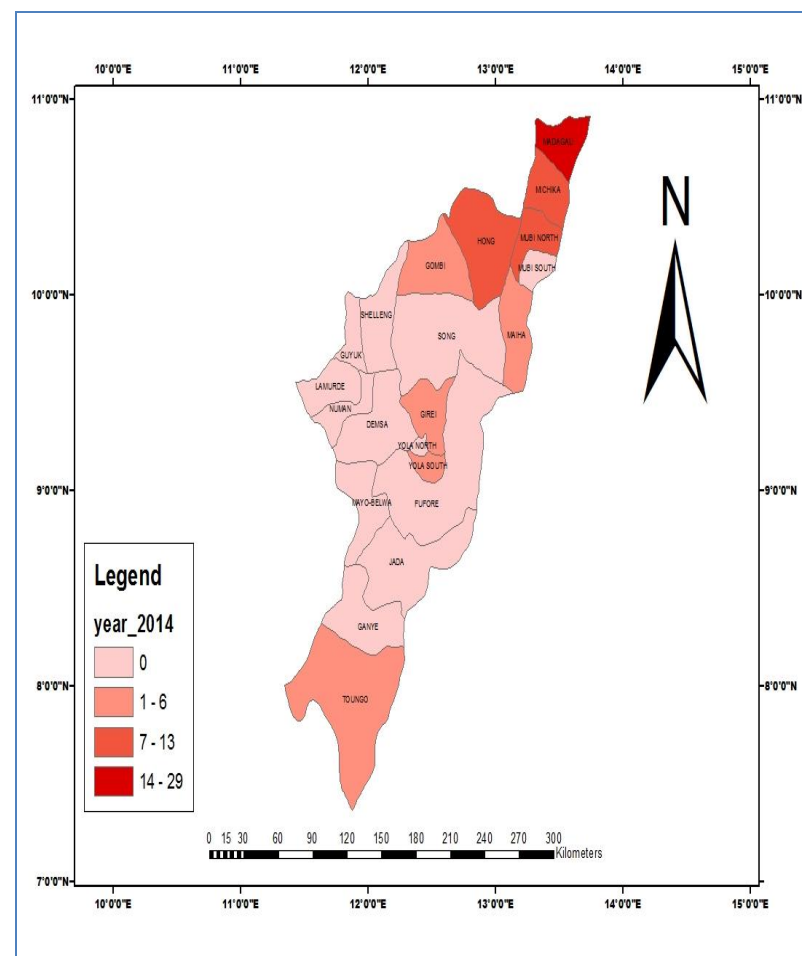


Figure 5.5: Intensity of Insurgency in Adamawa State (2014)

Source: Author's Computation, 2018

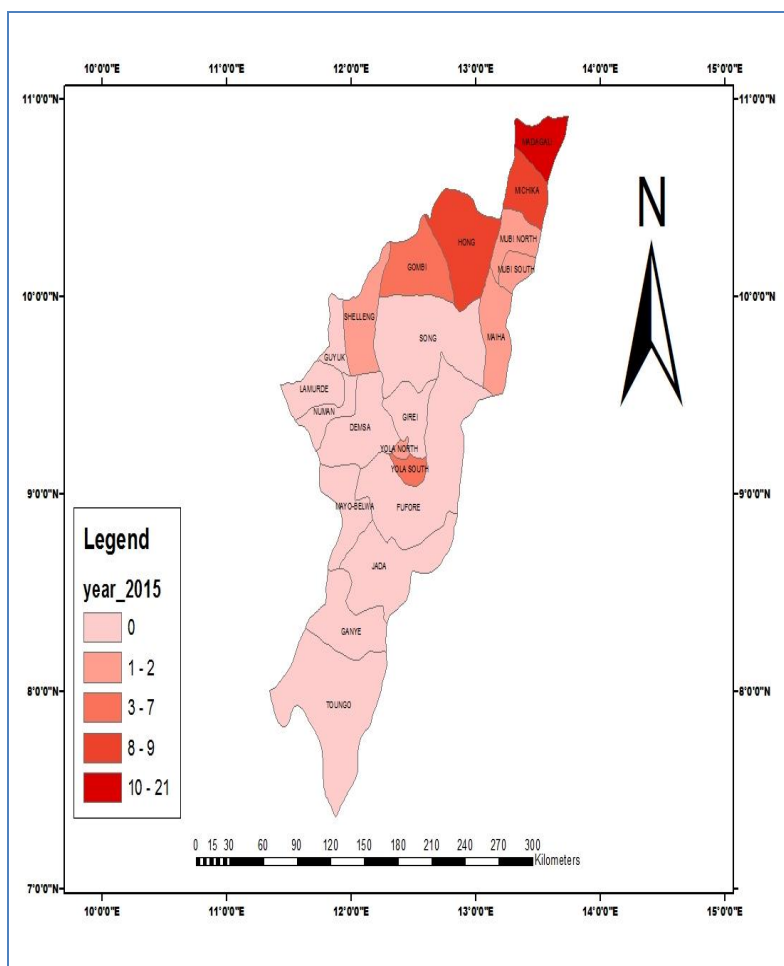


Figure 5.6: Intensity of Insurgency in Adamawa State (2015)

Source: Author's Computation, 2018

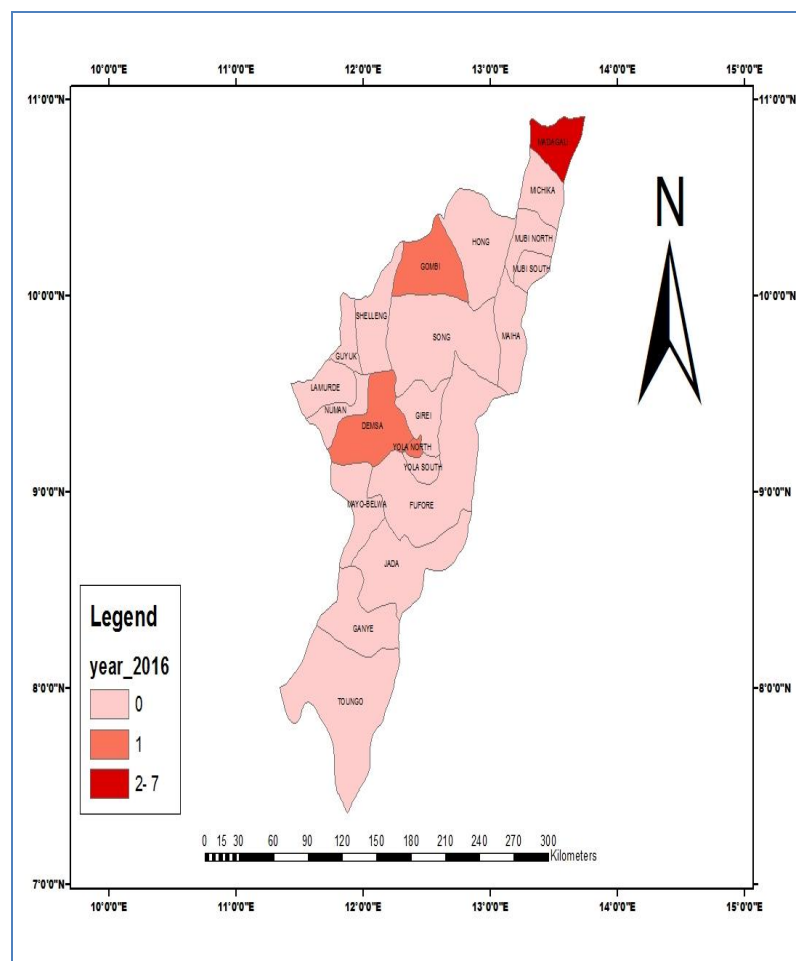


Figure 5.7: Intensity of Insurgency in Adamawa State (2016)

Source: Author's Computation, 2018

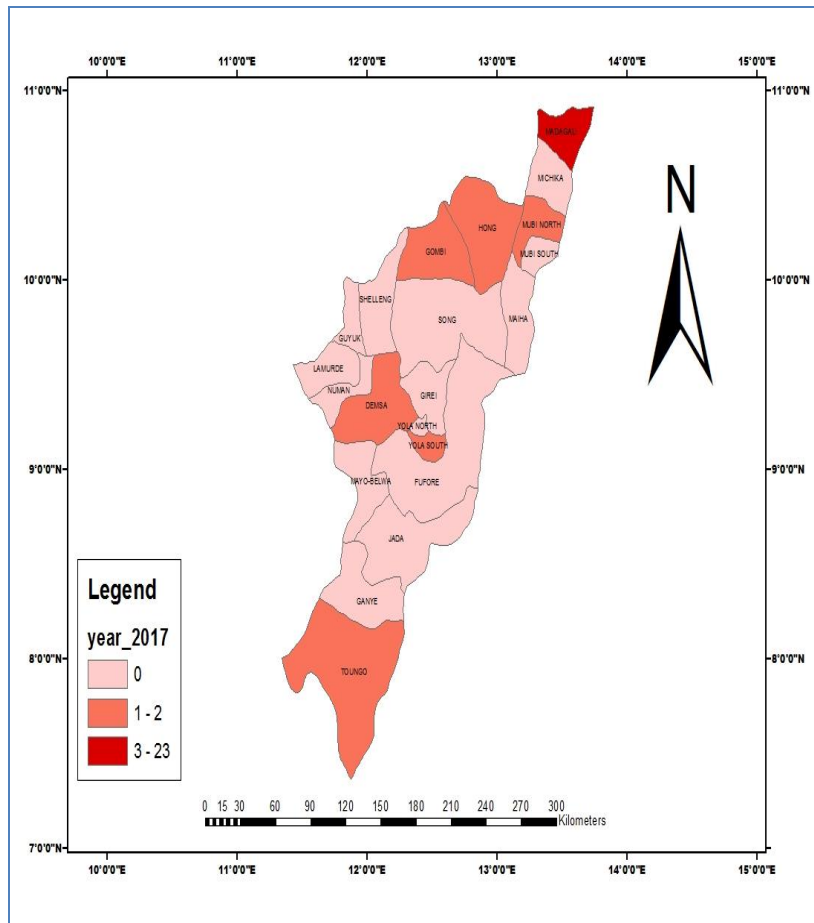


Figure 5.8: Intensity of Insurgency in Adamawa State (2017)

Source: Author's Computation, 2018

5.3.2 Borno State

Table 5.4 shows the frequency of insurgency activities in each of LGAs the State.

Table 5.4: Frequency of Insurgency in Borno State (2009-2017)

<i>S/No</i>	<i>LGA</i>	<i>2009</i>	<i>2010</i>	<i>2011</i>	<i>2012</i>	<i>2013</i>	<i>2014</i>	<i>2015</i>	<i>2016</i>	<i>2017</i>	<i>Total</i>
1.	ABADAM	0	0	0	0	2	3	8	5	5	23
2.	ASKIRA/UBA	0	0	0	3	4	11	16	5	6	45
3.	BAMA	0	2	0	6	17	23	46	37	12	143
4.	BAYO	0	0	0	0	0	0	0	0	0	0
5.	BIU	0	0	3	8	2	13	19	6	3	54
6.	CHIBOK	0	0	0	6	0	10	4	5	4	29
7.	DAMBOA	0	0	3	6	14	30	18	22	15	108
8.	DIKWA	0	0	0	1	2	3	6	11	6	29
9.	GUBIO	0	0	0	2	0	1	2	0	0	5
10.	GUZAMALA	0	0	0	2	2	8	3	5	1	21
11.	GWOZA	0	0	0	0	27	33	23	38	24	145
12.	HAWUL	0	0	0	2	3	19	7	1	3	35
13.	JERE	0	0	0	1	1	2	1	3	11	19
14.	KAG	0	0	0	1	6	6	11	2	2	28
15.	KALA/BALGE	0	0	0	1	0	0	4	12	7	24
16.	KONDUGA	0	0	0	4	8	18	15	6	25	76
17.	KUKAWA	0	0	0	0	8	2	15	7	6	38
	KWAYAR-										
18.	KUSAR	0	0	0	0	0	0	0	0	1	1
19.	MAFA	0	0	1	1	1	10	7	12	10	42
20.	MAGUMERI	0	0	0	11	1	6	6	0	10	34
21.	MAIDUGURI	8	22	82	118	58	17	40	36	32	413
22.	MOBBAR	0	0	0	2	2	4	11	4	3	26
23.	MONGUNO	0	0	0	1	3	2	10	2	4	22
24.	MARTE	0	0	0	1	2	6	10	3	2	24
25.	NGALA	0	0	0	4	12	10	10	7	3	46
26.	NGAZAI	0	0	0	0	4	0	11	3	6	24
27.	SHANI	0	0	2	0	0	2	2	1	0	7
	TOTAL	8	24	91	181	179	239	305	233	201	1461

Source: ACLED 2018 version

The result revealed a concentration of the insurgency activities in the central part of Borno State as shown in Figure 5.9 to 5.17. Maiduguri remains an important hub for insurgency activities throughout the entire study period as this area was regarded as the home of insurgency with between 8-413 incidence of insurgency activities. The insurgency at the earlier stage was characterized by robbery and violence against those who were not in line with their ideology. The spatial distribution of insurgency increases every year from 2009 to 2015 with the central part of the state experiencing the highest insurgency throughout this period. For example, Maiduguri, Gwoza, Kunduga and Bama have the highest incidence ranging between 5-420 attacks. The high rate of insurgency experienced in these areas was as a result of the presence of hideouts, understanding religion knowledge, and porosity of the borders. The result was similar to the earlier study of Sadau, (2017) who pointed out that Maiduguri, Konduga and Bama were faced with high activities of insurgency. The year 2016 and 2017 revealed a different pattern of low insurgency activities from what was observed in other years in Borno State. The change in the pattern of insurgency during this period was attributed to the high security personnel deployed in the State, movement of the high command to Borno State, and the establishment of more security units; thus leaving the insurgents in uncoordinated attacks in the area. As a matter of fact, the deployment of more troops to the state pushes the insurgents towards the border areas (Danbazau, 2016).

From the spatial pattern of insurgency activities in Borno State, the pattern of its occurrence was a non-random pattern and was influenced by the element of insurgent actions. The result revealed a progression and a shift from the central part to the south eastern part of the State with Gwoza, Bama, and Damboa forming a cluster of the activities.

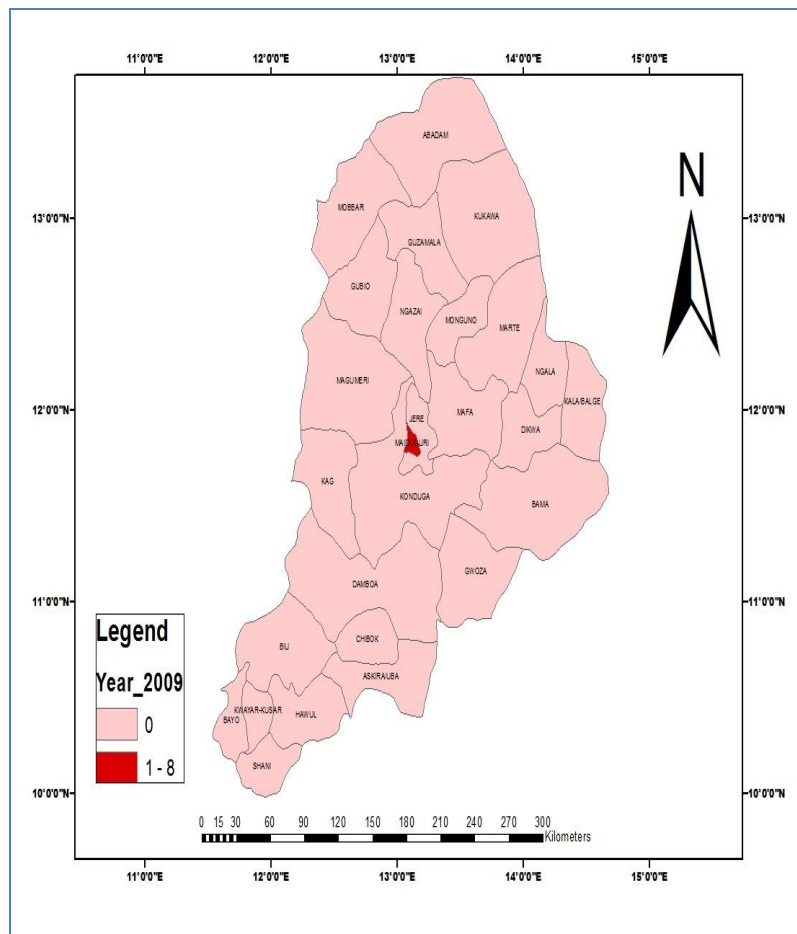


Figure 5.9: Intensity of Insurgency in Borno State (2009)

Source: Author's Computation, 2018

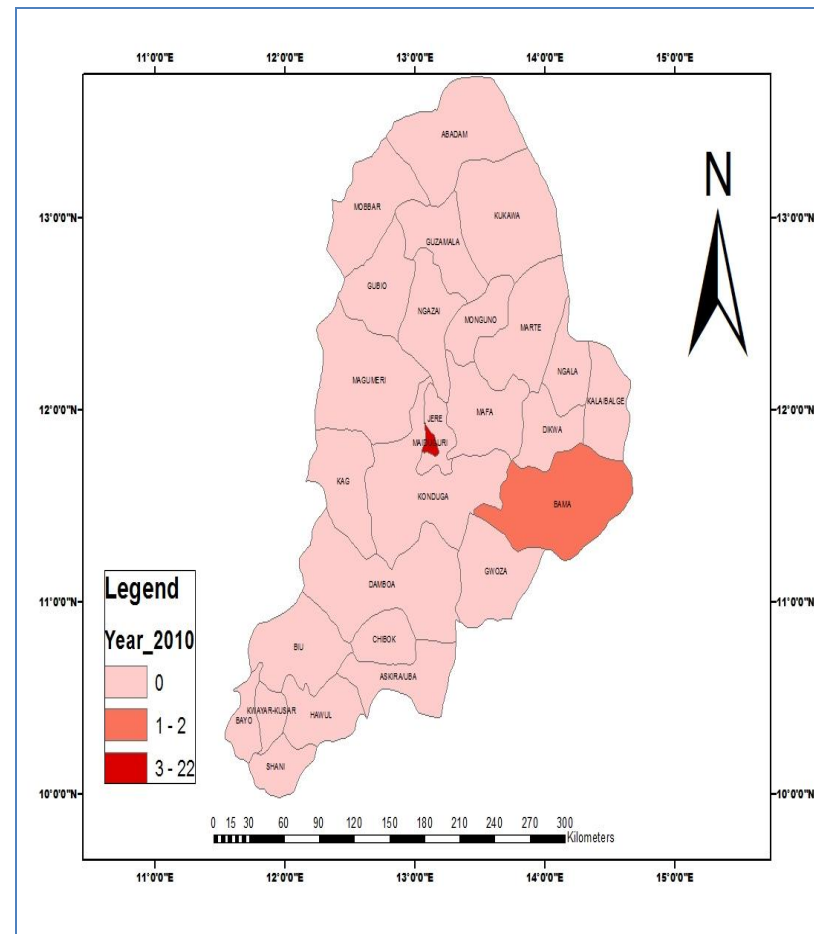


Figure 5.10: Intensity of Insurgency in Borno State (2010)

Source: Author's Computation, 2018

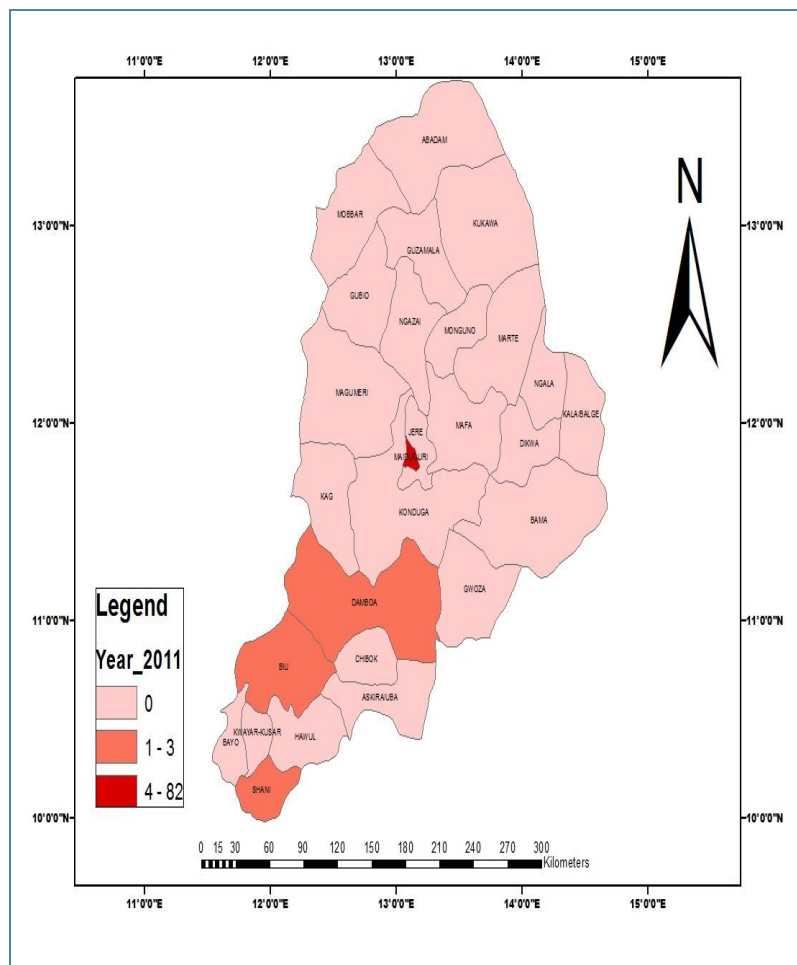


Figure 5.11: Intensity of Insurgency in Borno State (2011)

Source: Author's Computation, 2018

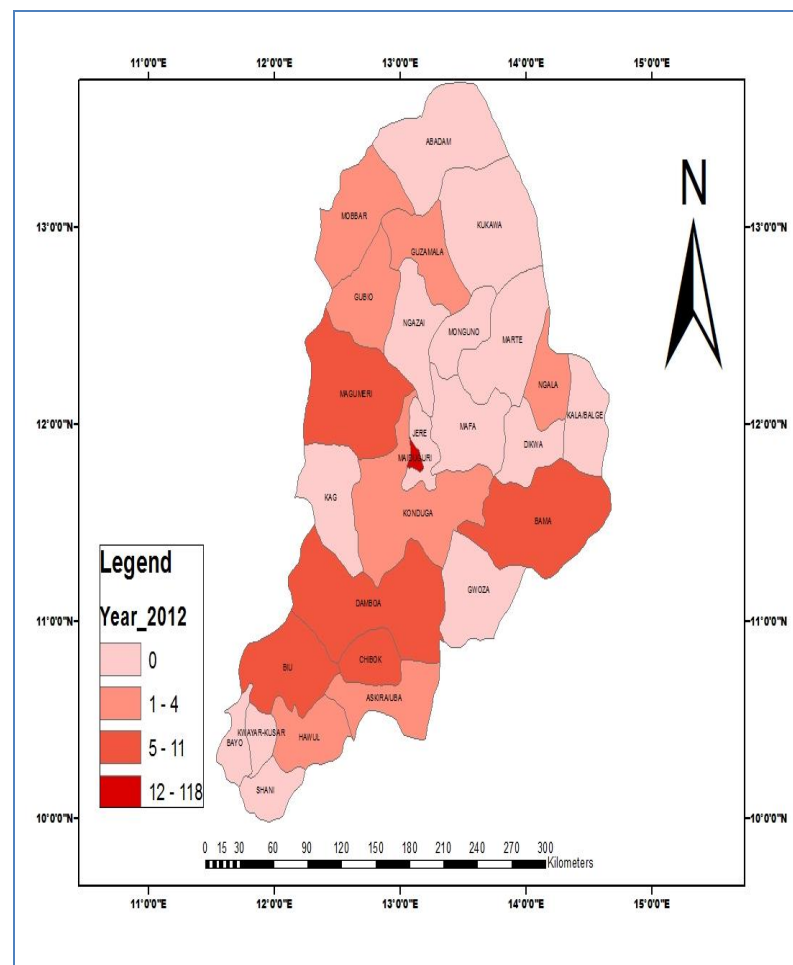


Figure 5.12: Intensity of Insurgency in Borno State (2012)

Source: Author's Computation, 2018

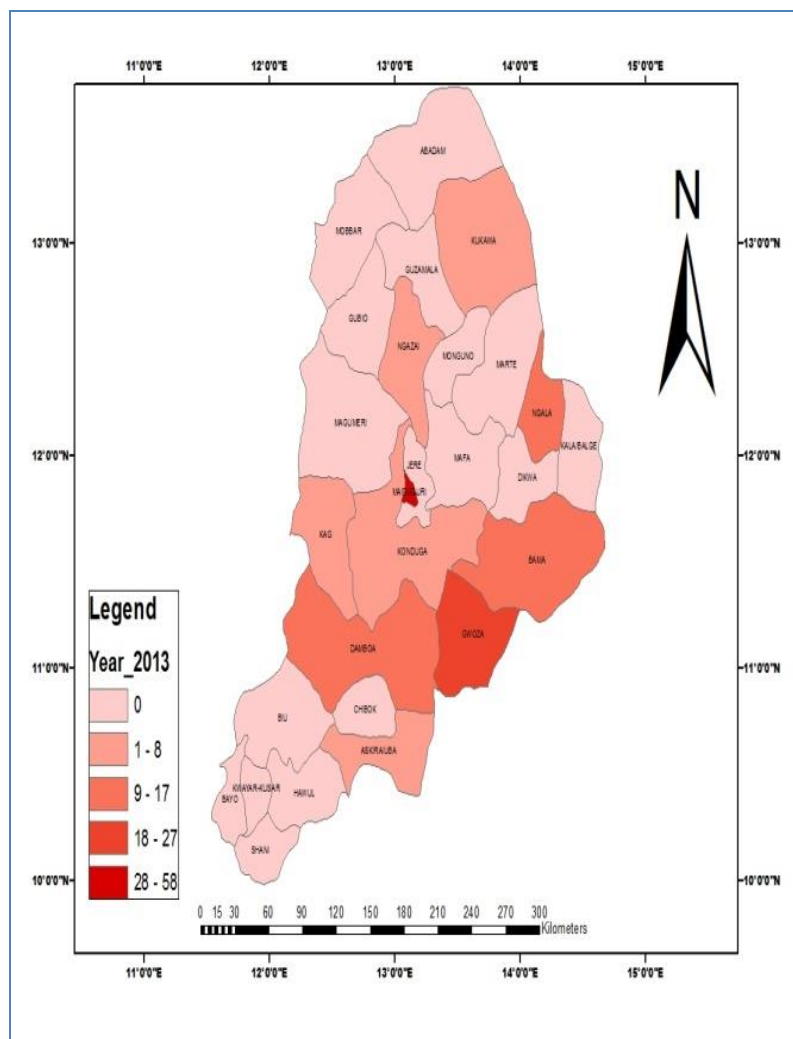


Figure 5.13: Intensity of Insurgency in Borno State (2013)

Source: Author's Computation, 2018

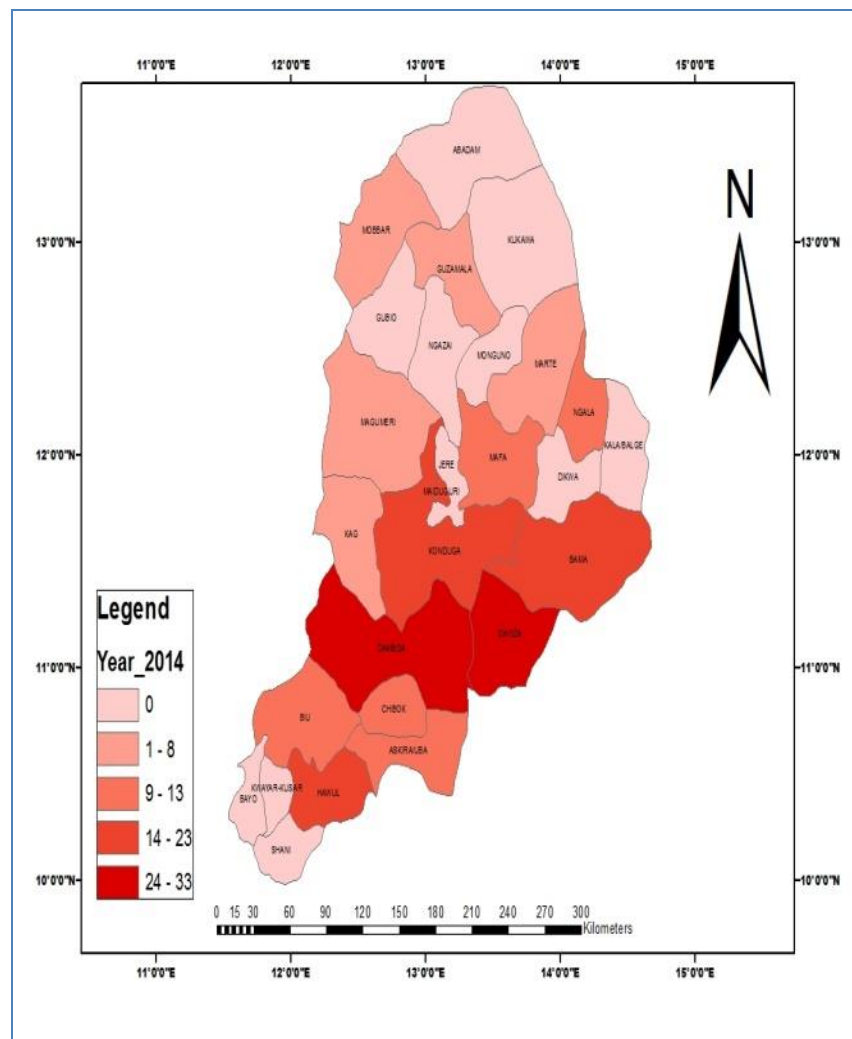


Figure 5.14: Intensity of Insurgency in Borno State (2014)

Source: Author's Computation, 2018

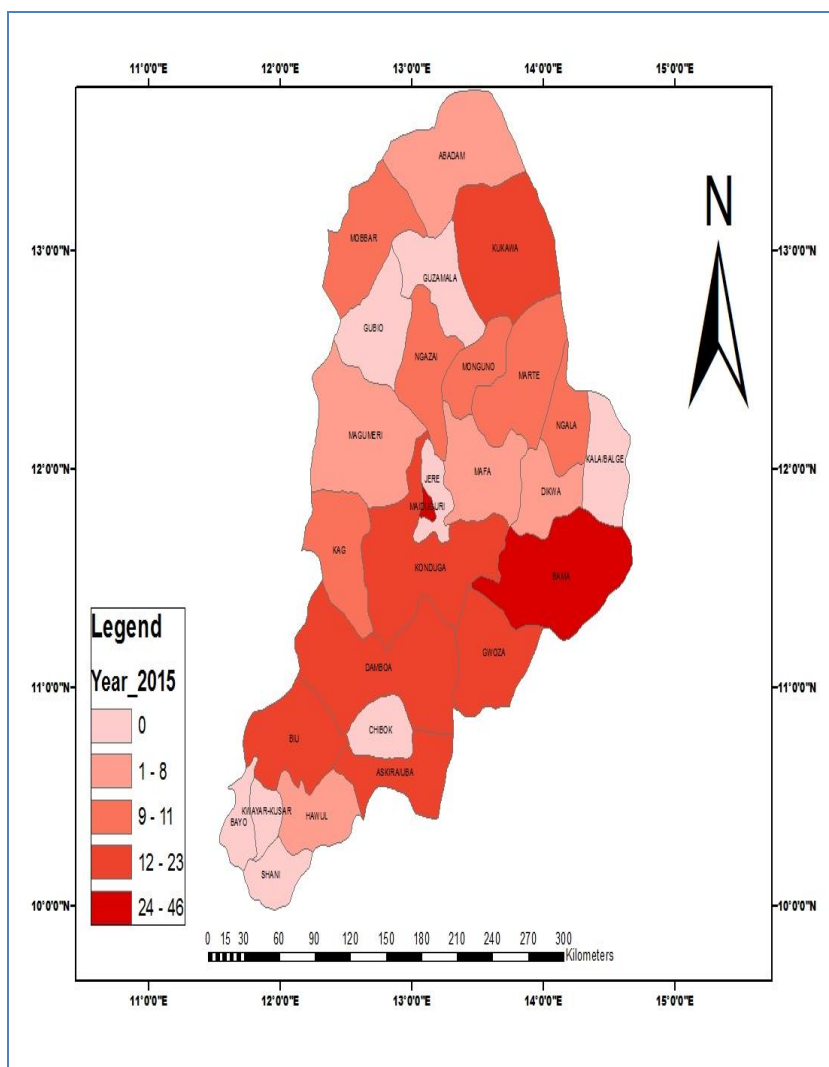


Figure 5.15: Intensity of Insurgency in Borno State (2015)

Source: Author's Computation, 2018

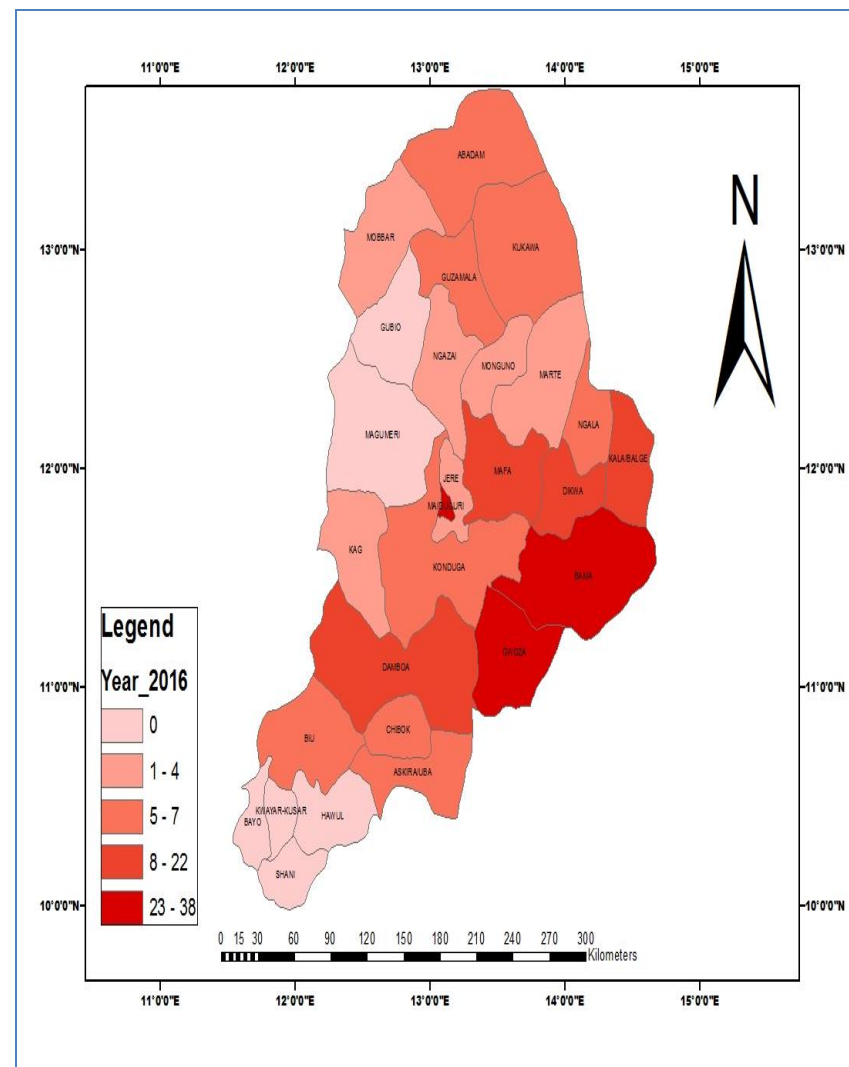


Figure 5.16: Intensity of Insurgency in Borno State (2016)

Source: Author's Computation, 2018

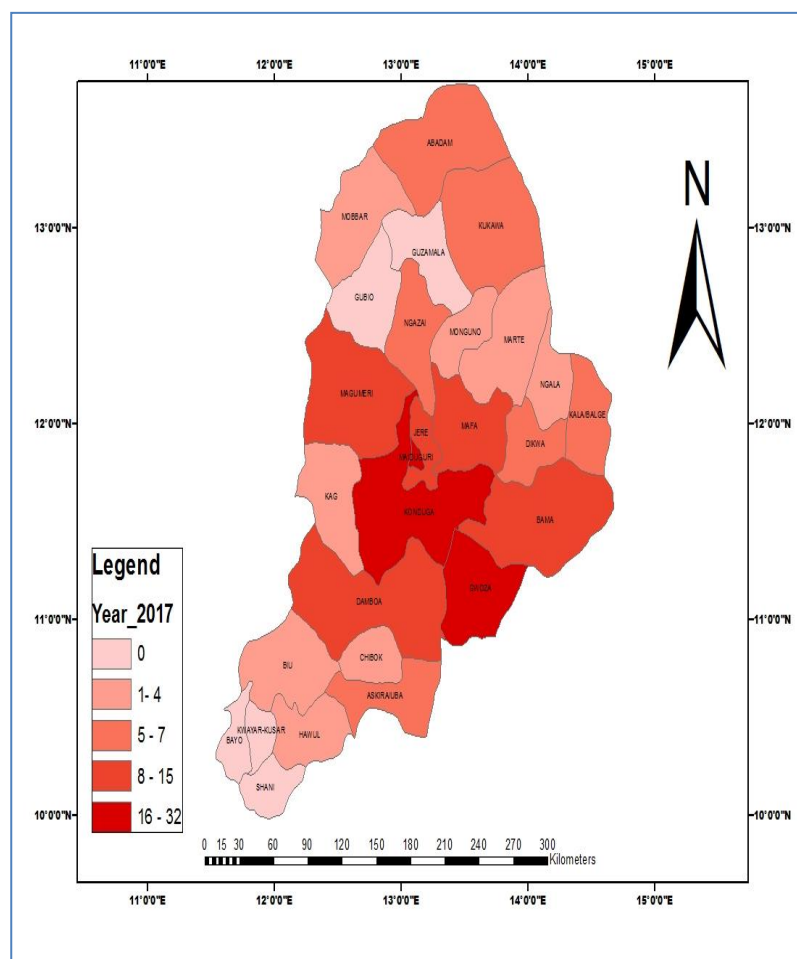


Figure 5.17: Intensity of Insurgency in Borno State (2017)

Source: Author's Computation, 2018

5.3.3 Yobe State

Table 5.5 indicates the frequency of insurgency in Yobe State from which spatial analysis was analyzed.

Table 5.5: Frequency of Insurgency in Yobe State (2009-2017)

<i>S/No</i>	<i>LGA</i>	<i>2009</i>	<i>2010</i>	<i>2011</i>	<i>2012</i>	<i>2013</i>	<i>2014</i>	<i>2015</i>	<i>2016</i>	<i>2017</i>	<i>Total</i>
1.	BADE	0	0	0	2	1	0	0	0	0	3
2.	BURSARI	0	0	0	0	0	0	0	0	0	0
3.	DAMATURU	1	2	5	35	8	4	9	3	5	72
4.	FIKA	0	0	0	1	0	0	4	0	0	5
5.	FUNE	0	0	0	3	1	2	0	0	0	6
6.	GEIDAM	0	0	1	1	2	5	3	0	0	12
7.	GUJBA	0	0	0	2	5	11	10	1	7	36
8.	GULANI	0	1	0	0	2	3	3	2	0	11
9.	JAKUSKO	0	0	0	0	0	0	1	0	3	4
10.	KARASUWA	0	1	0	0	0	0	0	0	0	1
11.	MACHINA	0	0	0	0	0	0	0	0	0	0
12.	NANGERI	3	0	0	2	0	0	0	0	0	5
13.	NGURU	0	0	0	0	0	0	0	0	0	0
14.	POTISKUM	2	0	0	33	6	7	12	2	0	62
15.	TARMUWA	0	0	0	0	1	0	1	2	0	4
16.	YUNUSARI	0	0	0	0	0	0	1	0	0	1
17.	YUSUFARI	0	0	0	0	0	0	0	0	2	2
	TOTAL	6	4	6	79	26	32	44	10	17	224

Source: ACLED 2018 version

The result revealed a focus of insurgency in the Southern part of the state throughout the study period in Damaturu, Gujba, Potiskum, and Fune with between 5-72 incidence of insurgency, while the lowest was in the Northern part of the state that ranges between 2-16 insurgency incidence (Figure 5.18 to 5.26). The spatial distribution of insurgency varies from

year to year. For example, year 2012 witnessed the highest insurgency attacks 79. This might not be unconnected to the fact that there was insufficient information about their hideouts and their activities in the area. The lowest insurgency was experienced in 2010 with about four incidence. The result agrees with the findings of Sadau, (2017) who pointed out that most of the insurgency in Yobe State was concentrated in Damaturu, Potiskum, and Gujba. The decrease in the frequency of insurgency from 2015 was associated with the deployment of more security personnel by the Muhammed Buhari administration to fight the insurgents. This greatly reduced the level of its occurrence in 2016 and 2017. Areas that experienced the incidence were very few, and even those affected were minimal in terms of its frequency compared to the year 2011-2015. The analysis of the spatial pattern of insurgency activities in Yobe State revealed a cluster pattern. The shift of the pattern from the central part to the southern part of the state was as a result of security presence in the counter insurgency activities.

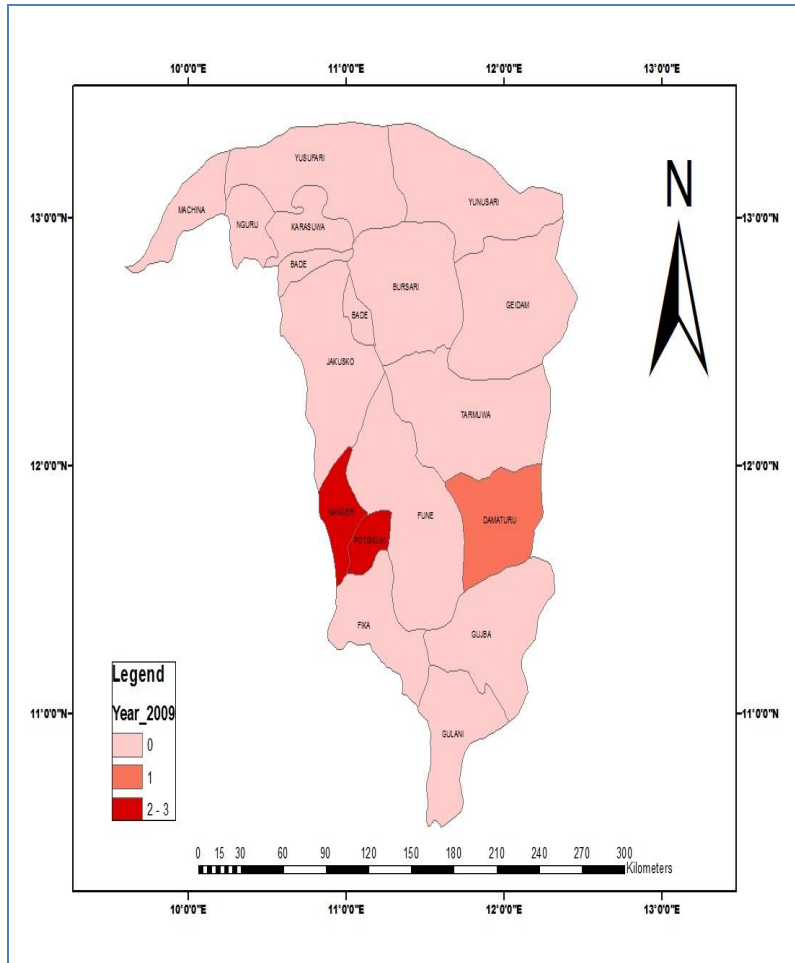


Figure 5.18: Intensity of Insurgency in Yobe State (2009)

Source: Author's Computation, 2018

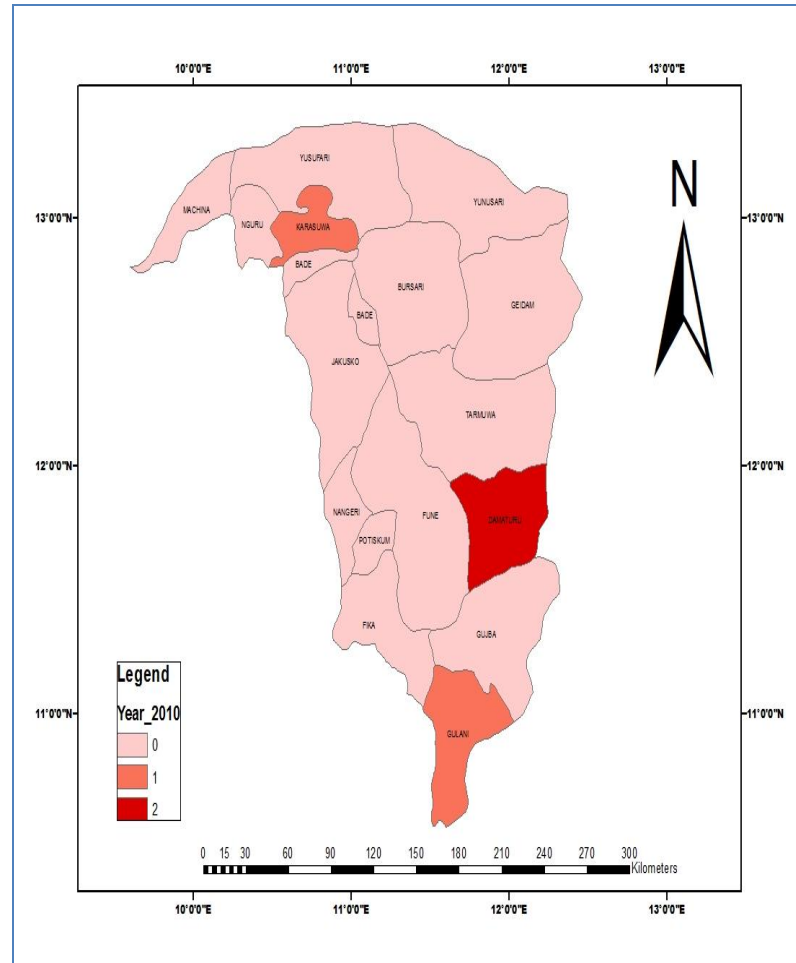


Figure 5.19: Intensity of Insurgency in Yobe State (2010)

Source: Author's Computation, 2018

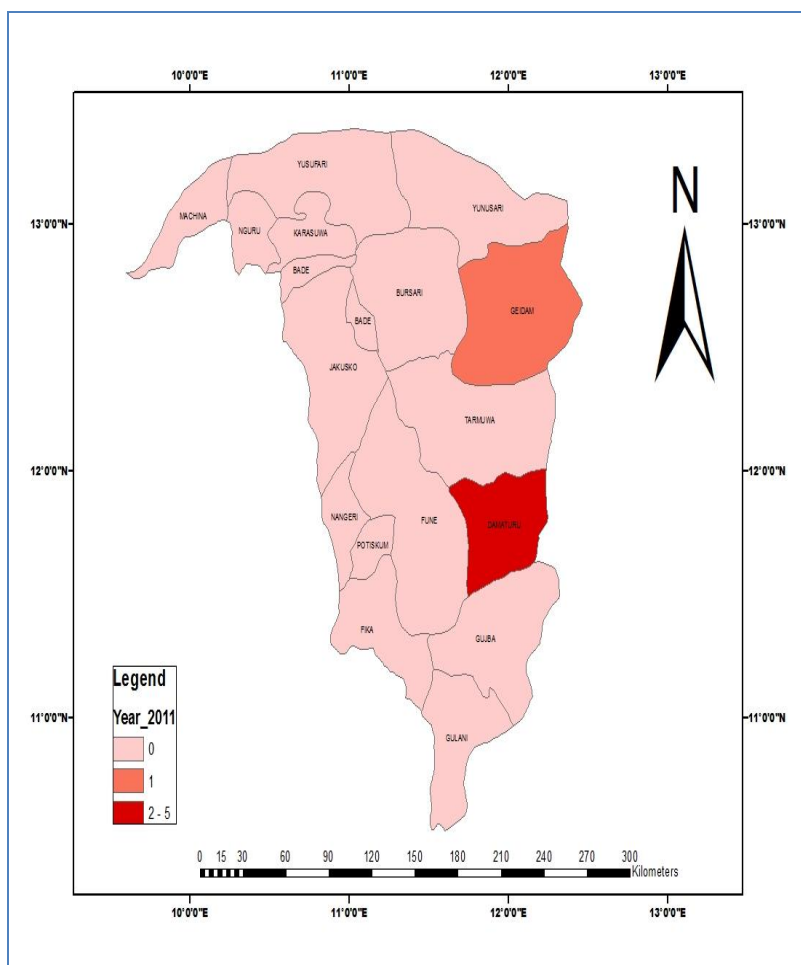


Figure 5.20: Intensity of Insurgency in Yobe State (2011)

Source: Author's Computation, 2018

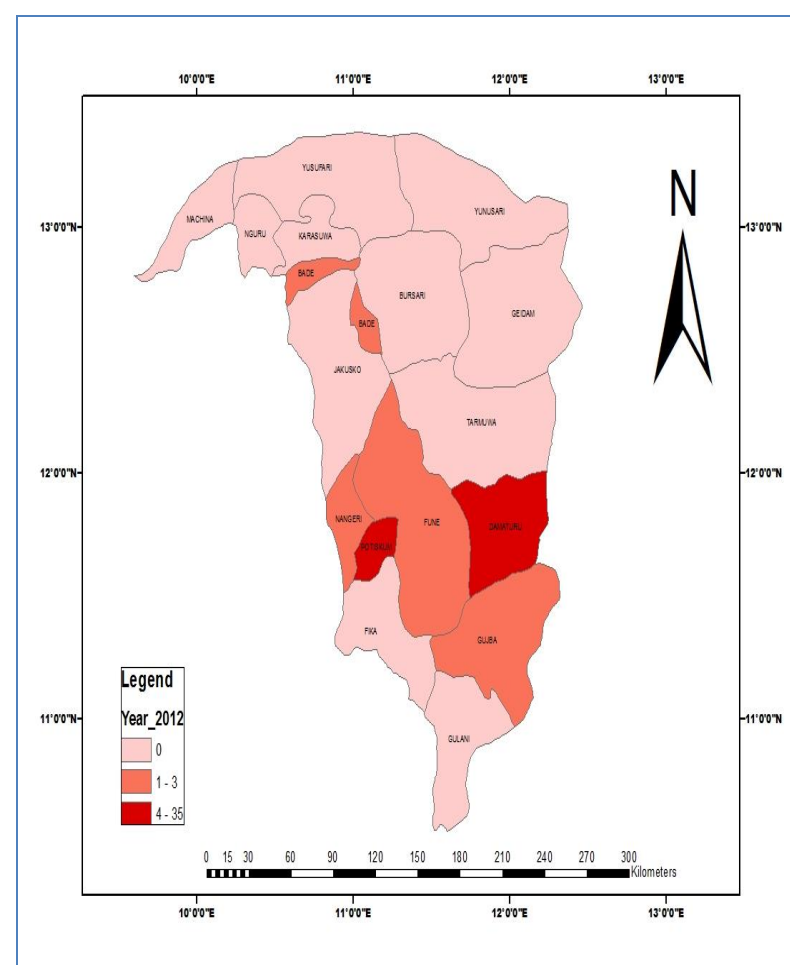


Figure 5.21: Intensity of Insurgency in Yobe State (2012)

Source: Author's Computation, 2018

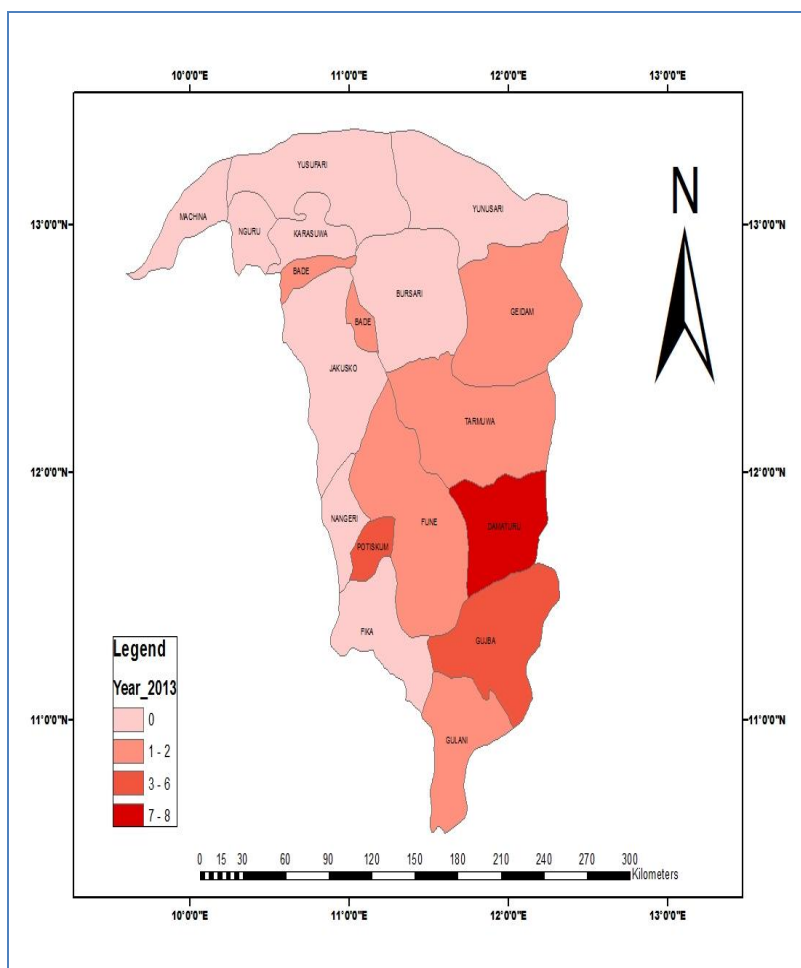


Figure 5.22: Intensity of Insurgency in Yobe State (2013)

Source: Author's Computation, 2018

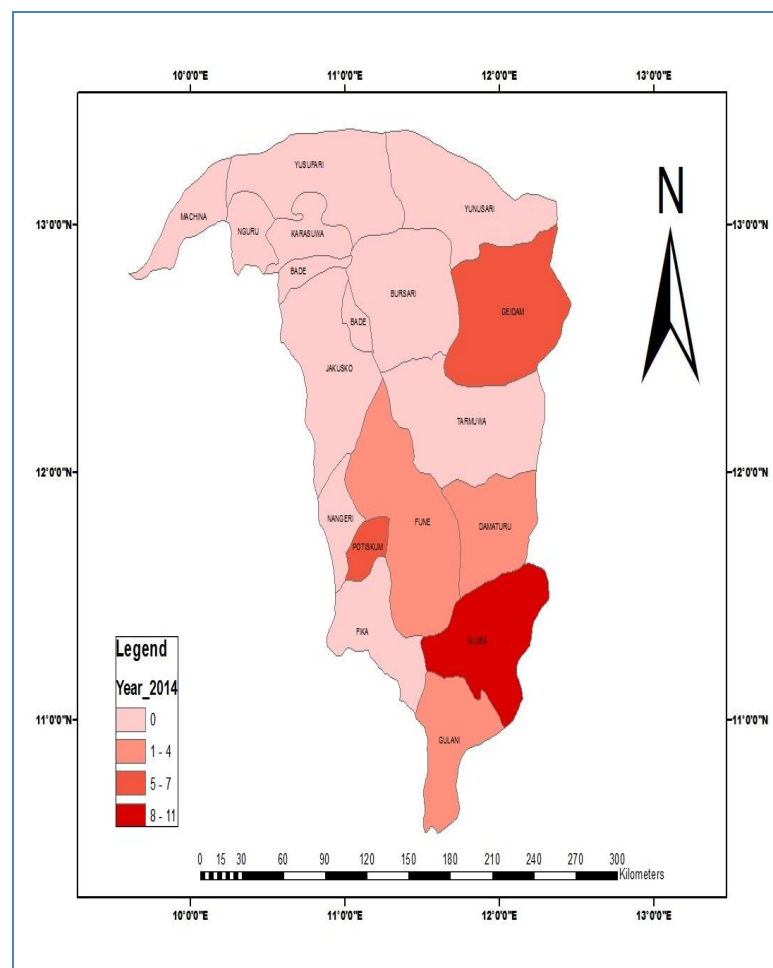


Figure 5.23: Intensity of Insurgency in Yobe State (2014)

Source: Author's Computation, 2018

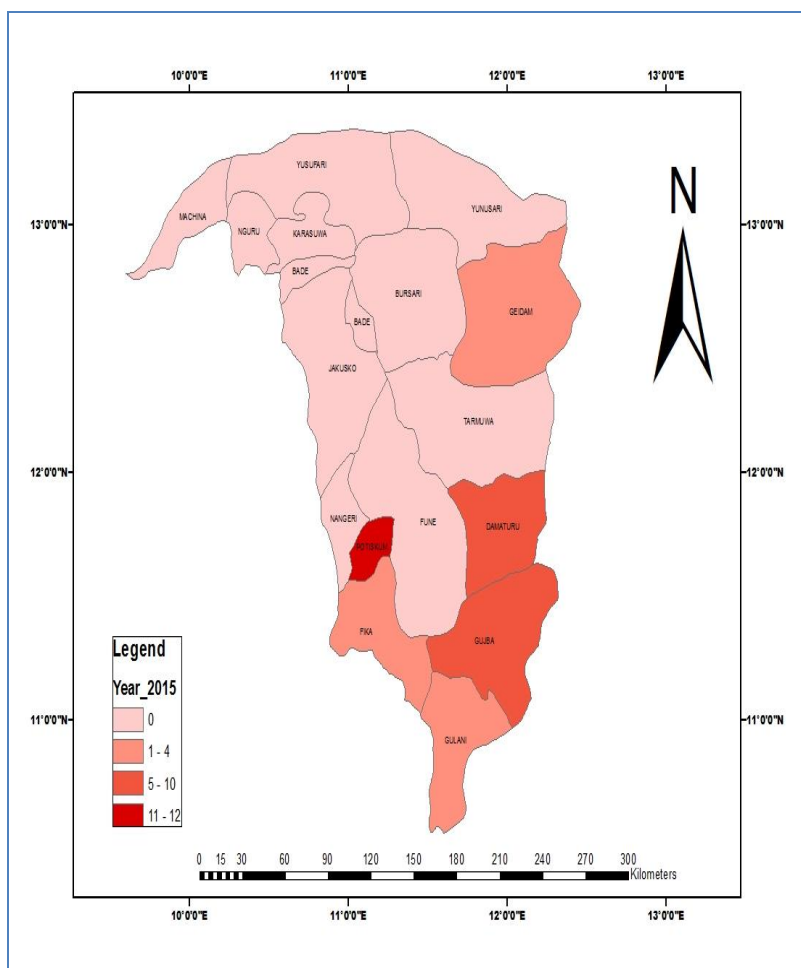


Figure 5.24: Intensity of Insurgency in Yobe State (2015)

Source: Author's Computation, 2018

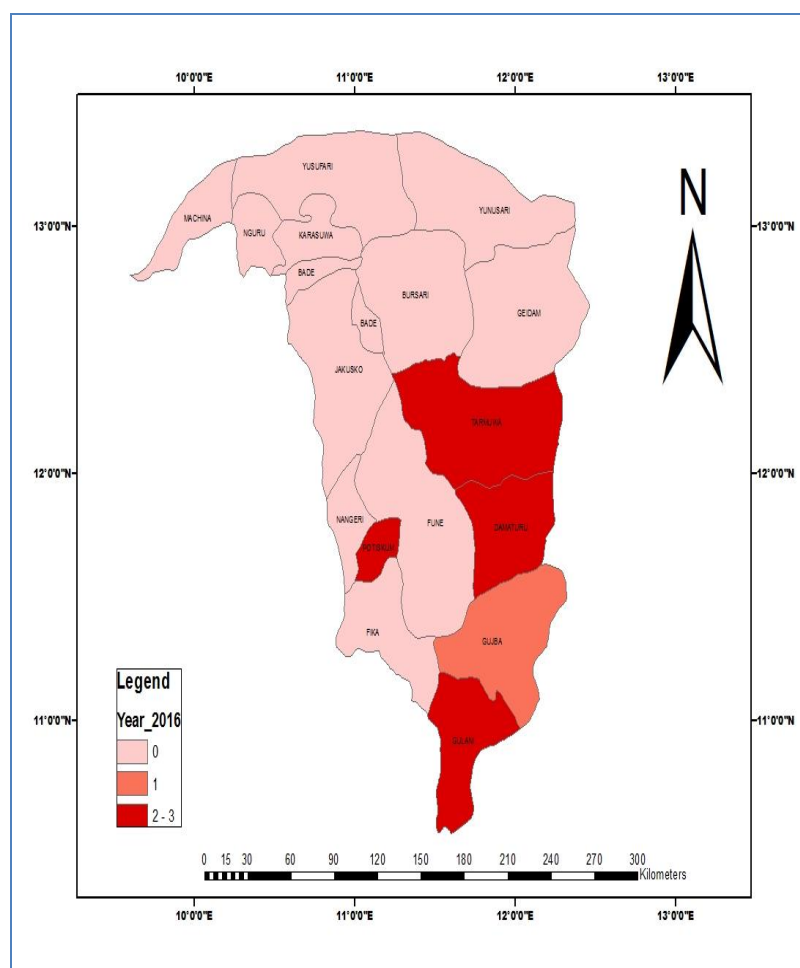


Figure 5.25: Intensity of Insurgency in Yobe State (2016)

Source: Author's Computation, 2018

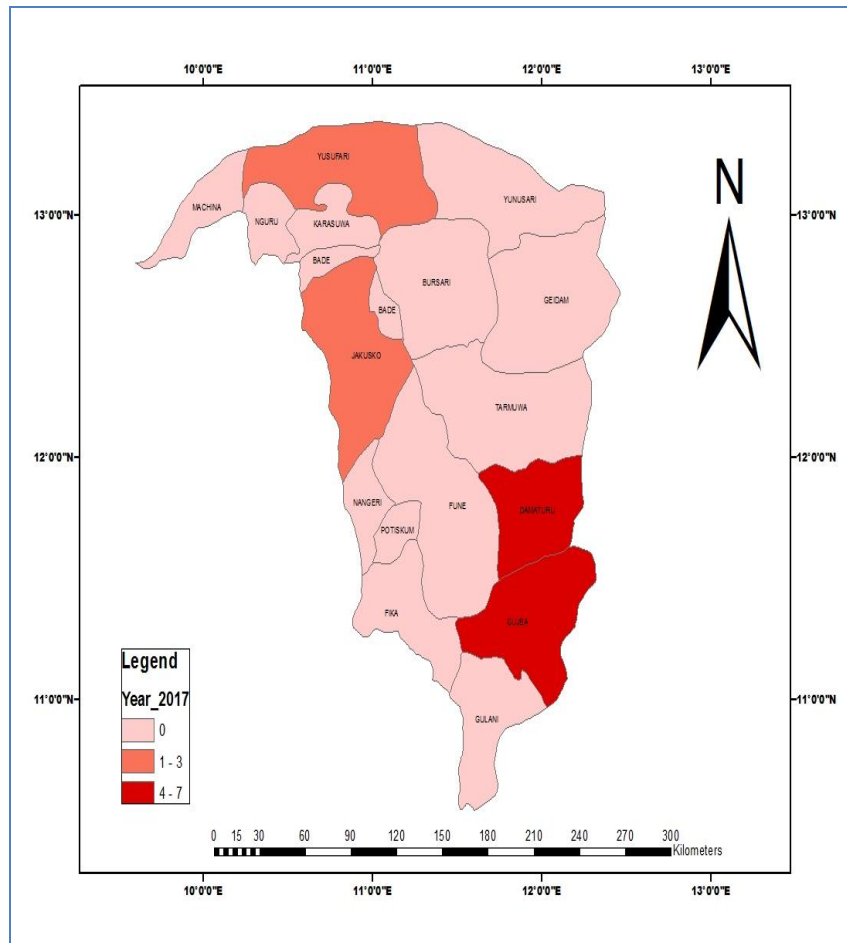


Figure 5.26: Intensity of Insurgency in Yobe State (2017)

Source: Author's Computation, 2018

5.4 Temporal (Trend) Pattern of Insurgency Activities in the Study Area

The yearly frequency of insurgency activities (Table 5.6) was utilized to show the trend of insurgency in the state..

Table 5.6: Yearly Frequency of Insurgency Activities in the Study Area

<i>Sno</i>	<i>Years</i>	<i>Frequency</i>	<i>Percentage</i>
1.	2009	14	0.73%
2.	2010	28	1.47%
3.	2011	100	5.25%
4.	2012	286	15.01%
5.	2013	218	11.44%
6.	2014	352	18.48%
7.	2015	406	21.31%
8.	2016	253	13.28%
9.	2017	248	13.02%
Total		1905	100%

Source: Author's Computation, 2018

The result of the trend analysis revealed a statistically significant positive trend in insurgency for the period of study (See Figure 5.27). This increase was attributed to the hit-and-run methods earlier adopted by the insurgents on those that went against their ideology. The porosity of the borders, presence of hideouts for insurgents, poverty level, and unemployment were seen as factors that encouraged insurgency in the study area. However, the declaration of the state of emergency in 2012 provided opportunity for the deployment of more security

personnel in the area to discourage insurgency. This action led to the decrease of the activities in 2013 in the area, but increased in 2014 to early 2015. The increase of the activities was as a result of the pulling out of security agencies from the study area. The insurgency activities decreased from 2015 to 2017 as a result of the relocation of the service chiefs to the area and also the establishment of more security units to counter insurgency. The result further showed that there was a tendency that the activity might increase in the near future if adequate measures are not taken. Also from the analysis, the frequency of insurgency showed an increasing rate of 38 occurrences per year during the period of study. The R-square statistic shows that the model as fitted explained 58% variability in frequency of insurgency activities in the study area.

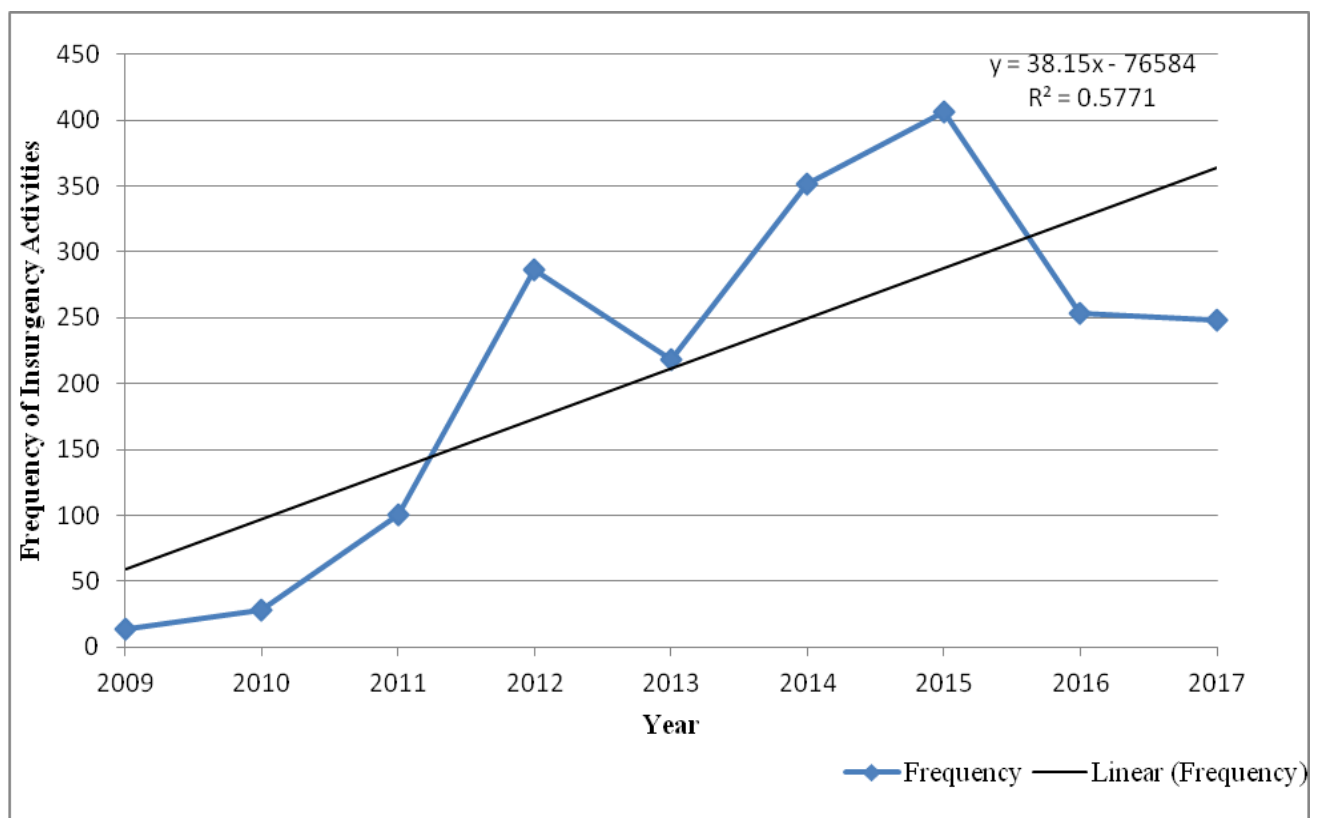


Figure 5.27: Temporal Analysis of Insurgency Activities in the Study Area (2009-2017)

Source: Author's Computation, 2018

5.5 Variation in the Temporal Analysis of Insurgency Activities

A detailed analysis on the temporal analysis of insurgency activities was analyzed. This was to show the differences in the level of increase or decrease of the insurgency in Adamawa, Borno, and Yobe State.

5.5.1 Adamawa State

The observed degree in frequency and percentage of insurgency activities in Adamawa are as presented in Table 5.5. This revealed that 2009 and 2010 experienced no incidence of insurgency activities. However, the first insurgency incidence was in 2011. The insurgency activities in 2011 paved way for the gradual increase in 2012 with twenty-six insurgency incidence. The increase in 2014 was associated with the frequent incidence of the insurgency coupled with the capturing of Madagali and its environs by the insurgents. As the general election of 2015 was approaching the activities decreased in the State because more security personnel were mobilized to the area. The insurgent activities declined further in 2016. The reduction can be attributed to the counter insurgency operations carried out by the security agencies in the area. However, the operation could not be sustained in some parts of the State which provided an avenue for an increase in the activities in 2017.

Table 5.7: Yearly Frequency of Insurgency Activities in Adamawa State

<i>Sno</i>	<i>Years</i>	<i>Frequency</i>	<i>Percentage</i>
1.	2009	0	0%
2.	2010	0	0%
3.	2011	3	1%
4.	2012	26	12%
5.	2013	13	6%
6.	2014	81	37%
7.	2015	57	26%
8.	2016	10	5%
9.	2017	30	14%
	Total	220	100%

Source: Author's Computation, 2018

The variation in the insurgency activities in Adamawa State revealed that the insurgency was very low or no incident in year 2009 and 2010, while year 2014 had the highest with eighty-one incidences of insurgency (See figure 5.28). The result revealed a positive significant trend in insurgency activities within the period of study. The result indicated that the frequency of insurgency activities increased at a rate of 5.22 occurrences per year during the period considered for the study. The R-square statistic showed that the model as fitted explained 26% variability in frequency of insurgency activities in Adamawa State.

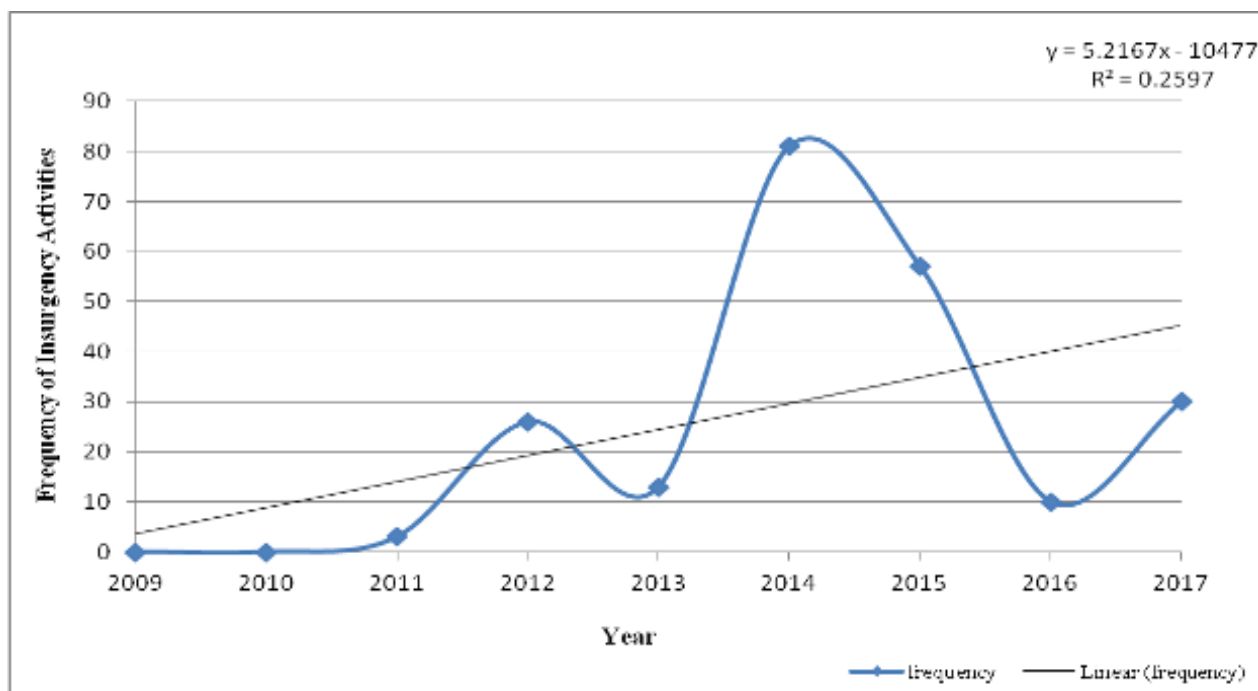


Figure 5.28: Trend Analysis of Insurgency Activities in Adamawa State (2009-2017)

Source: Author's Computation, 2018

5.5.2 Borno State

The frequency of insurgency activities in Borno State is presented in Table 5.8.

Table 5.8: Yearly Frequency of Insurgency Activities in Borno State

<i>Sno</i>	<i>Year</i>	<i>Frequency</i>	<i>Percentage</i>
1.	2009	8	0.55
2.	2010	24	1.64
3.	2011	91	6.23
4.	2012	181	12.39
5.	2013	179	12.25
6.	2014	239	16.36
7.	2015	305	20.88
8.	2016	233	15.95
9.	2017	201	13.76
	Total	1461	100

Source: Author's Computation, 2018

The variation in the insurgency activities in Borno State over the years is presented in Figure 5.29. The lowest insurgency was in 2009 with eight incidence of insurgency, while the highest was in 2015 with 305 incidence of insurgency. The result of the analysis had proven that the frequency of insurgency increased at the rate of 31.4 occurrence per year within the period of the study, while the R-square statistic showed that the model as fitted explained 73% variability in frequency of insurgency activities in Borno State (See Figure 5.29). The outcome of the analysis also agreed with an earlier work which reported that the insurgency activities tend to move outside Maiduguri as a result of the heavy security presence (Adrianna, 2015). However, the analysis revealed that from 2015 to 2017, there was a decrease in the insurgency. Nevertheless, if adequate measures are not taken into consideration, the insurgency might increase in the near future.

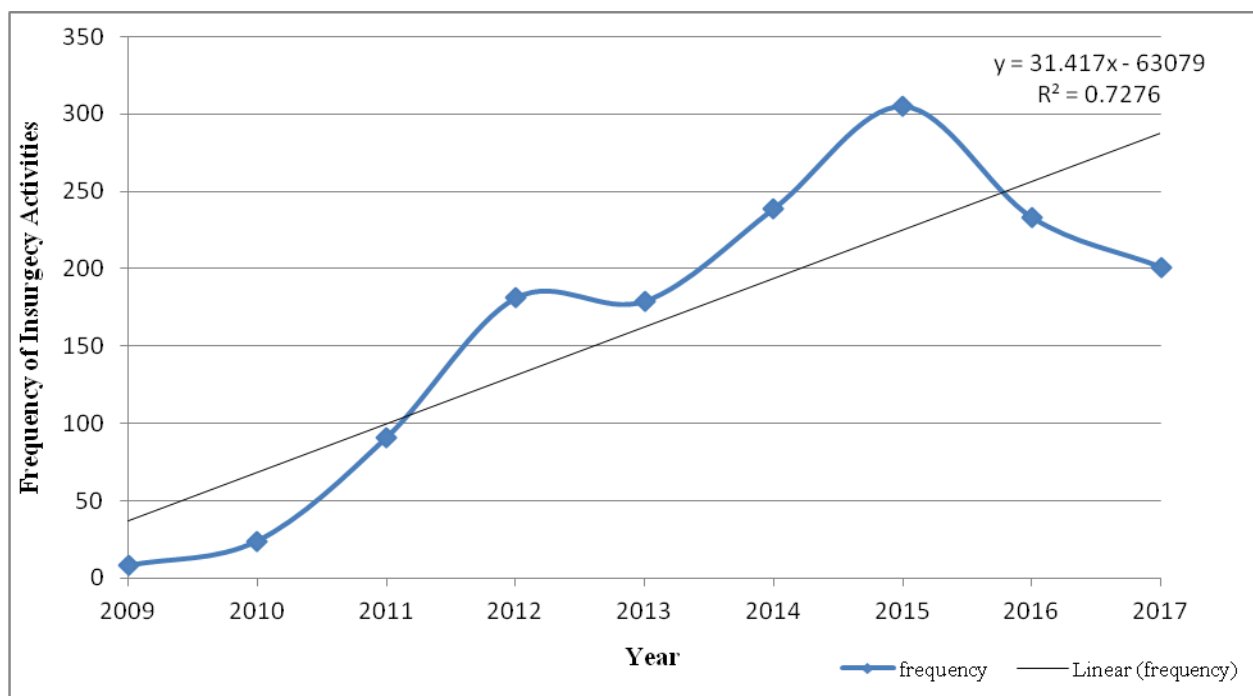


Figure 5.29: Temporal Analysis of Insurgency Activities in Borno State (2009-2017)

Source: Author's Computation, 2018

5.5.3 Yobe State

The frequency of insurgency activities in Yobe State is presented in Table 5.9. The result revealed that in 2009 the insurgency activities were very low and decreased in the following year with about three incidences. This decrease was as a result of government deployment of security personnel when the insurgents were first experienced in the State in 2009. The insurgency activities saw an increase towards 2011 to 2012 with the maximum incidence recorded in 2012 which amounted to 80 cases of insurgency activities. From 2012 to 2017, the incidence of the insurgency had been fluctuating from the figure early experienced. This fluctuation can be associated to the establishment of more security units in the State.

Table 5.9: Yearly Frequency of Insurgency Activities in Yobe State

<i>S no</i>	<i>Year</i>	<i>Frequency</i>	<i>Percentage</i>
1.	2009	6	2.68
2.	2010	4	1.79
3.	2011	6	2.50
4.	2012	79	35.27
5.	2013	26	11.61
6.	2014	32	14.29
7.	2015	44	19.64
8.	2016	10	4.46
9.	2017	17	7.59
	Total	224	100

Source: Author's Computation, 2018

The variation in the insurgency in Yobe State was high over the years in the areas considered in the study with 98.2%. This revealed that the insurgency varies over the years from 2009-2017. The result showed that 2010 had the lowest insurgency with 4 incidence. The year with the highest was 2012 with 79 incidences of insurgency.

The result showed that 2010 had the lowest insurgency with 4 incidence. The year with the highest was 2012 with 79 incidences of insurgency. The result revealed that the observed increasing trend in the State might be associated with some essential factors. These factors may include porous borders, presence of hideouts for insurgents, lack of government presence, and unemployment. Based on the result of the insurgency activities from 2009-2017, there is a tendency that the activity might increase in the near future. Also, the result revealed that the frequency of insurgency activities increased at a rate of 1.52 occurrences per year during the period considered for the study. The R-square statistic showed that the model as fitted explained 0.3% variability in frequency of insurgency activities in Yobe State as shown in Figure 5.30.

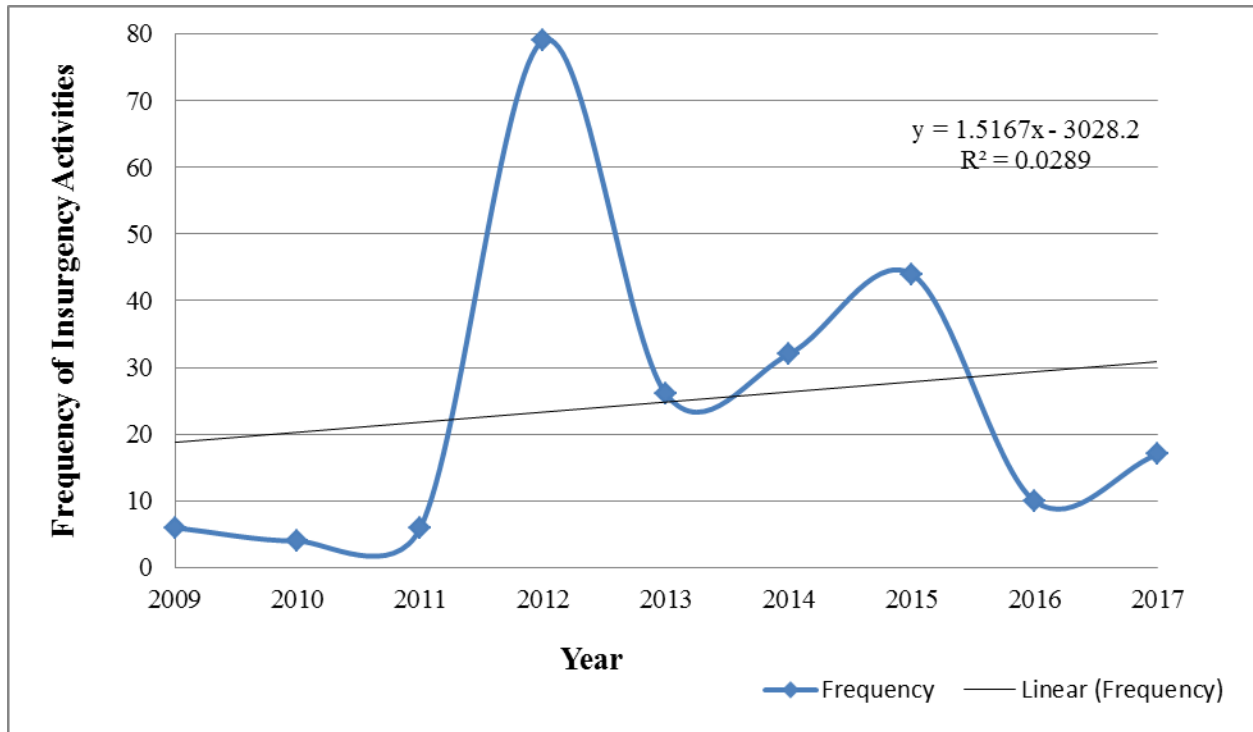


Figure 5. 30: TrendAnalysis of Insurgency Activities in Yobe State (2009-2017)

Source: Author’s Computation, 2018

5.6 Monthly Analysis of Insurgency Activities in the Study Area

The data on the insurgency activities were subjected to monthly analysis (See Table 5.10). This was done in order to detect which of the months in the years has the highest and lowest occurrence of insurgency activities in the study area. From the result, it shows that the month of July recorded the highest frequency of insurgency activities with 9.34 percent. The high level of the activity in this month may be associated with the raining season period (Figure 5.31). This season affects the counter insurgency operations by the security agencies due to the nature of the area where military equipment finds it difficult in penetrating into the hideout of the insurgents. The mountainous nature of the area at this period become more rouged and inaccessible by the security agencies, more also the high incidence recorded may also be as a result of insufficient and modern communication equipment used in the operations. The raining

season within the study area witnessed high rate of the insurgency activities more than the dry season. March was next with 9.29 percent. The high level of insurgency recorded within this period was as a result of the weather condition. The weather at this period was usually cold and makes it very difficult for the security agencies to perform their functions since most of them are not familiar with the environment. The month with the least in term of the insurgency activities was April with 7.45 percent. This was associated as a result of the dry nature experienced within this period of the year. At this period, you can easily see someone who is about 4 to 5Km far from you. This makes it easy for the security agencies to carry out their counter insurgency operation in the area.

Table 5.10: Monthly Frequency of Insurgency Activities (January 2009-December 2017)

S/No	Months	Adamawa	Borno	Yobe	Total	Percent
1	Jan	33	100	15	148	7.77
2	Feb	26	130	16	172	9.03
3	Mar	13	148	16	177	9.29
4	Apr	6	121	15	142	7.45
5	May	17	113	14	144	7.56
6	Jun	13	132	20	165	8.66
7	Jul	11	146	21	178	9.34
8	Aug	11	119	24	154	8.08
9	Sept	27	121	16	164	8.61
10	Oct	29	106	26	161	8.45
11	Nov	26	112	15	153	8.03
12	Dec	8	113	26	147	7.72
13	Total	220	1461	224	1905	100.0

Source: Researcher's Fieldwork, 2018

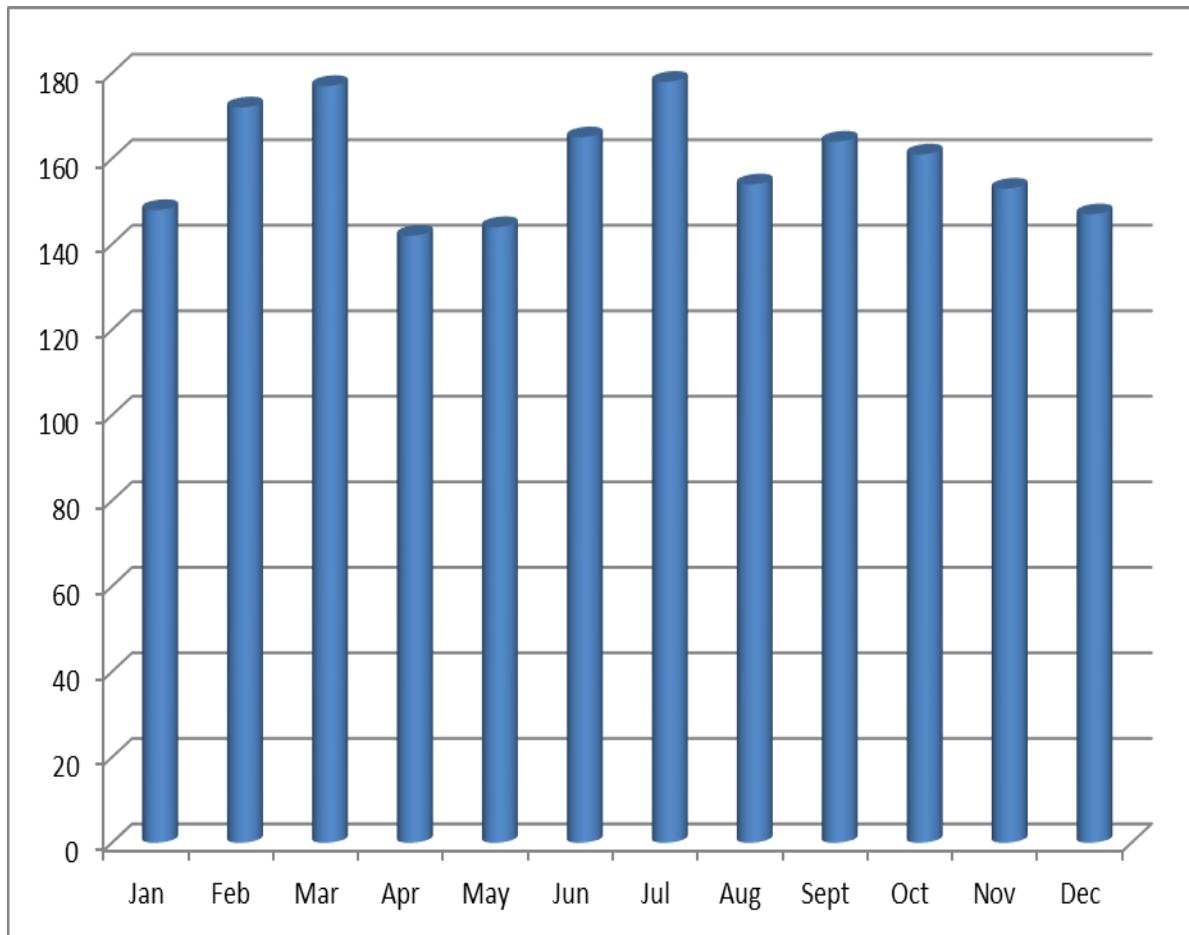


Figure: 5.31: Monthly Distribution of Insurgency Activities in the Study Area (2009-2017)

Source: Researcher's Fieldwork, 2018

5.7 Differences in the Monthly Analysis of Insurgency Activities within the Selected States (2009-2017)

Figure 5.32 depict the differences in the occurrence of insurgency activities in each of the months. The total insurgency activities for each of the months were sum up to arrived at the grand total for all the months. This was derived from the data in table 5.11 for Adamawa state, table 5.12 for Borno state and table 5.13 for Yobe state. The result shows that there was variation in the activities of insurgency within the months in the selected states. It is worthy to note that in

all the months Borno state experienced the highest insurgency activities. This was as a result of the numerous hideout located within the state and its proximity to the border areas which allow for easy escape route. A point of interest is that March had the highest incidence of insurgency in Borno which is not so with Adamawa and Yobe state. The highest incidence recorded in Adamawa and Yobe were in January (33 incidence) and October (26 incidence) respectively. This is associated with the less hideout areas for the insurgents in Adamawa and Yobe state.

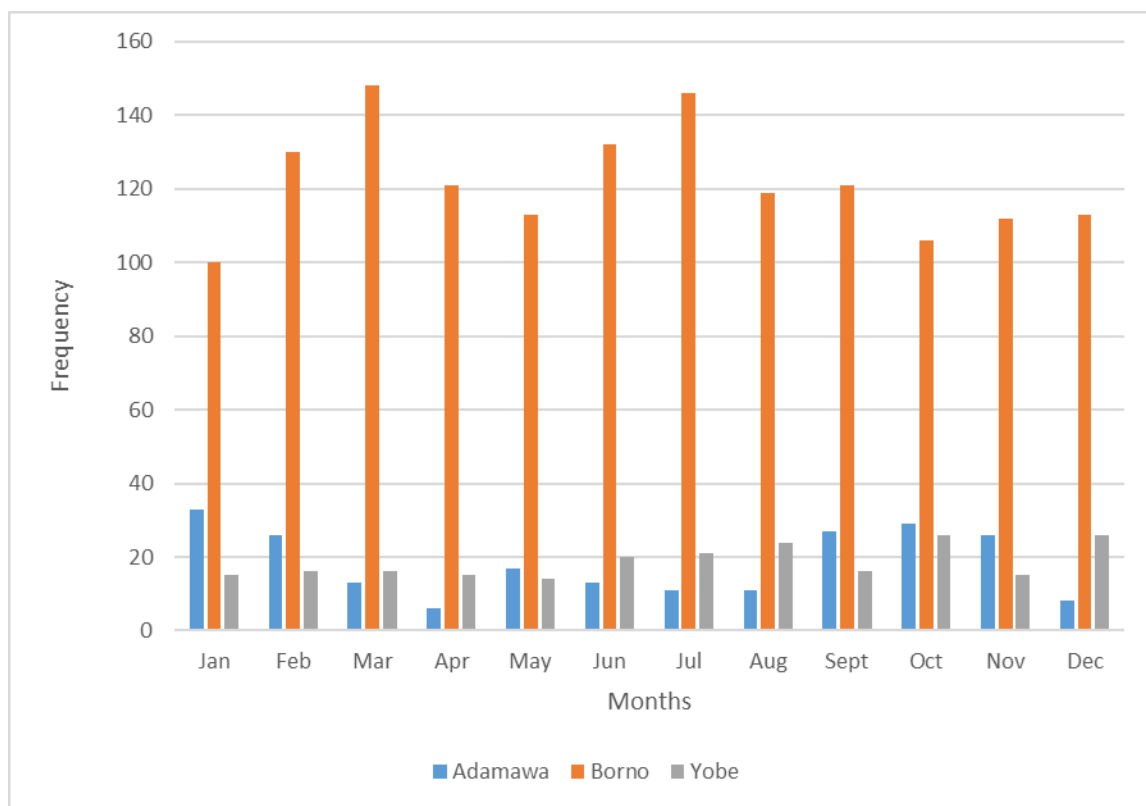


Figure 5.32: Differences in the Monthly Insurgency Activities in the Selected State (2009-2017)

Source: Researcher's Fieldwork, 2018

5.8 Classification of Insurgency Activities in the Study Area (2009-2017)

Insurgency activities were not uniformly distributed across the study area. Some areas had obviously greater numbers of insurgency activities and this may rightly be called hotspot. Insurgency activities data in the study area were subjected to cluster and Hot spot analysis. Anselin Local Moran's (Cluster and Outlier Analysis) and Getis Ord Gi* (Hot Spot Analysis).

The cluster analysis revealed two patterns of clusters which were the areas of not significant and the area of High-High cluster (Figure 5.33). The area of not significant pattern occupied about 95% of the study area. The areas identified as high-high cluster in the study area include Gwoza and Konduga. This was as a result of the high incidence of insurgency that was recorded in those areas within the time frame of the study and was also surrounded by areas with high incidence of insurgency activities. This result was similar to the work of Adesoji (2010), Abimbola and Adesote (2012), Bartolotta (2011), among others who maintained that the rate of insurgency in the North-eastern State were concentrated in Borno State, in Maiduguri and Konduga to be precise. The hot spot analysis as shown in Figure 5.34 revealed three patterns in the area. These are areas of not significant hot spot at 95%, and hot spot at 95% and 99% confidence level. The not significant hot spot areas occupied about 95% of the study area. Maiduguri, Jere, Mafa, and Konduga are hot spots areas with 99% significant level. This is attributed to the high frequencies of the insurgency recorded in these areas within the period of study though, while Gwoza ranked as hot spot area with 95% confidence level.

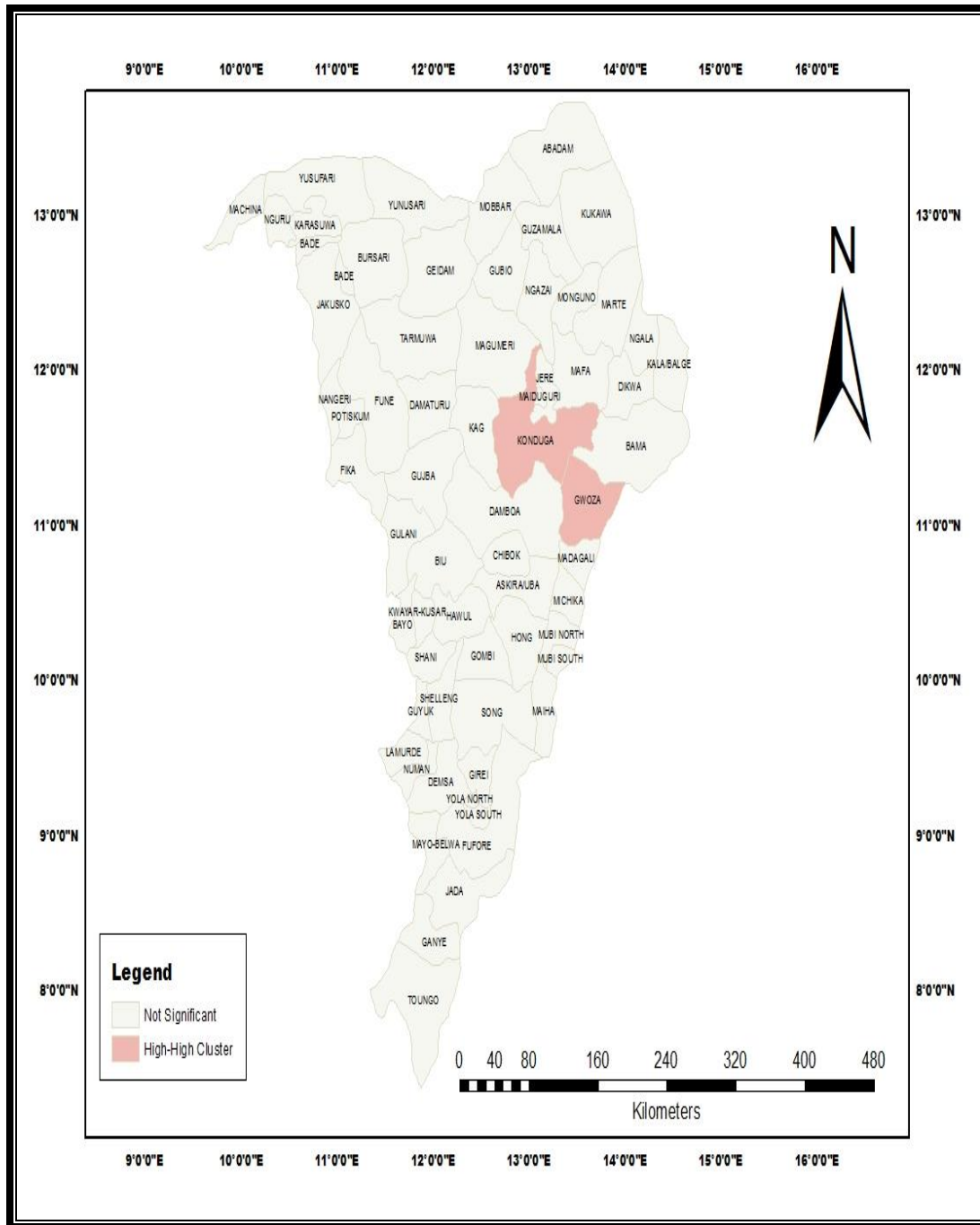


Figure 5.33: Cluster Map of Insurgency Activities in the Study Area (2009-2017)

Source: Author's Computation, 2018

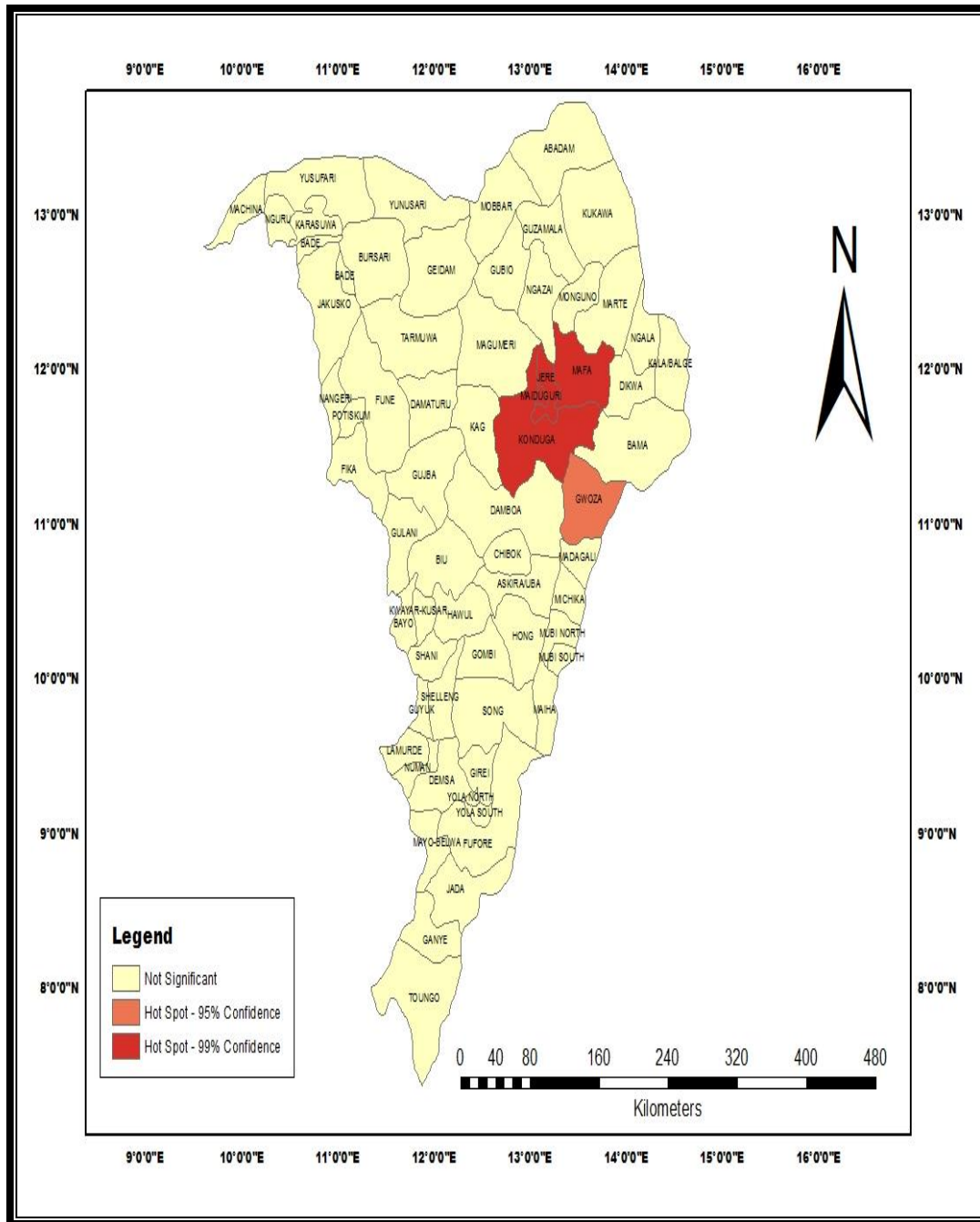


Figure 5.34: Hot Spot Map of Insurgency Activities in the Study Area (2009-2017)

Source: Author's Computation, 2018

5.9 Variation in Cluster and Hot Spot Analysis of Insurgency Activities

A comprehensive analysis on the cluster and hot spot was considered necessary in the individual states of Adamawa, Borno and Yobe States in order to depict the variations in the analysis. This will allow relevant agencies to determined areas where clusters and hot spot are located so that adequate measures can be taken in curtailing this deadly activity.

5.9.1 Cluster and Hot spot Analysis of Insurgency in Adamawa State (2009-2017)

There are two pattern of cluster observed in Adamawa State (Figure 5.35). These are the not significant and the high-high cluster areas. The not significant areas occupied about 98% of the State while the high-high cluster areas include Madagali and Michika. This indicated that Madagali, and Michika experienced high insurgency activities compared to other areas in the State and were surrounded by areas with high insurgency activities. The high-high cluster experienced in Madagali and Michika was attributed to the frequent activities of insurgency in these areas and also its porosity to the neighboring countries which provide easy escape route for the insurgent as well as the numerous hideouts for the insurgents. This is contrary to the hot spot results with three patterns (Figure 5.36). These are areas of not significant hot spot, areas that are hot spot at 95% and 99% confidence level. About 98% of Adamawa falls within the statistically not significant hot spot areas. Mean while, Madagali and Michika were hot spots areas at 99% and 95% confidence level respectively. Madagali which exhibited 95% hot spot confidence level experienced the highest insurgency activities within the time frame of study with (82) incidence of insurgency.

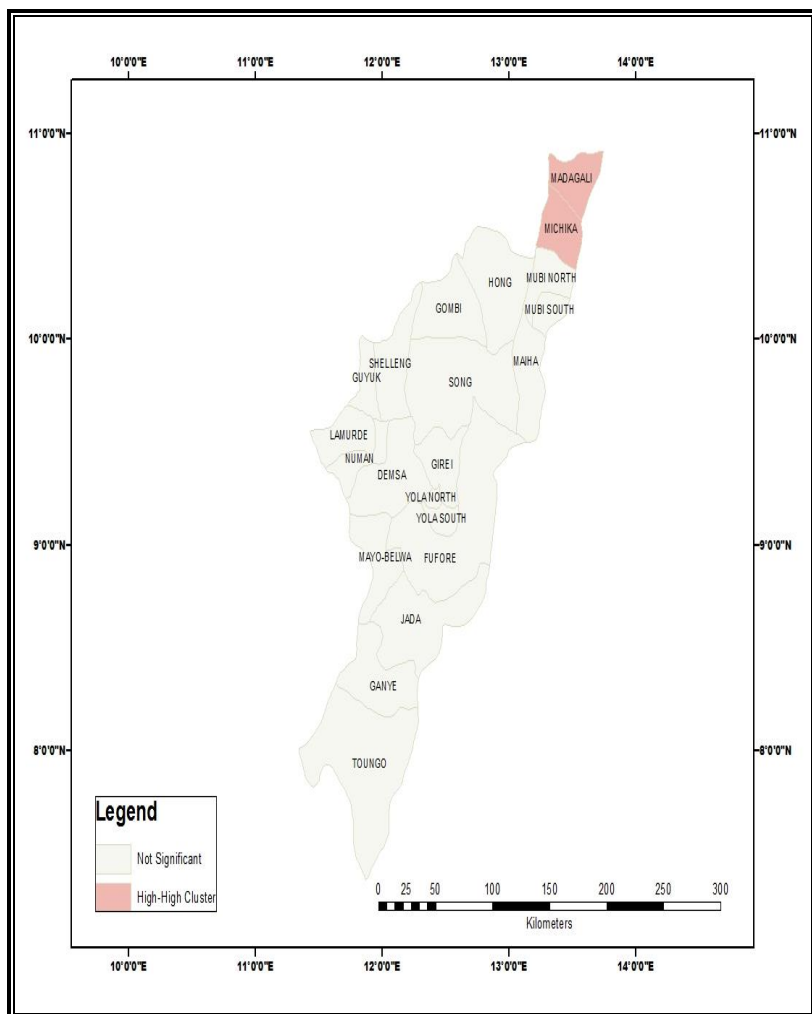


Figure 5.35: Cluster Map of Insurgency in Adamawa State

Source: Author's Computation, 2018

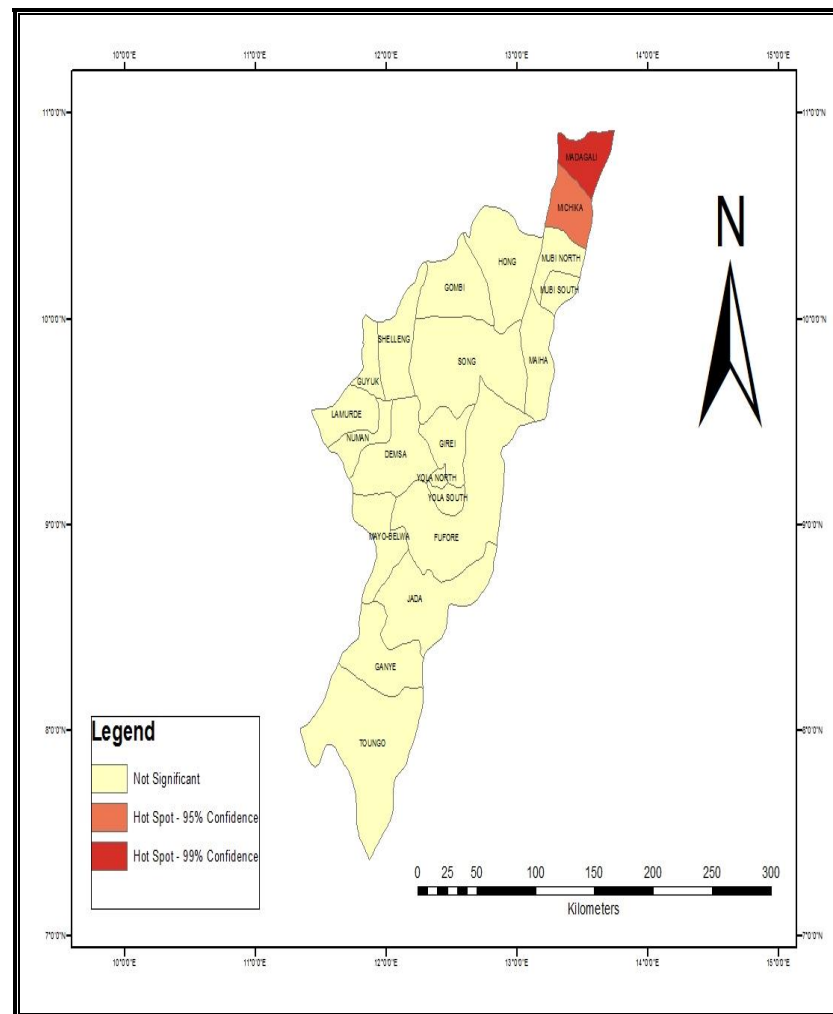


Figure 5.36: Hot Spot Map of Insurgency in Adamawa State

Source: Author's Computation, 2018

5.9.2 Cluster and Hot spot Analysis of Insurgency in Borno State (2009-2017)

Figure 5.37 shows the result of the cluster analysis in Borno State. The result exhibited a three pattern of cluster. These are the not significant, high-low outlier, and low-high outlier cluster pattern. The high-low outlier was observed in Maiduguri while the low-high outlier was in Jere. The high-low outlier in Maiduguri is an indication that there were insurgency in Maiduguri and is surrounded by other LGAs with low incidence of insurgency. The high frequency of insurgency in Maiduguri was attributed to the daily incidence of insurgency. This area recorded the highest incidence of insurgency within the period of study with (413) incidence, while the surrounding areas for example, Jere (19) incidence, Magumeri (34) incidence, and Kaga (28) incidence of insurgency. The low-high outlier identified in Jere implies that Jere has a low incidence of insurgency, but surrounded by areas with high incidence of insurgency. The result of the hot spot analysis revealed two patterns of hot spot in Borno State. These included areas of not significant and areas of hot spot significance at 95% confidence. The area identified as 95% confidence hot spot was Konduga (See Figure 5.38). The 95% hot spot confidence level recorded in Konduga was attributed to the high incidence that was exhibited in the area which was as a result of numerous hideouts, porosity to borders among others.

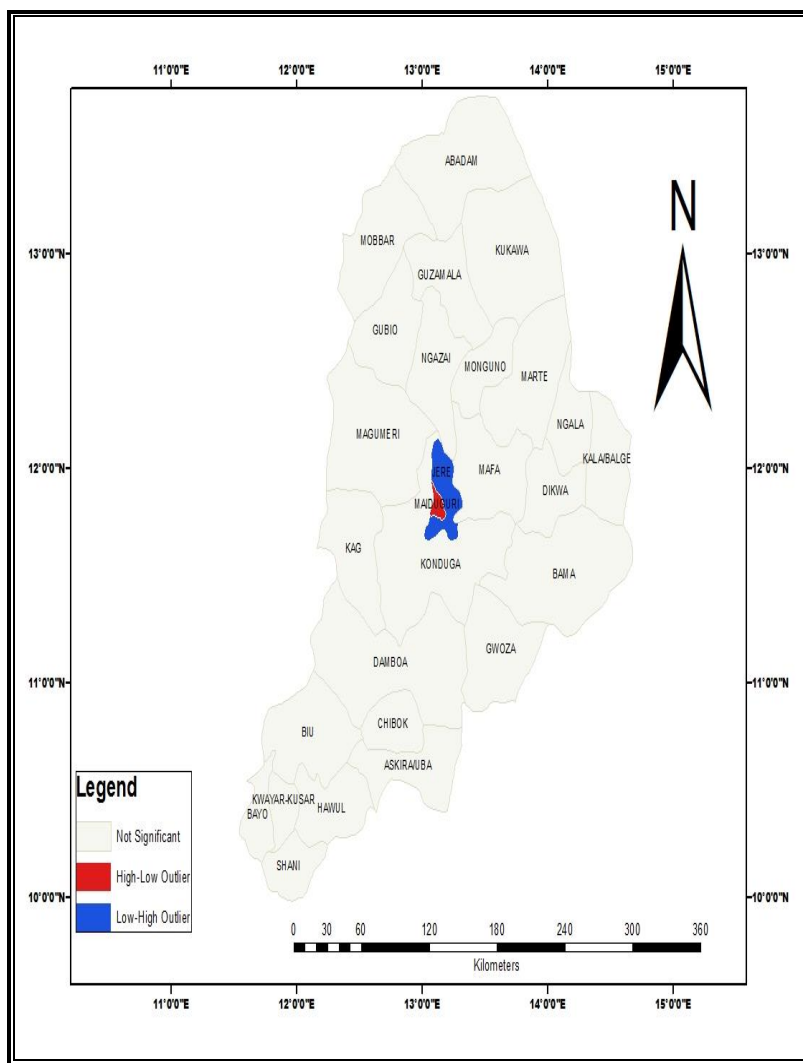


Figure 5.37: Cluster/Outlier Map of Insurgency in Borno

Source: Author's Computation, 2018

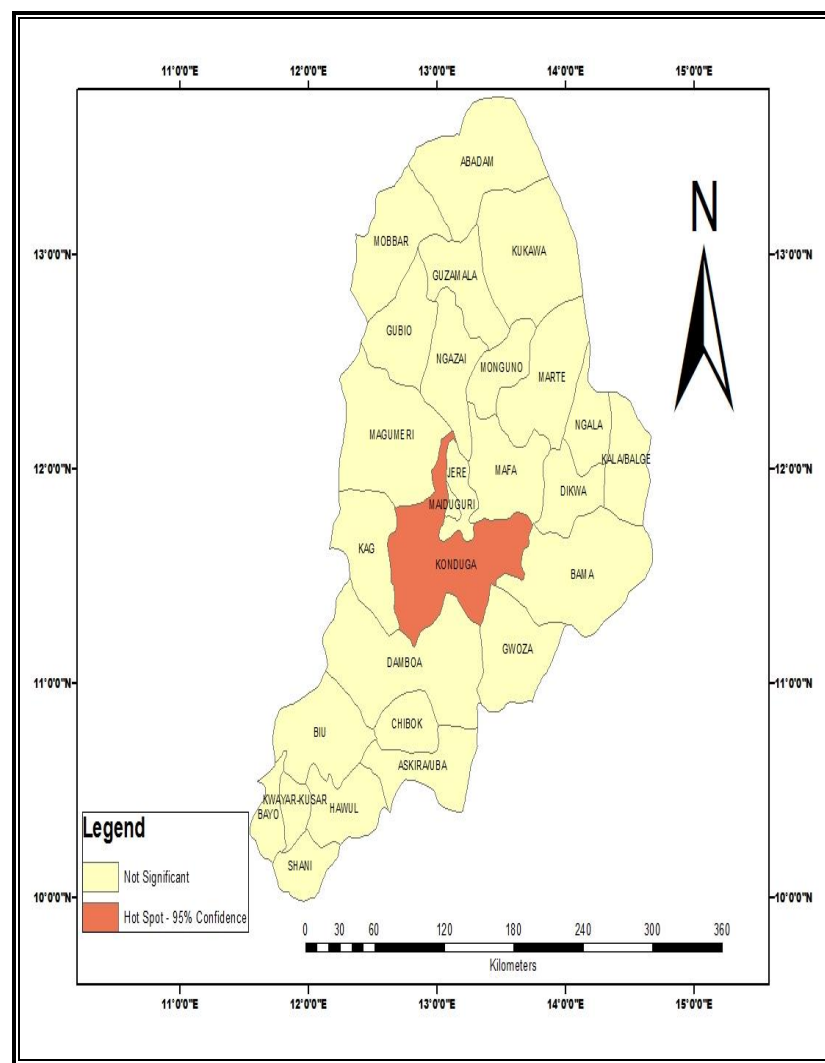


Figure 5.38: Hot Spot Map of Insurgency in Borno State

Source: Author's Computation, 2018

5.9.3 Cluster and Hot spot Analysis of Insurgency in Yobe State (2009-2017)

Figure 5.39 shows the result of the cluster analysis of insurgency in Yobe State. The result depicts a two pattern of clusters. These include the not significant and the high-high cluster pattern. The high-high cluster was identified in Gujba. This result indicates that a high number of insurgency activities were concentrated at the southern part of the State. High values of insurgency activities were found in the area identified and surrounded by high insurgency areas. The result of the hot spot analysis performed on the data is presented in Figure 5.40. The result revealed a two pattern hot spot in the State. These are the not significant hot spot areas and the hot spot areas that are significance at 95% confidence level. Damaturu and Gujba were identified as hot spot areas at 95% confidence level. The two areas fall within the southern part of the State. The 95% hot spot confidence level identified in Damaturu and Gujba was attributed to the numerous activities of insurgents that occurred within these areas as of the period of the study.

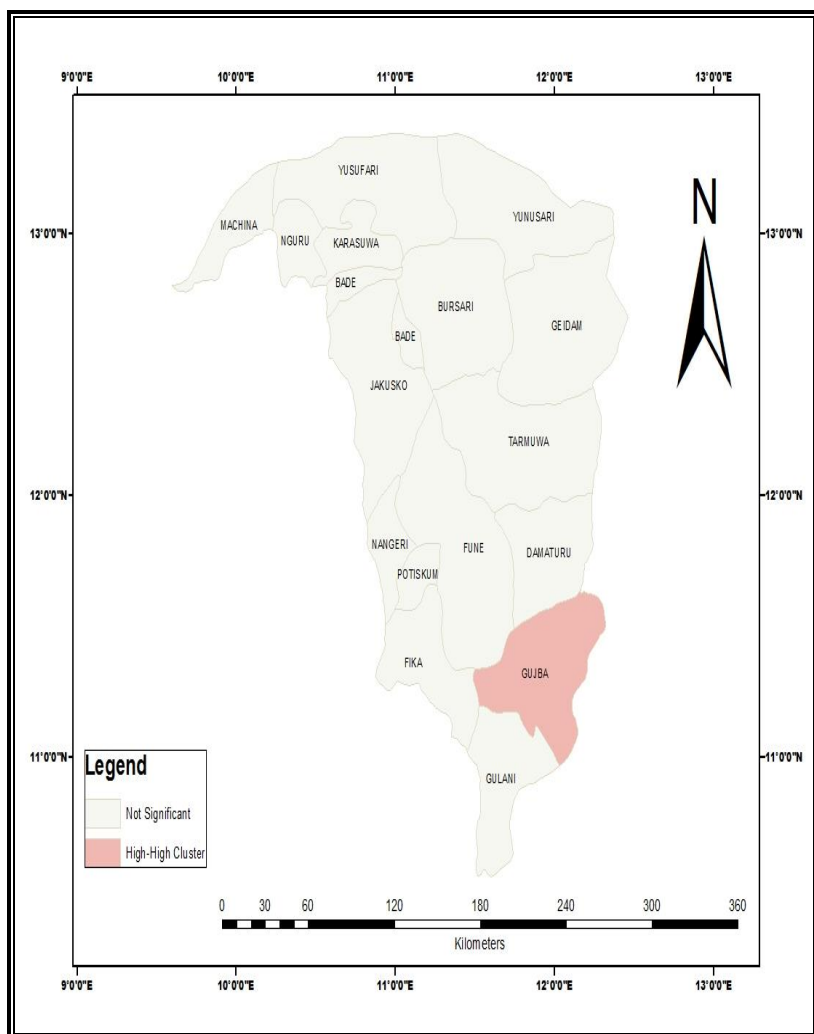


Figure 5.39: Cluster Map of Insurgency in Yobe State
Source: Author's Computation, 2018

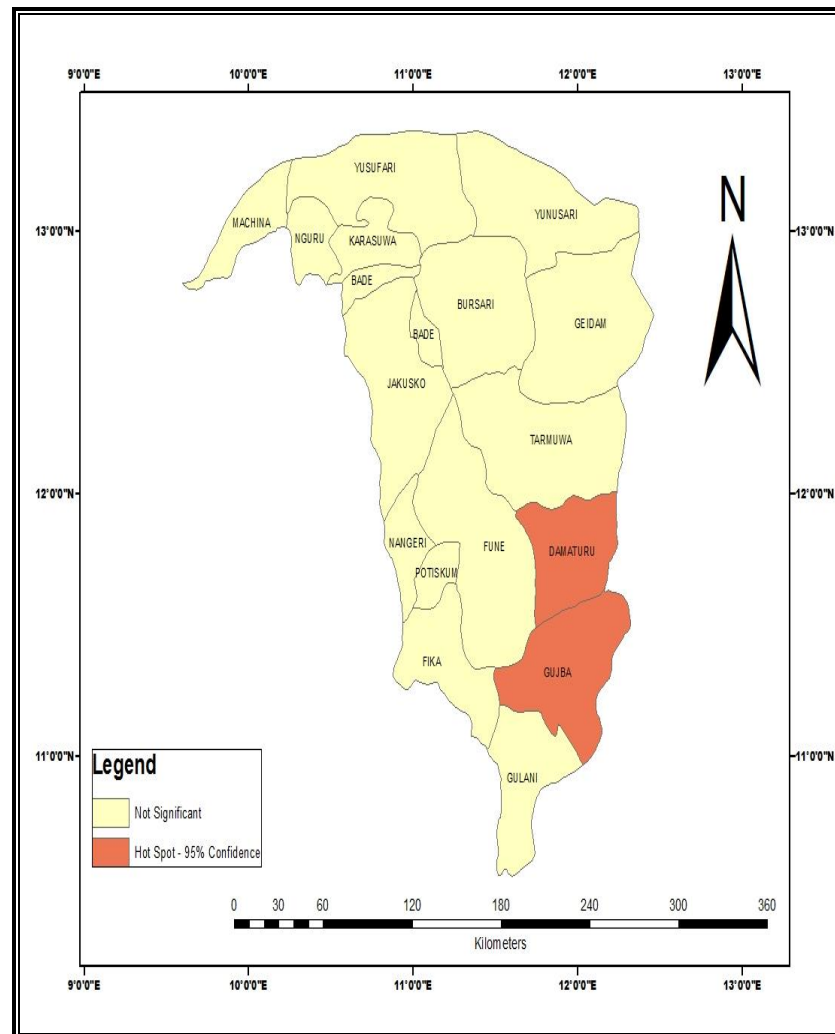


Figure 5.40: Hot Spot Map of Insurgency in Yobe State
Source: Author's Computation, 2018

5.10 Effectiveness of Existing Measures in Combating Insurgency

To combat insurgency activities in the study area, there were numerous measures that the government has been engaged on. The most visible measures are the deployment and establishment of more military formations, inclusion of its sister security agencies of Police and Civil Defence Corps, collaborating with the neighboring countries of Chad, Cameroun and Republic of Niger in the fight, inclusion of civilian Joint Task Force (JTF), and community sensitization. Respondents were asked to indicate the level of effectiveness of these measures taken by the government in combating insurgency in the north-eastern Nigeria as shown in Figure 5.41. The result from the respondents shows that 39% of the respondents are of the opinion that the measures taken by the government are effective. These measures have been very useful because the rate of the insurgency activities in the area has reduced drastically unlike before which has always recorded one form of insurgency and the other. These measures taken to tackle the insurgency include the movement of the military command to north-east. The manageable group of the respondent were 42 percent and 19 percent of the respondents agreed that the measures are not effective in the study area. This is so because with even the presence of security agencies in the study area there are still few occurrence of insurgency in the area.

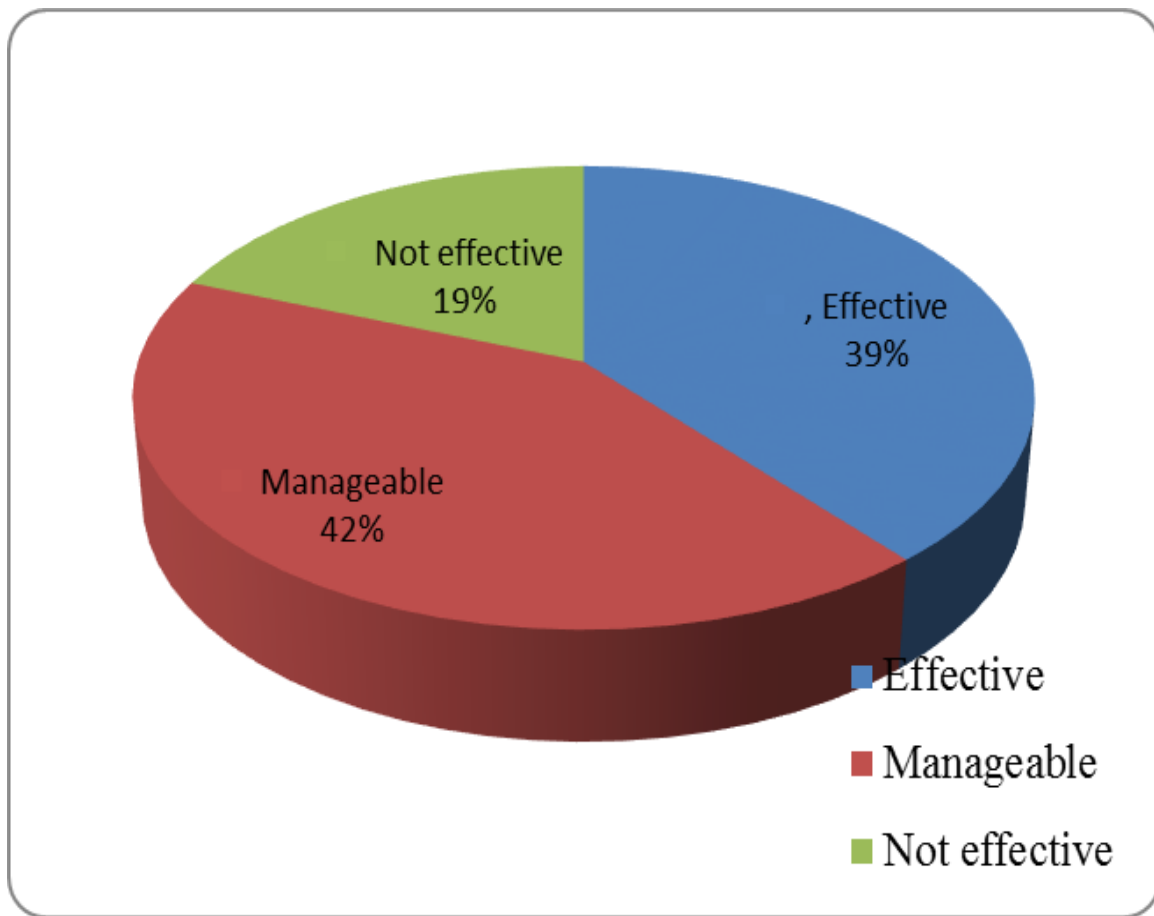


Figure 5.41: Distribution of Existing Measures in Combating Insurgency in the Study Area

Source: Reseracher's Fieldwork, 2018

5.11 Measures in Combating Insurgency Activities in the Study Area

To place insurgency prevention and managemnet in the study area, respondents were asked to suggest the best measures that can be put in practice in order to manage and prevent insurgency occurrence in the area. Table 5.11. Displays the view of the respondents on the best measures that can be adopted to control insurgency activities in the study area. From the respindents point of view, the creation of job opprtunities was the highest with 33%. Creation of jobs opportunities in the study according to the respondent will greatly reduce the perticipation of the youth in the act of insurgency. This according to (Abimbola & Adesote 2012; Adesoji,

2010; Adetoro, 2010) pointed out that most of those engaged in the act of insurgency are jobless and the only way for survival is to join the insurgents since they are been paid adequately. Equipping the military with modern machineries amounted for 24%.

Table 5.11: Measures to be Adopted in Combating Insurgency in the Study Area

<i>S/No</i>	<i>Measures to be adopted in combating insurgency</i>	<i>Percent</i>
1	Creations of job opportunities	33%
2	Equipping the military with modern machineries	24%
3	Establishment of more security outlet	15%
4	Improvement in the educational sector	9%
5	Establishment of more Almajire school	7%
6	Establishment of policies to guide religion schools	6%
7	Community sensitization	4%
8	Individual security	2%
	Total	100%

Source: Researcher's Fieldwork, 2018

The least measure suggested by the respondents is the individual security with 2%. Respondents believed that if all the people in the area can be security conscious and provide adequate information to security agencies will reduced or eliminate the insurgency activities. This aspect of the measure for years have been ignored by the people of the area. This is based on the reason that if they provide information about the activities of the insurgents, there is every possibility that the person will either be killed or kidnapped.

5.12 Conclusion

This Chapter analysed the spatial pattern and temporal trend of insurgency activities, hot spot and cluster analysis on the study areas (Adamawa, Borno and Yobe states). The spatial pattern of insurgency activities in the study area revealed that insurgency activities were mostly concentrated at the eastern part of the study area. The spatial pattern varies from state to state as considered. The analysis of the spatial trend indicated that there was a steady increase of insurgency activities from 2009 to 2015 but decreased after 2015 to 2017. Hot spot analysis that was conducted on the insurgency data of the study area identified Konduga as a statistically significant hot spot. Nevertheless, in terms of the cluster analysis, two LGAs were identified as High-High cluster which included Gwoza and Konduga.

Therefore, next chapter focuses on the summary of the findings, conclusion, and recommendations.

CHAPTER SIX

SUMMARY, CONCLUSION AND RECOMMENDATION

6.1 Introduction

This chapter summarizes the results and implications of the research. The conclusions prepared are addressed in terms of the objectives posed in the introduction and methodology chapters of the thesis. Recommendations and ideas for future research are also included.

6.2 Summary of Findings

The key findings of this study are that:

- i. the most prominent insurgency activity in the study area were kidnapping (25.93%); suicide bombing (16.09%); and attacks on security agencies (14.15%), citizen (13.28%), and infrastructure (11.65%);
- ii. robbery was the least type of insurgency in Adamawa State (9.39%), while attacks on foreigners were the least in Borno (9.30%) and Yobe State (9.16%) between 2009-2017;
- iii. poverty level (15.62%), presence of hideouts (15.57%), unemployment (14.61%), porous border (14.42%), low educational level (13.90%); religion extremism (13.51%); were the factors that encouraged insurgency. Incidentally, the lack of government presence was not a major factor (13%);
- iv. poverty level was the highest factor that encouraged insurgency in Adamawa State (16%), while, the presence of hideout was highest with 16% and 15% in Borno and Yobe State, respectively;
- v. loss of lives (23.09%), displacement of people (17.51%), destruction of property (15.86%), destruction of farm land (11.46%) were the major effects of insurgency,

negative effects on livelihood and socio-economic activities was the least affected (9.55%);

- vi. the variation in the magnitude of the effects of insurgency activities in Adamawa, Borno, and Yobe state are not statistically significant at 95% confidence level;
- vii. the bulk of the insurgency activities occurred in the central to the eastern parts of the study area;
- viii. the activity of insurgency indicates a statistically significant positive trend in insurgency for the period of the study with 38 occurrences per year and R-square of 58% variability in its frequency;
- ix. Gwoza, Konduga, Madagali, Michika and Gujba experienced high-high insurgency while the insurgency hot spot with 99% confidence level were exhibited in Maiduguri, Jere, and Mafa within the time frame of the study.

6.3 Conclusion

This study examined the spatial occurrence of insurgency activities in North-eastern Nigeria from 2009-2017. The study employed the likert scale method, ANOVA, Correlation matrix and coefficient of variation to usefully understand the nature and factors that encouraged insurgency; and the effects of insurgency activities in the study area. The individual states of Adamawa, Borno and Yobe State were further analyzed to provide insight into the variations of insurgency amongst the states. This knowledge will no doubt be useful to the government in addressing the issue of insurgency in the north-eastern part of Nigeria. Using GIS provided a visual synopsis of the insurgency locations and intensities. Visualization of the insurgency activities pattern provided a graphical knowledge and understanding of the trend.

6.4 Recommendations

A number of recommendations become significant amongst which are:

- i. adequate securities should be provided at the border areas so that it can assist in checkmating the activities of the insurgency at the border areas and also assist in controlling illegal migrant.
- ii. there is need for government to provide polices for religious leaders on the type of ideology they preached in the study area and Nigeria at large.
- iii. anti-kidnapping laws should be enacted in the study area and Nigeria at large.
- iv. the low level of educational system in the study area requires the attention of the government in providing more educational facilities and also provide frequent enlightenment.
- v. the forest reserve laws need to be revisit in order to provide punishment for its illegal usage.
- vi. the unemployment situation observed in the study area as seen in Table 4.5 requires the attention of the Federal and State Governments in reducing the rate of unemployment in the study area.
- vii. the use of GIS and Remote sensing need to be incorporated in the fight against insurgency activities, so that adequate information will be derived with respect to location of insurgency areas and understanding the pattern of the insurgency activities.
- viii. Government should ensure that there is compliance in the budget meant for the purchase of fighting equipment for the security agencies in other to assist in detection of bombs and mines in the study area and Nigeria at large.
- ix. finally, detection of bombs and mines in the study area and Nigeria at large.

the recent advancement in geo-spatial techniques should be an avenue for the Federal Government to invest, train and employ personnel in the utilization of geo-spatial techniques in other to monitoring the activities of the insurgency in the study area and Nigeria at large.

6.5 Areas of further study

The study examined the spatial analysis of insurgency activities in North-Eastern Nigeria (2009-2017), the nature, the factors that encouraged insurgency activities. Further study can center on:

- i. research into space-time model in insurgency analysis.
- ii. need to incorporate demographics of population to formulate a complete understanding of why some areas experience more insurgency activities than others.
- iii. there is need for improvement of location data. Coordinate information at the exact locations will be useful to detect and monitor pattern of insurgency activities in a specific location.

Reference:

- Abimbola, J.O. & Adesote, S.A. (2012). Domestic Terrorism and Boko Haram Insurgency in Nigeria, Issues and Trends: A Historical Discourse. *Journal of Arts and Contemporary Society*, 4, 1-19.
- Abolurin, A. (2011). *Terrorism: Nigerian and Global Dimensions*. Ibadan: Golden-Gems Unique Multi-ventures.
- Adefolalu, D.O. (2002). *Climate: African Atlases*. Les Edition. Nigeria. 62-65.
- Adeniran, A.M., Effiong, E., Alagbe, A.O., & Ibekwe, V.J. (2013). Application of Geographical Information System (GIS) in Internal Security Operation: A Case Study of Jos Metropolis, Plateau State, Nigeria. *A Paper Presented At Fig Working Week, Abuja*.
- Adesoji, A (2010). The Boko Haram uprising and Islamic revivalism in Nigeria. *African Spectrum*.
- Adetoro, R.A. (1982). The Impact of Julumi War (1878) on the people of Ikirun. Being a Long Essay submitted in partial fulfillment of the award for the Nigeria Certificate in education (NCE) to the Department of History, Oyo (now Osun) State College of Education, Ilorin, Oragun, Nigeria.
- Adetoro, R. A. (2010). The Almajirai syndrome as a potential threat to Nigeria national security: the role of social studies education. *Nigerian Journal of Social Studies*, 13 (3), 141-150.
- Adrianna, D.V (2015) Estimating population as risk in data-poor environments: A geographically disaggregated analysis of Boko haram terrorism (2009-2014). (Masters thesis). University of southern California.
- Agnew, J. (2004). Space-place. In P. Cloke & R. Johnston (eds.), *Spaces of geographical thought*, 81–96. London: Sage.

- Akinola, O. (2015). Boko haram insurgency in Nigeria: Between islamic fundamentalism, politics, and poverty. *African Security*, 8(1), 1-29.
- Akinfala, F.F., Akinbode, G.A., & Kemmer, I.A. (2014). Boko haram and terrorism in northern Nigeria: A Psychological Analysis. *British Journal of Arts and Social Sciences* 17(1), 1-22.
- Akubor, E. O. (2011). Civil unrest in northern Nigeria: Beyond the literal Boko haram, *The Constitution*, 2(4), 71-93.
- Alao, D.O. & Atere, C.O. & Alao, O. (2012). Boko-haram insurgence in Nigeria. *Singaporean Journal of Business Economics and Management Studies*, 1(4), 67-87.
- Albini, J. L. (2001). Dealing with the modern terrorist: The need for changes in strategies and tactics in the new war on terrorism. *Criminal Justice Policy Review*, 12 (4), 255-281.
- Alozieuwa, S. H. O. (2012). *Contending theories on Nigeria's security challenge in the era of Boko Haram insurgency*. Retrieved from <http://www.review.upeace.org/index.cfm?ejemplar=24&entrada=128>
- Andrew D. L. & Flint, C. (2010). The geography of insurgency, *Geography Compass*, 1154–1166.
- Ani, C. O. (2014). Combating terrorism: A case study of Nigeria against Boko haram terrorist group. (Master's thesis). U.S. Army Command and General Staff College.
- Asal, V., Fair, C. C., & Shellman, S. (2008). Consenting to a child's decision to join a jihad: Insights from a survey of militant families in pakistan. *Studies in Conflict and Terrorism*, 31(11), 1001-1022.

- Asemah, E. S. (2013). Public perception of mass media framing of terrorism in Nigeria: Implications for National unity. *Journal of communication and language arts*, 4 (1),137-162.
- Awake, F. (2008). When terrorism will end. *Nigeria Watch*. June edition, 1-6.
- Bagaji A.Y. (2012). Boko haram and the recurring bomb attacks in Nigeria: Attempt to impose religious ideology through terrorism: *Cross-cultural Communication* 8 (1), 33-34.
- Bamigbose, J. A. (2011). Boko Haram and Democracy in Nigeria's Fourth Republic, *The Constitution*, 11(4), 58-70.
- Bergen, P. (2009). Al Qaeda, the Organization: A Five-Year Forecast. *The Annals of the American Academy of Political and Social Science*, 618(1), 14-30.
- Bernard, H.R. (2002). Research methods in anthropology: Qualitative and quantitative methods. (3rd ed). AltaMira Press ,Walnut Creek, California.
- Bartolotta, C. (2011). Terrorism in Nigeria: The rise of Boko haram the world Policy Institute. Retrieved 22-01-2012. Greenwich, CT: JAI Press. (2), 95-108.
- Bibi, U.M. (2013). The impact of climate variability and land cover change on land surface conditions in north-eastern Nigeria. (Doctor thesis). University of Leicester, Leicester, UK.
- Binbol, N.L. & Zemba, A.A (2007). Analysis of rainfall data for effective agricultural production in Adamawa State, Nigeria multidisciplinary. *Journal of empirical research*, 9 (1), 169-175.
- Black, D. (2004). Terrorism as social control. In M. Deflem. *Terrorism and Counterterrorism:Criminological Perspectives*. Sociology of Crime, Law and Deviance, 5, 9-19.

- Brock, J. (2011). Nigeria sect leader defends killing in video. Reuters Africa (Thomson Reuters).
http://af.reuters.com/article/topNews/idAFJOE*. Retrieved 2018-01-24
- Brown, D., Dalton, J., & Hoyle, H., (2004). Spatial forecast methods for terrorist events in urban environments, Springer-Verlag Berlin Heidelberg.
- Bruce, C.W. & Stallo, M.A. (2009). Better policing with Microsoft Office 2007. Book Surge Publishing, USA.
- Brunsdon, C., & Comber, L. (2015). *An Introduction to Spatial Analysis & Mapping*. London: SAGE Publication limited.
- Bruzewicz, A. (2003). Remote sensing imagery for emergency management. In S. Cutter, D. Richardson & T. Wilbanks (Eds.), *The geographical dimensions of terrorism* (87-98). New York: Routledge
- Brynjar, L., & Katja H.W. S. (2000). *Why terrorism occurs - A survey of theories and hypotheses on the causes of terrorism* No. FFFI/Rapport-2000/02769). Norway: Forsvarets Forsknings Institutt (FFI), Norwegian Defense Research Establishment.
- Bwala, J. (2011). Boko Haram wraps bombs as Sallah gifts. *Nigerian Tribune*, 3 November.
<http://www.tribune.com.ng/index.php/front-page-news/30668-boko-haramwraps-bombs-as-sallah-gifts-police-arrest-bomb-makers-recover-bombs-guns> Accessed 5 November 2017.
- Campbell, J. (2013). Nigeria: Dancing on the brink. Rowman & Littlefield Publishers: UK.
- Caplan, B. (2006). Terrorism: The relevance of the regional choice model. *Public Choice* 128, 91-107.
- Chainey, S., & Ratcliffe, J. (2005). *GIS and crime mapping*, TJ International Ltd, Padstow, Cornwall.

- Chainey, S., Tompson L., & Uhlig, S. (2008). The utility of hotspot mapping for predicting spatial patterns of crime. *Security Journal*. 21(3), 4–28.
- Chinwokwu, E. C. (2013). Terrorism and the dilemmas of combating the menace in Nigeria. *International Journal of Humanities and Social Science* 3(4), 269.
- Chukwuma, O. A., & Philip, L. (2014). Terrorism and humanitarian crisis in Nigeria: Insight from Boko haram insurgency: *Global Journal of Human-Social Science*, 14 (1), 1-13.
- Clarke, K.C. (1986). Advances in geographic information systems. Computers, *Journal of Environment and Urban Systems*, 10 (1), 175-84.
- Crenshaw, M. (1909). The causes of terrorism. *Comparative Politics*, (13), 379-399.
- Cresswell, T. (2006). *Place: A Short Introduction*. Oxford: Blackwell.
- Cutter, S.L., Richardson, D.B. & Wilbanks, T.J. (2003). *The geographical dimensions of terrorism* (New York: Routledge).
- Daniel, E.S., & Dogo, H.S. (2011). Development of criminals record information system. Nigeria Computer Society (NCS): 10th International Conference –July 25-29 2011
- Dammo, M.N., Ibn Abubakar, B.S.U., & Sangodoyin, A.Y. (2015). Quantittive analysis of rainfall variation in North eastern region of Nigeria. *Journal of Agricultural and crop research*. 3(5), 67-72.
- Danbazau, A. B. (206). Boko haram insurgency in Nigeria. Lecture delivered at Ghana Armed Forces Command and Staff College, Accra, Ghana.
- Deflem, M. (2004). Social control and the policing of terrorism: Foundations for sociology of counterterrorism. *The American Sociologist*, Summer 2004.
- Devetak, R. (2005) The gothic scene of international relations: ghosts, monsters, terror and the sublime after September 11. *Review of international studies*, 31 (4), 621-643.

- Duru, E.J.C., & Ogbonnaya, U.M. (2010). Globalization, international security and national security challenges, *kogi Journal of Politics*, 1(1), 1-9.
- Donald, B., Jason, D., & Heidi, H. (2004). Spatial forecast methods for terrorist events in urban environments. Springer-Verlag Berlin Heidelberg, 426–435. 2004.
- Engene, J. O. (1998). Patterns of terrorism in western europe, 1950-1995. Universiteteti Bergen, Norway.
- Ettlenger, N., & Bosco, F. (2004). Thinking through networks and their spatiality: A critique of the US (public) war on terrorism and its geographic discourse. *Antipode* 36 (2), 249-271.
- Fajemirokun, F., Adewale, O., Idowu, T., Oyewusi, A. & Maiyegun, B. (2006). A GIS Approach to Crime Mapping and Management in Nigeria: a case study of Victoria Island Lagos, Presented at the XXXIII FIG Congress in Munich, Germany, October 8-13, 2006.
- Falola, T. (1998). Violence in Nigeria: The Crisis of Religious Politics and Secular Ideologies. *Journal of African Economic History*, 26, 1-18.
- Farinelli, F. (2003). *Geografia. Un'introduzione ai modelli del mondo*. Turin: Einaudi. Washington D. C: Brassey's Publication.
- Faseun, F. (2005). OPC : Our history, our Mission. Lagos: Inspired Communication Ltd.
- Ferreira, J, João, P., & Martins, J. (2012). GIS for crime analysis - Geography for predictive models. *The Electronic Journal Information Systems Evaluation*, 15 (1), 36 -49.
- Flint, C. (2003). Terrorism and counterterrorism: Geographic research questions and agendas, *The professional geographer* 55, 161–169.
- Flint, C. (2005). Dynamic metageographies of terrorism: The spatial challenges religious terrorism and the "war on terrorism". In C. Flint (Ed.), *The geography of war and peace*: 198-216. Oxford: Oxford University Press.

- Forest, J. J. F. (2012a). Global trends in kidnapping by terrorist groups. *Global Change, Peace & Security* 24(3), 311-330.
- Forest, J. J. F. (2012b). Kidnapping by terrorist groups, 1970-2010: Is Ideological Orientation Relevant? *Crime & Delinquency* 58(5), 769-797.
- Galloway, G. (2003). Emergency preparedness and response - lessons learned from 9/11. In S. Cutter, D. Richardson & T. Wilbanks (Eds.), *The geographical dimensions of terrorism*. New York: Routledge, 27-34.
- Grare, F. (2007). The evolution of sectarian conflicts in pakistan and the ever-changing face of islamic violence. *South Asia*, 30 (1), 127-144.
- Giuseppa, A. Roberto, L. & Maria, F. M. (2012). A GIS tool for the emergency management of terrorist actions in the transport of hazardous substance, University of Messina - Dipartimento di Chimica Industriale e Ingegneria dei Materiali Salita Sperone, 31 - 98166 Messina ITAL.
- Goodchild, M. (2003). Data modeling for emergencies. In S. Cutter, D. Richardson & T. Wilbanks (Eds.), *The geographical dimensions of terrorism*. New York: Routledge. 105-110.
- Guo, D., Liao, K., & M. Morgan. (2007). Visualizing patterns in a global terrorism incident database. *Environment and planning B: Planning and design* 34 (5), 767-784.
- Haruna, B. (2002). Balancing ethnic and religious forces for development: A case of Adamawa state. *Paper delivered at the presidential retreat on peace and conflict resolution in some States*. Held at the National Institute for Policy and Strategic Studies Kuru, Jos, from 23rd -26th January, 2002.

- Hess, T.M., Stephens, W., & Maryah, U.M. (1995). Rainfall trends in the north east arid zone of Nigeria 1961–1990. *Agric. For. Meteoro*, (74), 87–97.
- Heywood. I., Cornelius. S.; & Carver, S. (1998). *An introduction to geographical information systems*, Longman pub.
- Holmes, J.S., Curtin, K.M., & Guterrez, S.A. (2005). A subnational study of insurgency: FARC Violence in the 1990s. (Doctoral Thesis), University of Texas, Dallas.
- Hubbard, R.M., Ryan, M.G., Giardina, C.P., & Barnard, H., (2004). The effect of fertilization on sap flux and canopy conductance in a *Eucalyptus saligna* experimental forest. *Global Change Biol.* 10, 427–436.
- Human Rights Watch (2014). World report 2014 events of 2013. Access on line at www.hrw.org/world-report/2014.
- Human Rights Watch (2018). World report 2018 events of 2017. Access on line at www.hrw.org/world-report/2018.
- Huyck, C.K. & Adams, B.J. (2003). An evaluation of the role played by remote sensing technology following the World Trade Center attack, 159-160.
- Idris, H. (2013). Why Boko haram is changing tactics. *Weekly Trusth*, 5th October, 2013
- Ijere, J.A. (1993). Borno State. In Udo, R.K and Mamman, A.B. (Eds.) *Nigeria: Giant in the Tropics*, Lagos Gabumo Publishing Company. (2),111-116.
- Ijere, J.A & Daura, M. M (2000). Borno State In Mamman, A.B, Oyebanji, J.O, and Peters, S .W (eds) *Nigeria: A People United, A Future Assured*. 2. Millenium Edition.. Gabumo Publishing Company, Calabar: 103-120

- Ikpeze, N. (2000). Post Biafran Marginalization of the Igbo in Nigeria. In Amadiueme Ify & Abdular An-Na'im (eds) *Politics of Memory: Truth, Healing and Social Justice*. London/New York: Zed. 90-109.
- Imam, Y.O. (2004). Religious Crisis and Social Disruption in Northern Nigeria. Ibadan: Loud Books Publishers.
- Ingold, T. (2000). *The perception of the environment: Essays on livelihood, dwelling and skill*, London and New York: Routledge.
- Internal Displacement Monitoring Center. (2014). Nigeria IDP Figures Analysis. Accessed October 20, 2018. <http://www.internal-displacement.org/sub-saharan-africa/nigeria/figures-analysis>.
- Isyaku, A. (2013). Terrorism: A new challenge to Nigeria's stability in the 21st century. *International Affairs and Global Strategy* 12, 16-24.
- James, N. (2010). Recording of crime in Nigeria: Problems and prospects. Retrieve on 15/07/2017 from <http://dspace.unijos.edu.ng/bitstream-/10485/187/122%20%20>.
- Jiawei, H. (2003). Mining spatiotemporal knowledge: Methodologies and research issues. 2003 KDVis Workshop.
- Johnson, C.P. (2000). Crime mapping and analysis Using GIS. Geomatics 2000: Conference on Geomatics in Electronic Governance, January 2000, Pune.
- Johnson, T. (2011). Boko Haram - council on foreign relations. Retrieved on 25th April, 2018 from www.cfr.org/africal/boko-haram/p25739.
- Johnston, P. (2008). The geography of insurgent organization and its consequences for civil wars: Evidence from Liberia and Sierra Leone. In *security studies* 17(1), 107-137.
- Kautt, W.H. (1999). *The Anglo-Irish war, 1916-1921: A people war*. Praeger: Westport, CN.

- Kegley, C. (2003). The characters, causes, and controls of the new global terrorism: An introduction. In Charles Kegley (ed.), *The New Global Terrorism: Characters, Causes, and Controls*, New Jersey: Pearson Education, Inc, 1-14.
- Knox, P.L., & Marston, S.A. (2007). Places and region in global context: Human geography. 4th Ed, Prentice Hall, Upper Saddle River.
- Krueger, A.B., & Maleckova, J. (2003). Education, poverty & terrorism: Is there a causal connection? *Journal of Economic Perspectives*, (17) 4, 119-144.
- Kwan, M.P. (2003). Intelligent emergency response systems. In S. Cutter, D. Richardson & T. Wilbanks (Eds.), *The geographical dimensions of terrorism*: New York: Routledge. 111-116.
- Lamb, P.J. (1983). West African water vapor variations between recent contrasting Saharan rainy seasons. *Tellus*, 35, 198–212.
- Lefebvre, H. (1991). *The production of space*, Oxford; Cambridge, MA (Blackwell). Google Books.
- Lefebvre, H. (2009). *State, space, world: Selected essays*. Minneapolis: University of Minnesota Press.
- Lersch, K.M. (2004). *Space, time, and crime*. North Carolina Press, Durham, NC.
- Lewis, J.L. & S.R.J. Sheppard. (2006). Culture and communication: can landscape visualization improve forest management consultation with indigenous communities? *Landscape and Urban Planning* 77, 291–313.
- Li, S., Long, C., Liu, F., Lee, S., Guo, Q., Li, R., & Liu, Y. (2006). Herbs for medicinal baths among the traditional Yao communities of China. *Journal of Ethnopharmacology* 108, 59-67.

- Livingstone, D.N. (2003). *Putting science in its place: Geographies of scientific knowledge*. Chicago: University of Chicago Press.
- Logan, B. (2002). The lessons of 9/11. *Geospatial solutions*, September: 26-30.
- Looney, R. (2003). The role of foreign aid in the war on terrorism: Examples from pakistan. *Political Crossroads*, 1(2), 10-11.
- Loughlin, J.O., Witmer, F.D.W., & Linke A.M. (2012).The Afghanistan-Pakistan Wars, 2008–2009: Micro-geographies, Conflict Diffusion,and Clusters of Violence. *Journal of economic literature*, 2(1), 112-123.
- Mackey, S. (2015). Applied Theatre and Place (working title) in J. Hughes and Nicholson, H. (eds) *Critical Perspectives in Applied Theatre*, Cambridge University Press.
- Madunagu, E. (2011). Reflections on Nigeria terrorism. *Journal of constitutional development*. 11 (4), 1-6.
- Maguire, D.J., Goodchild M.F., & Rhind, D.W. (1991). *Geographical information systems (1)*. London: Longman Scientific and Technical.
- Mair, S. (2003). Terrorism and Africa. *African security review*, 12(1), 107-110-
doi:10.1080/10246029.2003.9627576
- Mallam, B. (2009). Nigeria: An assessment of Nigeria police force. In Tanko, M., Salau, S. and Abdu, M (eds), *Proceedings of 2nd National conference on security and Nigeria's development*, FSMS, Kaduna State University, Kaduna, Dec. 2009, 1-9
- Massey, D. (2005). *Space, place and gender*, Cambridge, UK (Polity Press).
- Medina, R. M., & G. F. Hepner. (2013). *The geography of international terrorism: An introduction to spaces and places of violent non-state groups*. CRC Press.

- Medina, R.M., Laura, K. S., & George, F. H. (2011) A Geographic Information Systems (GIS) Analysis of Spatiotemporal Patterns of Terrorist Incidents in Iraq 2004–2009, *Studies in Conflict & Terrorism*, 34 (11), 862-882.
- McDonald, M.A., Hofny-Collins, A., Healey, J.R., & Goodland, T.C.R. (2003). Evaluation of trees indigenous to the montane forest of the Blue Mountains, Jamaica for reforestation and agroforestry. *Forest Ecology and Management* 175, 379-401.
- Miller, H. (2003). Transportation and communication lifelines disruption. In S. Cutter, D. Richardson & T. Wilbanks (Eds.), *The geographical dimensions of terrorism*: 145-152. New York: Routledge.
- Mohammed, M. (2012). Violence and Threat to Yobe's Economic Growth, *The Moment*, Wednesday, March 7.
- Monestiez, P., Dubroca, L.; Bonnin. E., Durbec, J.P., (2006). Geostatistical modeling of spatial distribution of *balanotera physalus* in the north-western Mediterranean Sea from sparse count data and heterogeneous observation efforts. *ecological modelling*. 193, 615-628.
- Mu'azu, A. (2011). Understanding the emerging trends of terrorism in Nigeria: A case study of Boko Haram and similar groups; being paper presented in 5th policing executive forum on Responding to the emerging trends of terrorism in Nigeria by CLEEN Foundation: 18-19.
- Mudasiru, S.O. (2011). Understanding the dimensions of the new face of terror: A political economy of African terrorist groups, *Journal of Constitutional Development*. 11 (4), 94-110.
- Murray, A., & Grubestic, T. (2007). *Critical infrastructure*. London: Springer.

- Mustafa, D. (2005). The terrible geographicalness of terrorism: Reflections of a hazards geographer. *Antipode*, 37 (1), 72-92.
- Naing. L, Winn. T & Rusli. B,N. (2006). Sample Size Calculator for Prevalence Studies. Available at: http://www.kck.usm.my/ppsg/stats_resources.htm
- Nance, M. W. (2014). *Terrorist recognition handbook: A practitioner's manual for predicting and identifying terrorist activities*. 3rd ed. Boca Raton, Florida: CRC Press.
- National Counterterrorism Center (2016). Worldwide incidents tracking system methodology criteria. Available at http://www.nctc.gov/witsbanner/wits_subpage_criteria.html accessed 18 April 2018.
- National Population Commission (2017). [Population Census](#), Federal Republic of Nigeria, National Bureau of Statistics. Archived from [the original Archived](#) July 4, 2007, at the [Wayback Machine](#). On 25 February 2018.
- Ndirmbitah, G.Y (2000). *A History of the Kibaku*, Kaduna: Barakat Press.
- Negx. (2013). Major events, facts and dates in Nigeria. Access on www.Ngex.com/default.htm
- Nigeria Bureau of Statistic (2010). The national literacy survey. Retrieved from [www.nigerianstate.gov.ng/pdfupload/National % 20 literacy%20survey,%202010.pdf](http://www.nigerianstate.gov.ng/pdfupload/National%20literacy%20survey,%202010.pdf) on 14/03/18
- Nwanegbo, C. J. & Odigbo, J. (2013). Security and national development in Nigeria: The threat of Boko haram, *International journal of humanities and social sciences*, 3(4), 285-291.
- Okpaga, A., Chijioke, U.S., & Eme, O. I. (2012). Activities of Boko Haram and Insecurity Question in Nigeria. *Arabian Journal of Business and Management Review*. 1,(9), April 2012.

- Olagundu, L. (2012). Almajirai, street kids and a nation's future, *Nigerian tribune*, 20 April. <http://tribune.com.ng/index.php/the-friday-edition/39559-almajirai-street-kids-and-anations-future> (Accessed 7 Dec 2017).
- O'Loughlin, J. (2002). The electoral geography of weimar germany: Exploratory spatial data analyses (ESDA) of protestant support for the Nazi party." *Political analysis* 10(3), 217-243.
- O'Loughlin, J., F. W. Witmer & A. Linke (2010). The Afghanistan-Pakistan Wars, 2008-2009: Micro-geographies, Conflict diffusion, and clusters of violence. *Eurasian geography and economics*, 51(4), 437-471.
- Olowoselu, A. (2014). Historical analysis of Boko haram insurgency on educational management in Northern Nigeria. *Global Journal of Arts, Humanities and Social Sciences*, 2(10), 77-83.
- Omoh, G. (2012). How government impoverished Nigerians, poverty on rampage". *Financial Vanguard: vanguard Newspaper*, 20th February, 2012, 16-20.
- Onanuga, A. (2013). How Jonathan can Combat Security Crisis, *The Nation*, May 14, 29-30.
- Onapajo, H., & Uzodike. U.O. (2012). Boko Haram Terrorism in Nigeria. *African Security Review* 21 (3), 24-39.
- Onuoha, F.C. (2010). The islamist challenge: Nigeria's Boko haram Crisis explained. *African Security Review*, 19(2), 54-67.
- Onuoha, F. C. (2012). The audacity of the Boko haram: Background, analysis and emerging trend. *Security Journal* 25 (2), 134-151.
- Olugbode, M. (2011). Nigeria: we are responsible for Borno killings, says Boko haram. *All Africa.com*. Retrieved 31January 2017

- Ovaga, O.H. (2013). The socio-economic implications of Boko haram activities in Northern Nigeria. *Review of Public Administration & Management*, 1 (2), 1-17
- Patrick, O., & Felix, O. (2013). Effect of Boko haram on school attendance In Northern Nigeria: *British Journal of Education*, 1(2), 1-9.
- Polk, W. R. (2008). *Violent Politics: A History of Insurgency, Terrorism and Guerilla War, From the American Revolution to Iraq*. New York: Harper Perennial.
- Raghavan, S. (2011). Inspired by Tunisia and Egypt, Yemenis join in Anti-government Protests, *Washington Post*, Thursday, January 27.
- Ratcliffe, J.H. & McCullagh, M.J. (1998). Aoristic crime analysis. *Int J Geogr Inf Sci*, 12(7), 751–764
- Ratcliffe, J.H. (2000). Aoristic analysis: the spatial interpretation of unspecific temporal events. *International Journal of Geographical Information Science*, 14(7), 669–679
- Rayar, A. J. (1996). Desertification and soil degradation in arid and semi arid regions in Nigeria. *University of Maiduguri inaugural lecture series*, 55, 1– 9.
- Richard, M, M., Laura, K. S., & George F. H. (2011). A Geographical Information Systems (GIS) Analyses of Spatial Temporal Analyses of Terrorist Incidents in Iraq, 2004–2009. *Journal of Studies in Conflict and Terrorism*, 34 (11), 862-882
- Robert, C.W. (1981). Social Forces, States and World Orders: Beyond International Relations Theory', *Millennium: Journal of International Studies*, 10 (2), 126–55.
- Rosenfeld, R (2004). Terrorism and criminology, in *Terrorism and counter-terrorism: Criminological perspectives*, ed. M Deflem, Elsevier, Amsterdam.
- Ruvalcaba, J. (2004). Understanding Iraq's insurgency. The fletcher school online Journal for issues related to Southwest Asia and Islamic Civilization, Spring.

- Sack, R. D. (1997). *Conceptions of space in social thought: A geographic perspective*. Minneapolis: University of Minnesota Press.
- Sadau, Z.A (2017) *A critical analysis of Boko haram insurgency*. (Doctoral thesis) U.S Army Command and General staff college. Fort Leavenworth, Kansas.
- Sadiya, T.B., Oladiti, I., James G.K., Shaba, H.A., Mamfe, V., Muhammed, S.O., Xu M., Sha, J., Sanusi, M. (2016). Military Terrain Trafficability Analysis for North-East Nigeria: A GIS and Remote Sensing-Based Approach. *Journal of mobile computing & Application*, 4, 34-46.
- Sani, S. (2011) Boko haram: History, ideas and revolt, *Journal of Constitutional Development*, 11 (4), 1-16.
- Schaffer, T. C. (2008). The madrassah challenge: Militancy and religious education in pakistan. *Survival*, 50(5), 199-200.
- Schmid, A.P. (1992). Terrorism and Democracy. *Terrorism & Political Violence*, 4, 14.
- Shamblin, C.C. (2004). *An Application of Geographical Information Systems (GIS): The Utility of Victim Activities Spaces in The Geographic Profiling of Serial Killers*. (M.Sc Thesis). University of Tennessee.
- Shettima, K. (2012), The challenges of insecurity in Borno State, *Leadership*, 15 May (reprinted in *Sunday Trust*). http://www.leadership.ng/nga/columns/24704/2012/05/15/challenges_insecurity_borno_State_gov_kashim_shettima.html (Accessed 11 Nov 2014).
- Sheppard, E. (2002). The spaces and times of globalization: Place, Scale, Networks, and Positionality, *Economic Geography*, 78, 307–330.

- Shillingford, D & Groussman, J.D. (2010). Using GIS to fight crime. ISO Review. [online] <http://www.iso.com/Research-and-Analyses/ISO-Review/Using-GIS-to-Fight-Crime.html>. Accessed January 27, 2017.
- Smelser, N.J., & Mitchell, F. (2002). *Terrorism: Perspectives from the behavioral and social sciences*. The National Academies Press, 500 Fifth Street, NW, Washington, DC 20001.
- Soja, E.W. (2002). *Third space: Journeys to Los Angeles and Other Real-and-imagined Places*, Malden, MA (Blackwell).
- Stern, J. (2000). Pakistan's jihad culture. *Foreign Affairs*, 79(6), 115 .
- Stern, J. (2003). *Terror in the Name of God*. Harper Collins, NY
- Suleiman, T. (2011). Living in the shadows of Boko haram. *Tell magazine*, November 21st, 2011, 45.
- Taylor, M. & Ryan, H. (1988). Fanaticism, political suicide and terrorism. *Terrorism*, 11(2), 91-111.
- Tukur, A. (2004). Sociology of terrorism. *Annual Review of Sociology*, (30), 271-286
- United States Agency International Development (2012). *Activities of Terrorism in the United State. USAID Publication*. Washington, D.C.
- Usigbe, L. (2012). Embrace Islam, or resign, Boko Haram tells Jonathan. *Nigerian Tribune*, Monday 6th August 2012.
- United State Counter-Insurgency Initiative (2009) *United State counterinsurgency guide*. Bureau of political-military affairs.
- U.S. State Department. (2012). Country reports: Africa overview. Chap. 2, In *Country Reports on Terrorism 2011*: Office of the Coordinator for Counterterrorism. Accessed July 8, 2014. <http://www.state.gov/j/ct/rls/crt/2011/195541.htm>.

- U.S. State Department. (2014). Boko haram and U.S. Counterterrorism Assistance to Nigeria." Accessed July 8, 2014. <http://www.state.gov/r/pa/prs/ps/2014/05/226072.htm>.
- Vargas, M.P.B. & van Andel. V.T. (2005). The use of hemiepiphytes as craft fibres by indigenous communities in the Colombian Amazon. *Ethnobotany Research and Applications* 3(2), 243-260.
- Wali, A. M. (2014). Terrorism related trauma in Africa, an increasing problem. *Journal of Epidemiology and Global health*.
- Wayne, O. D. (2000). Poisson-Based Regression Analysis of Aggregate Crime Rates, *Journal of Quantitative Criminology*, 16(1).
- Waziri, M. (2009). The Geography of Borno State: An overview. In: Waziri, M., kagu, A. and Monguno, A.K. (Eds.) *Issues in the Geography of Borno State*. Adamu Joji Publishers. Kano city, Nigeria. 1-13.
- Wilbanks, T. (2003). Energy systems and infrastructures. In S. Cutter, D. Richardson & T. Wilbanks (Eds.). *The geographical dimensions of terrorism*: 139-144. New York: Routledge.
- Williamson, R. and Baker, J. (2002). Lending a helping hand: Using remote sensing to support the response and recovery operations at the world trade center. *Photogrammetric Engineering and Remote Sensing*, 68 (9), 870-875.
- Wright, R., Ganster, P., & Dow, D. (2003). Transborder diaster management. In S. Cutter, D. Richardson & T. Wilbanks (Eds.), *The geographical dimensions of terrorism*: 5-44. New York: Routledge.
- Yuan, Y. F. (1974). Space and place: humanistic perspective. *Progress in Geography* 6, 211-52.
- Yuan, Y. F. (2005). *Space and Place: The Perspective of Experience*, Minneapolis (University of

Minnesota Press).

Yuenting Tsang, B.A. (2008). GIS application in emergency management of terrorism events on the University of North Texas Campus. (*M.Sc. Thesis*). University of North Texas.

Zhang, C. S., Luo, L., Xu, W., and Ledwith, V. (2008). Use of local Moran's I and GIS to identify pollution hotspots of Pb in urban soils of Galway, Ireland, *Sci. Total Environ.*, 398, 212–221

APPENDIX I

QUESTIONNAIRE ON INSURGENCY ANALYSIS IN NORTH-EASTERN NIGERIA

Dear Respondent,

I am a Ph.D. student in the Department of Geography, University of Ilorin, Ilorin, Kwara State, studying the spatial analysis of insurgency activities in North-eastern Nigeria. The understanding of the distribution, factors responsible for insurgency, and its effects is the main focus of the work. This will assist the security agencies in decision making in the area and Nigeria at large.

You are please required to provide answers to the questions below. Your sincere response will go a long way in ensuring the security of lives and properties in the north-eastern Nigeria. All answers will be treated as confidential.

SECTION A: PERSONAL DATA

1. State of Residence

Adamawa

Borno

Yobe

2. Gender

Male

Female

3. Age

Below 16

17-21

22-26

27-31

Above 31

4. Marital status

Single

Married

Divorced

Widow

Widower

Separated

5. Educational level

No formal
Primary
Secondary
Tertiary
Advanced

6. Occupation

Unemployed
Peasant/trader
Student
Civil servant
Others (Specify)

Section B: Factors and Effects Survey

1. What are the factors that encourage insurgency in your area

Factors	Agreed	Strongly Agreed	Disagreed	Strongly Disagreed
Educational Level				
Poverty level				
Religion Extremism				
Porous border				
unemployment				
Presence of hideout for insurgents				
Lack of Government presence				
Others (Specify)				

2. What is the nature of the insurgency in your area

Note: pick based on the highest ('1' is the low and '5' is the high)

Nature	1	2	3	4	5
Robbery					
Kidnapping (children)					
Kidnapping (Adult)					
Attack on Government infrastructure					
Attack on citizens					
Attack on security agencies					
Suicide bombing					
Attacks on foreigners					
Others (Specified)					

3. What are the effects of insurgency activities in your area

Effects	Agreed	Strongly Agreed	Disagreed	Strongly Disagreed
Loss of lives				
Destruction of properties				
Displacement of people				
Lack of trust				
Destruction of land				
Negative effects on socioeconomic activities				
Effects on the international communities				

4. How effective is the government measure in solving insurgency activities

Government Measures	Agreed	Strongly agreed	Disagreed	Strongly disagreed
Effective				
Manageable				
Not effective				

5. Suggest measures to fight insurgency in your area

1.
2.
3.
4.
5.
6.
7.
8.
9.
10.

ONCE AGAIN, THANK YOU FOR YOUR COOPERATION

APPENDIX II

Ethical Certificate

UNIVERSITY OF ILORIN, ILORIN, NIGERIA
UNIVERSITY ETHICAL REVIEW COMMITTEE

Vice-Chancellor: Prof. A.G. Ambali
DVM (ABU), M.V. Sc., Ph.D (Liverpool, UK),
MVCN, MCVSN, MNVMA, FCVSN
Registrar: Mr. E.D. Obafemi
B.A (Hons), Cert. Public Information (Kaduna),
MNIPR

E-mail: P.M.B. 1515, Ilorin
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Website: ethicalreview.unilorin.edu.ng
www.unilorin.edu.ng

Our Ref: UIL/UERC/14/68BP001 **Date:** 14th June, 2018

Protocol Identification Code: UERC/SSC/029
UERC Approval Number: UERC/ASN/2018/1266

SPATIAL ANALYSIS OF INSUGENCY ACTIVITIES IN NORTH-EASTERN NIGERIA

Name of applicant/Principal Investigator: MUSTAPHA, Ibrahim Alhaji
Address of Applicant: Department of Geography & Environmental
Management,
Faculty of Social Sciences,
University of Ilorin, Ilorin.

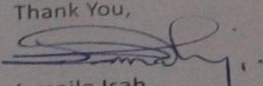
Type of Review: Full Committee Review
Date of Approval: 14/06/2018

Notice of Full Committee Approval
I am pleased to inform you that the research described in the submitted proposal has been reviewed by the University Ethical Review Committee (UERC) and given full Committee approval.

This approval dates from 14/06/2018 to 09/06/2021, and there should be no participant accrual or any activity related to this research to be conducted outside these dates.

You are requested to inform the committee at the commencement of the research to enable it appoints its representative who will ensure compliance with the approved protocol. If there is any delay in starting the research, please inform the UERC so that the dates of approval can be adjusted accordingly.

The UERC requires you to comply with all institutional guidelines and regulations and ensure that all adverse events are reported promptly to the UERC. No charges are allowed in the research without prior approval by the UERC. Please note that the UERC reserves the right to conduct monitoring/oversight visit to your research site without prior notification.

Thank You,

Ismaila Isah
For: University Ethical Review



...it's not ethical!

APPENDIX III

Protocol Certificate

UNIVERSITY OF ILORIN, ILORIN, NIGERIA.
POSTGRADUATE SCHOOL
Zahra Ishowo-Jaji House

Vice-Chancellor:
Prof. S. A. AbdulKareem
B.ChE (Detroit); Ph.D. (Louisville);
MNAICH; MNSE; MACS; R.Eng (COREN)

Dean:
Prof. S. A. Bolu
B. Agric; M. Sc; Ph.D (Ilorin)
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UIL/PGS/90 **21st January, 2019**

MUSTAFA, Ibrahim Alhaji
Matric No.: 14/68BP001
C/o Department of Geography and Environmental Management,
Faculty of Social Sciences,
University of Ilorin,
Ilorin.

Dear **Mustafa**,

Approval of Doctoral Research Protocol

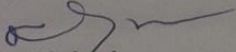
I am pleased to inform you that the Board of the Postgraduate School at its 274th meeting held on Wednesday, 19th December, 2018, considered and approved your Research Protocol titled:

Spatial Analysis of Insurgency Activities in North-Eastern Nigeria

You are to proceed with your Ph.D. programme accordingly.

Thank you,

Yours sincerely,


Olu Olajugba
Deputy Registrar/Secretary, PG School

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