CRIME MAPPING AND ANALYSIS IN KADUNA METROPOLIS, KADUNA STATE NIGERIA

BY

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DECLARATION

I declare that the study in this thesis entitled *"Crime Mapping and Analysis in Kaduna Metropolis, Kaduna State Nigeria"* was conducted by me, and has not been presented in the department or anywhere for a degree or publication. All sources of information and quotations are duly acknowledged in the text and a list of references provided.

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Buhari**, AYUBA** **Date**

CERTIFICATION

This thesis entitled *"Crime Mapping and Analysis in Kaduna Metropolis, Kaduna State Nigeria"*by Buhari, AYUBAsatisfied the regulations governing the award of the degree of Master of Science (Remote Sensing and Geographic Information Systems) of Ahmadu Bello University, Zaria and is approved for its contribution to knowledge and literary presentation.

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DEDICATION

This work is dedicated to my amiable parents Mr. Ayuba Adamu Shenew and Mrs. Christiana Ayuba Shenew and to the victims of crime.

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I will forever be grateful to God for His mercies and grace and for making this course a success.

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ABSTRACT

This research mapped and analyzed crime incidences between 2010 and 2011 in Kaduna Metropolis, Kaduna state, Nigeria Using Remote Sensing and Geographic Information System (GIS) techniques. This was achieved by identifying and mapping the crime types, analyzing the spatial occurrence of the crimes, examining the temporal occurrence of crime and also identifying the hot spots areas in the metropolis. The data on crime were obtained from the 15 Police Divisional Headquarters within the metropolis. An administrative map of the study area was obtained from the Ministry of Land and Survey Kaduna State which was used as the base map for the study. Microsoft excel and ArcGIS version 9.3 was used to analyzed the data.A total of eleven (11) crime typeswere identified. Theft/Stealing had the highest incidence with 19.29% while Kidnapping was the least with 0.46%.The general distribution of crime in the metropolis revealed thatTudunWada had the highest crime with 15.05% while SabonGari had the least with 3.27%. The spatial distribution of each crime types showed that Armed Robbery was highest in Sabon Tasha with 13.64%, Murder in Rigachikun with 27.36%, Assault in Tudunwada with 21.75%, Theft/Stealing inTudunwada with 17.2%, Rape in Rigachikun with 19.1%, Forgery in Kabala West with 13.23%, Burglary in Tudun Wada with 19.2%. Suicide in Rigachikun with 26.54%, Cheating in Tudun Wada with 14.52%, Hurting/Fighting in SabonTash with 17.1% and Kidnapping in Rigachikun with 27.3%. The temporal distribution of crime revealed that crimes are committed most in December and January with 26.9% and 22.45% for both 2010 and 2011.The study identified four (4) crime hot spots using the clustering techniques : Tudun Wada, Sabon Tasha, Rigachikun and Rigasa. These are areas where crime incidences exceed the average for the metropolis. The study therefore recommends that more effort in terms of personnel deployment or location of more police formations should be intensified in areas with high crime incidences and also crime documentation should be done alongside withabsolute location and time of the day or week for a better hot spots and temporal analysis. The use of GIS as a tool should be adopted in decision making, planning and management of crime with the aim of reducing the menace of crime in Kaduna Metropolis.

CHAPTER ONE

INTRODUCTION

1.1 BACKGROUND TO THE STUDY

Crime is one of the continuous problems that bedevil the existence of mankind. Since early days, crime had been a disturbing threat to his personality, property and lawful authority (Louis, Cookie,Louis and Sheldon1981).The relationship between crime and evolution of mankind is considered a historical one as Cain (first son of Adam and Eve) committed the first violent crime when he murdered his brother Abel because of jealousy (Hafiz and Muhammad, 2010).Today, in the modern complex world, the situation is most highly disturbing. Crime started in the primitive days as a simple and less organised issue, and ended today as very complex and organised. Therefore, the existence of crime and its problems have spanned the history of mankind. Due to the complex nature of the subject of crime, its causes and consequences, various academic disciplines such as criminology, sociology, geography, psychology and demography study it from their own perspective (Hafiz and Muhammad, 2010).

The distribution of crime across the landscape is geographically random since crimes are human phenomena. Several factors, including the lure of potential targets and simple geographic convenience for an offender, influence where people choose to break the law. Therefore, geography plays an important role in law enforcement and criminal justice. A popular slogan says criminals are not spirits, they move from one place to the other, and live in the society just like every one of us(Francis, Adewale, Timothy, Abimbola and Babajide. 2006)

Criminal activity continues to be a major concern in contemporary society. Most nations in the world are faced with unacceptable levels of delinquency and crime. In many of the world industrialized countries crime rates recorded by the police are many times those recorded 30 years ago(Francis, *et al*, 2006).

The International Crime Victim Survey (ICVS) has collected data on 55 countries, spread over six major regions including Africa, Asia, Central and Eastern Europe, Latin America, and Western Europe. Findings showed that for the 1989 to 1996 period, more than half of urban respondents reported being victimized at least once, regardless of what part of the world they inhabit (Zhuo, Messner, and Zhang 2008). According to Richard (2004) over 1.4 million violent crimes were reported in the United State in 2000 including more than 15,500 homicides. He stressed that the key ingredients in the incidence of street crime is as a result of proliferate drug use and widespread of fire arms.

During the pre-reformed China in 1950s and 1960s, only five to six criminal cases per 100,000 inhabitants were recorded annually which made it earn a reputation of being a “crime free” society at that time (Liu, 2005). However, since China implemented economic reform and an open-door policy in the late 1970s, crime reporting has increased approximately 50 times the rates observed in the 1950s and 1960s (Zhang, Messner, and Lu, 2007).

According to Francis *et al* (2006), there is no place or society that is completely devoid of crime. The existence of crime is as old as the creation of man itself and man has always looked for ways to combat it and reduce it as much as possible. Murray, McGuffog, Western, and Mullins(2001) explained that the occurrence of criminal activity in form of theft, assault homicide etc. is something that takes place every day in almost all reaches of our world. They stressed that there is a great deal of debate on the causes of crime and affirmed that in the 1980s the rate of crime occurrence grew sharply to nearly epidemic proportions.

In Nigeria, the level of crime is attributed to the unacceptable rate of unemployment, poverty, corrupt Police Force that is ill-equipped to fight crime (Adibe 2009). The idea that unemployment, poverty and corruption are related to a whole series of other misfortunes such as illness, despair, and crime is not a new one (Aminu, Manu, El-Maude and Kabiru 2013). Nigeria is currently caught in the web of crime dilemma, manifesting in the convulsive upsurge of both violent and non-violent crimes. But the most alarming and terrifying is the present escalation of violent crimes and the barbarity, lethality and trauma the perpetrators unleash on the hapless citizenry across the length and breadth of the country. Notable in this regard are the rising incidents of armed robbery, assassination and ransom-driven kidnapping, which are now ravaging the polity like a tsunami and spreading a climate of fears and anxieties about public safety (Uche, 2008). Ackerman and Murray (2004) stated that high crime rates are not unique features of a few nations, but statistically normal features of life all over the world

Urban areas like Kaduna due to population explosion, stark economic inequality and deprivation, unemployment, socio-political condition among others are factors that contribute to crime occurrence (Dodo 2008; Francis *et al* 2006). Greenburg and Rohe (1984) affirmed that certain environmental factors such as the physical layout of an area, proximity to various services and land use mixes are likely to influence criminal behaviour and are fundamental to the explanation of criminal activities in a spatial context. The issue of access, exposure, opportunity and the availability of targets are also important elements in helping to explain crime from an environmental perspective (Cohen and Felson, 1979; Brantingham and Brantingham, 1981). There have been several research efforts seeking to explain the geographic variation in crime rate for more than 150 years (Eck and Weisburd, 1995).

Geographic Information System (GIS) as a tool can be used by police personnel to plan effectively for emergency response, determined mitigation priorities, analyse historical events, and predict future events. The ability to access and process information quickly while displaying it in a spatial and visual medium allows agencies to allocate resources quickly and more effectively. In the 'mission-critical' nature of law enforcement, information about the location of a crime incident, suspect, or victim is often crucial to determine the manner and size of the response. GIS software helps co-ordinate vast amounts of location-based data from multiple sources. It enables the user to create layers for the data and view the data most critical to the particular issue or mission (Johnson 2000).

In an effort to fight crime, the U.S. Department of Justice, Criminal Division, has developed a Map Objects based spatial crime analysis system. The application, known as Regional Crime Analysis GIS (RCAGIS), was specifically developed to assist police departments in analyzing crime on a regional basis (David and Alex, 1999). A company - Environmental Systems Research Institute (ESRI) developed softwares like MapInfo which introduced the first crime mapping applications accessible, in terms of both cost and technology to the average crime analyst. Suddenly, mapping crime was no longer a matter of sticking colour dots on paper maps. Basic pin maps could be done in one twentieth of the time as before, and many new advanced GIS features from raster mapping to buffer analysis to three-dimensional imaging were suddenly available to analysts everywhere (Harries, 1999). Crime mapping and analysis have evolved significantly over the past 30 years. In the beginning, many agencies utilized city and precinct maps events and crime plaque areas. Today with the rapid advancement of technology computer- based techniques for exploring, visualizing, and explaining the occurrences of criminal activity have been essential (McCord and Ratcliffe, 1999; Harries, 1999).

Applications of GIS to crime mapping and management have been successful in many developed countries. It is therefore pertinent to know that any community with high criminal activities is unattractive or less attractive to both local and foreign investment. This is the problem that prevails in some part of Nigeria. According to Aluyor (2005), the Nigerian security agents are not effective in trying to abate crime because of inadequate or poor location of police formations and personnel and failure to adopt the new technology used in fighting crime in developed countries. The police force has failed the Nigerian public by not providing information and awareness on crime hot spots, the time of the day or period of the year that crime are committed as reported by crime victims. This has contributed to the rising cases of crime incidence in Kaduna metropolis.

The use of GIS to map out and analyze crime hotspots will play a great role in abating crime rates in Kaduna metropolis. That is why the researcher intends to test the possibility of applying such tools in fighting crime. Failure to adopt the new technology in fighting crime means a degradation of police abilities, and a regression to the days of informal, infrequent crime analysis performed sporadically by patrol officers. Success can offer greatly improved problem oriented policing capabilities, optimal resource allocation, reduced crime rates, and the prevention of thousands of crimes (IACP, 2002).

Criminal activities are important concerns in the public safety of a contemporary society. Today many countries are faced with high levels of offences and crime rates. Clarifying where different types of crime and other incidents occur is one of the many important functions of crime analyses. There are different types of crime analysis. Many of the researches and practices are oriented to tactical, strategic, and investigative types of crime analysis. The aims of these applications are to detect the distribution and clustering of crimes, and to identify high rate regions to implement precautionary measures and provisions by crime agencies for public security (Ahmadi, 2003). However, administrative type of crime analysis focuses on providing summary data, statistic, and general trend information to managers.

1.2 STATEMENT OF THE RESEARCH PROBLEM

Kaduna metropolis has experienced exponential growth both in terms of population and socioeconomic activities, a process termed as urbanization. An indicator of industrial development, labor market pooling, trade of goods and services, knowledge spillover, high level of income and economic relations. The other face of this urbanization may be the encouragement of crimes as well, since crimes normally occur in large cities and highly urbanized areas (Krivo and Peterson, 1996). In rural areas, due to lower population density, criminal persons have fewer chances of escaping and hiding themselves because people know one another. The opposite is true for urban areas. The main facts of crimes in urban areas are the fewer chances of arrest and recognition (Glaeser and Sacerdote, 1996). Therefore, it is argued that as urbanization increases so does crime (Galvin, 2002: Gaviria, 2002) This is a common observation for many countries in the world.

Much work have been done in different parts of the world on the use of GIS in Crime mapping and analysis, (Murray *et al*, 2005; Haidong, Jianping, Shenjun, Zhanhong, Zhenhua, and Bailang, 2011; Johnson, 2000; Harries, 1999). In Nigeria, little or no effort has been made in this direction. The only known studies that exist focused on A GIS Approach to Crime Mapping and Management in Nigeria, A Case Study of Victoria Island Lagos (Francis, *et al* 2006).

Murray *et al* (2005) conducted a study on Crime mapping and analysis, they acquired data associated with crime in Lima and Columbus (Ohio) and integrated in a GIS environment and were able to map out crime hot spots. Their findings revealed that certain areas had high concentration of crime than others depending on the land use type. The result of their analysis had helped to formulate policy and decision making in the Lima Police Department activities, particularly with respect to community policing in the State. Similar study was conducted by the Chicago Police Department (CPD) in 2002, in an effort to fight murder and aggravated battery with fire arms, the result has led to a decline in criminal activities because there was 18% drop in murder compared with same period the year before (Anne, 2004).

Similarly, Haidong *et al*, (2011) also conducted a Spatial Analysis of Crime Pattern of Metropolis Using Police Records and GIS in Shangai. The Pearson Correlation method was used to probe the relationship between population and crime incidence. It was observed that both violent and property crime were closely related to population in each district. They compared the relationship between crime and proximity to the city and it was discovered that crime density reduces with distance away from the city.

In another study, Francis *et al*, (2006) carried out crime mapping and management in Victoria Island Lagos. They created a data base for the police formations and merged it with house address in a GIS environment, so that it is possible to track a distress call from a crime scene and find the possible shortest route from the police stations to the crime spot. They also did a buffering analysis of the location of the Police station and discovered that the police formations in Victoria Island were not adequately sited as some areas are bigger in land mass and densely populated than others.

Other studies focused on the impact of urban crime on property value in Akure, Nigeria (Bello, 2011), the impact of urban crime on residents' satisfaction and mobility in Nasarawa, Nigeria (Aluyor, 2005; Yacim, 2010), and a whole lots that look at the causes of crime in the society. None of these studies to the best of the researcher's knowledge has addressed crime mapping and analysis in the study area. The focus of the present study therefore is to map and analyse crime of Kaduna metropolis using GIS. The ability of law enforcement agencies to understand and decrease crime rates within a given area is largely dependent on their ability to understand and use their crime data they and other public safety agencies have accumulated. This includes both historical information generated by previous criminal activity and the continuous stream of data produced by new incidents that develop daily (Soneye 2002). For police departments to effectively use this data, it must be recorded in a well-organized manner, made easily accessible and available in an easy-to-understand format that promotes quick decision-making (Murray, *et al*, 2005).

The increasing cases of criminal activities in Kaduna metropolis has triggered the Kaduna State Government to come up with security measures. This has led to the establishment of a security unit, "tagged Operation Yaki" from the Nigerian Police Force in Kaduna. This unit is saddled with the responsibility of fighting criminal activities in the metropolis. Despite this effort by the government and the Police, on a daily basis, crime cases are continually reported, by various media houses in the state. Hence the need for this study to map and analyz crime in the metropolis.

To successfully carryout this research, some basic fundamental research questions were raised:

1. What are the major crimes carried out in Kaduna Metropolis?
2. What is the spatial pattern of crime in Kaduna metropolis?
3. Are there changes in the crime pattern between 2010 and 2011?
4. Where are the hot spots of crime?
5. What periods of the year do crimes occur most?

1.3 AIM AND OBJECTIVES

The overall aim of this research was to map and analyse crime in Kaduna metropolis. This aim was achieved through the following specific objectives which are to:

i. identify and characterise crime types and incidence in the study area.

ii. examine the spatial distribution of crime incidence in the study area.

iii. examine the temporal distribution of crime in the study area.

iv. identify crime hot spots in the study area.

1.4 SIGNIFICANCE OF THE STUDY

The traditional and age-old system of intelligence and criminal record maintenance has failed to live up to the requirements of the existing crime scenario. Manual processes neither provide accurate, reliable and comprehensive data round the clock nor does it help in trend prediction and decision support. It also results in lower productivity and ineffective utilisation of manpower. The solution to this ever-increasing problem lies in the effective use of Information Technology (Francis *et al*, 2006).

Levine (1999), revealed that "certain areas are more prone to higher concentrations of crime, widely labelled as 'hot spots'. Such areas are often targets of increase in manpower from law enforcement agencies in an effort to reduce crime, where resources are concerned. The identification of hot spots is helpful because most police department are understaffed. Clarifying where different types of crime and other incidents occur is one of the many important functions of crime analyses. As such the ability to prioritize intervention through a geographic lens is appealing".

Soneye (2002), established that a large proportion of the men of the Nigerian Police Force can hardly ascertain the areas under the jurisdiction of their stations or define the shortest route from their station to specific crime areas. He concluded that the police stations in Nigeria are far from being distributed according to geographical spread, population characteristics or crime incidence. Crime mapping and analysis will help in decision making because the information gotten will reveal areas that are in need of more police formation in the metropolis.

The popular adage that 'information is power' is true because if crime are mapped out and analysed, both the police and the citizens (public) are informed about the areas that are notorious for a particular crime, it therefore means that they have been empowered and decisions would be easily taken. One major advantage of crime mapping is that it helps citizens to understand crime and how it affects the places we live. Currently, GIS is not being used to fight crime in Nigeria. This is due to the lack of awareness of the benefits offered by GIS in crime control and management in the country. Providing crime statistics for police administrators is important, Crime analysis can support decision making, problem solving, and strategy planning at every level of policing.

1.5 SCOPE OF THE STUDY.

This research was carried out in Kaduna metropolis which comprises of Kaduna South and Kaduna North and some parts of Chikun and Igabi that fall within the metropolis. Political map of Kaduna metropolis was used and the Districts was conveniently delineated based on the Jurisdiction of the Divisional Headquarters within the study area. The research was based on the available documented data on crimes in Kaduna provided by the Kaduna State Police Divisional Head Quarters, Kaduna. The study was based on crime data between 2010 and 2011.

CHAPTER TWO

THEORETICAL FRAMEWORK AND LITERATURE REVIEW

2.1 INTRODUCTION

The purpose of this chapter is to review related literature and to present the conceptual framework on crime, crime mapping, and spatial Analysis of crime that will form the basis of the analysis in this study

2.2 THEORETICAL FRAMEWORK

2.2.1 Theories of Crime Hot Spots

Crime theories are critical for useful crime mapping because they aid in the interpretation of crime data (Eck, 1998) and provide guidance as to what actions are most appropriate. Therefore, understanding how crime theories account for hot spots is critical. Several theories of crime and disorder concentration (hot spots) exist. Some theories disagree, but often the theories do not contradict each other. Rather, they explain different types of crime phenomena that occur at different geographic levels. Each level has basic units of analysis-the things being examined. One can think of units as corresponding to the geographic areas being depicted on maps: points, lines, or polygons (Harries, 1999). Some theories help explain point concentrations of crime. Other theories help explain linear concentrations of crime or hot spot crime polygons. However, theories of crime are useful for helping to guide crime and disorder mapping only if one selects a theory appropriate for the level of analysis and action (Eck, 1998).

2.2.1.1 Place theories

Place theories explain why crime events occur at specific locations. They deal with crimes that occur at the lowest level of analysis-specific places. They involve looking at specific incidents and asking such questions as, “At what places are burglaries occurring and at what places are they not occurring?”

Crime phenomena at this level occur as points, so the appropriate units of analysis are addresses, street corners, and other very small places, which are typically represented on maps as dots. Police action, such as warrants, which specify exact addresses (not blocks or neighbourhoods), is very precise at this level. Similarly, nuisance abatement focuses on specific locations.

2.2.1.2 Street Theories

Street theories deal with crimes that occur at a slightly higher level than specific places; that is, over small, stretched areas such as streets or blocks. A prostitution stroll is an example. At this level of analysis analysts ask such questions as, "On which streets are prostitutes found and on which streets are they not found?" The appropriate units of analysis can be street segments, paths, and sections of highways, which would be represented on maps as straight, bent, or curved lines. Police action is still relatively precise, although not as precise as at the place level. Concentrated patrolling occurs at this level, for example, as well as efforts to change traffic and street patterns.

2.2.1.3 Neighbourhood Theories

Some theories of crime attempt to explain neighbourhood differences.At a higher level than place or street, neighbourhood theories deal with large areas. Here analysts are interested in such questions as, "What areas are claimed by gangs and what areas are not?" The appropriate units of analysis are quite varied and can include square blocks, communities, and census tracts, to name a few. Two-dimensional shapes such as ellipses, rectangles, and other polygons are used on maps to represent crime phenomena at this level. At this level police action is far less precise because the areas are typically too large for effective concentrated patrolling (Eck 1998). Nevertheless, depending on neighbourhood characteristics, relevant action might include efforts to engage residents in collective action against crime and disorder. If offenders are mobile throughout an area, rather than concentrated at a few places, then efforts to deter them should occur at this level. (Sherman, 1997).

For the purpose of this research the Neighbourhood theory of crime hot spots was adopted because the hot spots analysis was done at a larger space than spot, place or street level.

2.3 CONCEPT OF CRIME, CRIME MAPPING, HOTSPOTS AND CRIME ANALYSIS

2.3.1 Concept of Crime

The concept of crime involves the idea of a public as opposed to a private wrong with the consequent intervention between the criminal and injured party by an agency representing the community as a whole. Crime is thus the international commission of an act deemed socially harmful or dangerous. According to Ahmadi, (2003) the word 'crime' is of origin that is; 'Crimean' which means 'charge' or 'offence'Crime is a multifaceted concept that can be defined in legal and non-legal sense. From a legal point ofview, it refers to breaches of the criminal laws that govern particular geographic areas (jurisdictions)and are aimed at protecting the lives, property and rights of citizens within those jurisdictions. Mostof the crimes with which the criminal justice system is concerned involve breaches of State/Territorylegislation that cover most offences relating to persons (for example, murder and sexual assault),property (for example, theft and property damage) and regulation (for example, traffic violations).Commonwealth legislation relates primarily to matters such as trade and commerce, importation/exportation, taxation, defence and external affairs.

Non-legal point of view would define crime as acts that violate socially accepted rules of human ethical or moral behaviour. As the moral principles that underpin the notion of crime are subject to gradual change over time, the types of behaviour defined by the legal system as criminal may also change. Examples of behaviours that have been de-criminalized in some jurisdictions include prostitution, abortion, attempted suicide and homosexual intercourse. Other behaviours, such as tax evasion or credit card fraud, have been criminalized over time (Ahmadi 2003).

Marshall and Clark (1952) defined crime as "Any act or omission prohibited by public law for the protection of the public and punishable by state in a judicial proceeding in its own name". Similarly Tappan (1960) defined crime as "an instrumental act or omission in violation of criminal law, committed without justification and sanctioned by the state as felony or misdemeanour". Uche (2008) sees "crime as an infraction of both the basic principles of law and order and the norms of civilized behaviour.The Author further stressed that no society is immune from this knotty social problem but what differs is the frequency and magnitude of the situation and the response mechanisms to address it".

2.3.2Crime Mapping

Boba (2005) define Crime mapping as the process of using a geographic information system to conduct spatial analysis of crime and disorder problems as well as other police-related issues. Weisburd and McEwen (2004) affirmed that Mapping has fostered a broader approach to crime problems and gained significant institutional support because of its usefulness as a crime prevention tool. Crime mapping is an important feature for the location of crime and that it does not occur accidentally but instead criminal offences may occur in a conspicuous structures that are harmed by the land scape in which they occur and psychological factors that govern the motion of the offender. (Kumar, Paru, Leena, and Chandresh, 2014)

Mapping provides the capability of displaying any subset of events on a map. Not only can theuser specify the time period they want to examine, they can also display events of a certain type orthat meet specific criteria. By enabling the visualization of subsets of information, mapping providesan invaluable tool for revealing clusters and patterns of crime that are not readily apparent from a listof crime events in a report. Another important function that mapping enable is the visualization of theconcentration of events at a single address. This is accomplished by tying the size of the symbol at alocation to the number of events occurring there: the more events, the larger the symbol. This methodfor identifying report events at a single address supports problem-oriented policing efforts by makinglocations with several calls easily identifiable (Eck, 2005).

2.3.3 Pattern of Crime

Pattern detection occurs when offenses reported during a short period of time have common attributes, such as type of crime, modus operandi, and type of weapon used. Acrime pattern could occur over a large geographic region, or it may occur in a relatively small area. Acrime pattern occurring in a relatively small area is called a "hot spot" or cluster. Sherman (1995) defines a hot spot as "small places in which the occurrence of crime is so frequent that it is highly predictable, at least over a one year period". Block, and Block (1990 and 1994) note that “hot spot” areas are defined by clusters of events or locations. The high concentration of cases and the greater probability of future cases occurring within the same area make it a suitable target for crime-suppression strategies.

2.3.4 Crime Hot Spots

Areas of concentrated crime are often referred to as hot spots. Researchers and police use the term in many different ways. Some refer to hot spot addresses (Eck and Weisburd, 1995; Sherman, Gartin, and Buerger, 1989), others refer to hot spot blocks (Taylor, Gottfredson, and Brower, 1984; Weisburd and Green, 1994), and others examine clusters of blocks (Block and Block, 1995). Like researchers, crime analysts look for concentrations of individual events that might indicate a series of related crimes. They also look at small areas that have a great deal of crime or disorder, even though there may be no common offender. Analysts also observe neighbourhoods and neighbourhood clusters with high crime and disorder levels and try to link these to underlying social conditions. One of the programs that work against crime is “hot spots policing” (Short, Bertozzi and Brantingham, 2010; Braga, 2006; Sherman and Weisburd, 1988; Sherman &Weisburd, 1995), a strategy of deploying more crime prevention resources at placesconsidered crime hot spots and times considered hot times. The ample evidence of theeffectiveness of hot spots policing in reducing crime is found in the review conductedby Braga (2006). Braga also found no significant evidence of crime displacements toother areas when hot spots policing is implemented. However, before hot spotspolicing can be initiated, crime mapping and analysis must be first conducted in orderto possibly determine hot spots, hot times, and determinants of crimes in space and time (Ratcliffe, 2010; Eck *et al*., 2005; Anselin, Cohen, Cook, Gorr & Tita, 2000).

A study conducted by Anderson, Santana and Lucilene, de SA in Joao Pessoa in Brazil titled " Spatial Analysis of crime distribution". They use the hot spot analysis using the Kernel density method and their findings revealed that the highest crime rate were committed at the centre of the town where shops, banks and places of hanging out are located and also in residential areas where the residents have high purchasing power.

The term hot spothas become part of thecrime analysis lexicon and has received alot of attention.A hot spot is a condition indicating someform of clustering in a spatial distribution.However, not all clusters are hot spotsbecause the environments that helpgenerate crime (the places where peopleare) also tend to be clusters. So, anydefinition of hot spots has to be qualified.Spelman (1995) defined hot spots "assmall places in which the occurrence ofcrime is so frequent that it is highlypredictable, at least over a one year period."According to Sherman, crime is approximatelysix times more concentratedamong places than it is among individuals,hence the importance of asking"wheredunit" as well as "whodunit."

2.3.5 Crime Analysis

Crime Analysis is a systematic process of collecting, categorizing, analysing and disseminating timely, accurate and useful information that describes crime patterns, crime trends and even potential suspects (McCord, 2009). Law enforcement needs information management, especially location information. Traditional law enforcement for different types of police applications really deals with data collection. However, data collection without data analysis is useless. Not only GIS allows integration and spatial analysis of data to identify, apprehend, and prosecute suspects, it also aids more proactive measures through effective allocation of resources and better policy setting. According to Boba (2001) and Ahmadi (2003) there are six types of crime analysis each contains characteristics of crime analysis in general, but each is specific in the type of data and analysis used as well as in its purpose.

2.3.5.1 Tactical Crime Analysis

This is day-to-day crime analysis, looking for series, patterns, sprees, hot spots, and hot dots immediately affecting the jurisdiction. Tactical crime analysis also focuses on specific information about each crime such as method of entry, point of entry, suspects actions, type of victim, type of weapon used, as well as the date, time, location, and type of location. Field information such as suspicious activity calls for service, criminal trespass warnings, and persons with scars, marks, or tattoos collected by officers is also considered in the analysis. Used for:

- Day to day
- For series, patterns, sprees, hot spots
- Used for Deployment & Administration

2.3.5.2 Strategic Crime Analysis

The study of crime and law enforcement information integrated with socio-demographic and spatial factors to determine long term "patterns" of activity, to assist in problem solving, as well as to research and evaluate responses and procedures. Used for:

- Identify unusual activity levels by time or location.
- Forecasting potential crime events/concentration

2.3.5.3 Administrative/Academic Crime Analysis

The study of crime and law enforcement information integrated with socio-demographic and spatial factors to determine long term "patterns" of activity, to assist in problem solving, as well as to research and evaluate responses and procedures. Used for:

- Reports or statistical summaries for grant funding, commanders & public
- Policy implications beyond law enforcement agency.

2.3.5.4 Operations Analysis

The study of policing practices is regards patrol and resource allocation. Operational analysis coupled with Strategic Crime Analysis, helps patrol commanders to make changes that use resources more efficiently. Used for:

- Assess needs (calls for service, population of data & demographics)
- Generate projections for deployment & resource allocation

2.3.5.5 Intelligence Analysis

The study of criminal organizations and enterprises; how they are linked, who the key players are, helps investigation and prosecution units within police. The purpose of intelligence analysis is to assist sworn personnel in the identification of networks and apprehension of individuals to subsequently prevent criminal activity. Used for:

- Linkage between crime organizations & enterprises

- Relate elements such as companies, agencies, people, times, days, to crimes and places.

2.3.5.6 Investigative Analysis

This looks at crime scene, psychological, and forensic analysis used in major crimes. It also helps catch serial killers, arsonists, and similar criminals. The primary purpose of criminal investigative analysis is to develop patterns of serial crimes crossing city, state, and even national boundaries by linking behaviour and evidence within and among incidents in order to catch the offender and/or clear cases. Used for:

- Crime scene, psychological & forensic information.
- Link serial or related events.

2.4 LITERATURE REVIEW

2.4.1 Geographic Information System in Crime Analysis

With the rapid advancement of technology recently, a computer-based technique for examining, visualizing, and analysing the occurrences of criminal activity is essential. GIS is one of the most influential tools for facilitating and exploration of the spatial distribution of crime (Ahamed and Salihu, 2013). GIS according to Lusch (1999), is an intergrated system of computer hardware and software coupled with procedures and a human analyst which together supports the capture, management, manipulations, analysis, modelling and display of spatially referenced data.Burrough, (1998) described GIS as a powerful set of tools for collecting, storing, retrieving at will, transforming and displaying spatial data from the real world for a particular set of purposes.

The fundamental strength of GIS over traditional crime analytical tools and methods is the ability to visualize, analyse and explain the criminal activity in a spatial context. Certain environmental factors, such as the physical layout of the area, proximity to various services and land use are likely to influence criminal behaviour and it is necessary to take them into account when analysing the crime data (Ahmed and Salihu, 2013). Establishing a direct relationship between information and their geographical location is a unique characteristic of GIS, a versatile tool that also enables information to be displayed as maps. As a decision-support tool, GIS helps to integrate several data sets, and unravel complex relationships between phenomena within an ordered spatial framework (Akinyemi, 2001). Every crime problem is related to some location, whether it's an address, street, ZIP Code, or district. GIS can help you leverage the locational aspect of your data to analyse, understand, and build solutions to the problems you face (ESRI, 2010). Boba (2001) affirmed that GIS is a powerful software tool that allows the user to create anything from asimple point map to a three-dimensional visualization of spatial or temporal data. A GIS is different from manual pin maps and computer maps in that it allows the analyst to view data behind the geographic features, combine various features, manipulate the data and maps, and perform statistical functions. There are many different types of GIS programs, which include desktop packages (e.g., ArcView, MapInfo,GeoMedia, Atlas GIS, Maptitude) as well as professional software (e.g., ArcInfo and Intergraph).

Law enforcement officers have been mapping crime virtually since the time that police agencies were established through the use of push pins and a paper map at the beginning of the 20 Century (Harries, 1999). Since the 1960's Geographical Information Systems (GIS) have been applied to a vast number of studies and criminality is not an exception, (Ferreira, Joao and Martins 2012). By the late 70's and early 80's, there was a resurgence of interest in understanding and analysing the spatial dimension of crime through the characteristics of incident, its location and geographical analysis on incident (Boba, 2009). With the development of GIS in the 90's, law enforcement officers begun to consider the principles of geography and spatial information using new technologies in order to realize and develop mechanisms to crime prevention and the public safety.

However, it was only in the beginning of the 1980s with the reducing prices of technologies (operating systems, processors, storage capacity, memory and hardware), that GIS saw a significant development on new research fields, such as crime analysis, relocation of police precincts and crime reduction strategies. From the first stage of data collection to monitoring and modelling future scenarios to evaluate how, where and when to react, (Ferreira, Joao and Martins 2012), GIS supports the needs in tactical crime mapping by providing a platform for analysing crime data to identify crime patterns and series, linking modus operandi and suspect information to specific crime locations, providing investigative leads by aggregating data from multiple sources, forecasting potential crime locations through spatial tools and techniques, supporting operations plans and clarifying ideal deployment locations, clearing cases by linking suspects to specific crimes after arrest, continuous active monitoring of high-risk and convicted sex offenders etc (ESRI, 2010).

GIS has been applied in crime analysis in different parts of the world in recent times, For example Ferreira, João and Martins in 2012 utilized GIS in crime analysis in Lisbon, Portugal and analyzed the criminal density of the town. They found out that parishes with high population figures had higher criminal density and concluded that there is a strong relationship between crime and population. Also, Barrera, Cagang and Capistrano (2013) applied GIS to create spatial and temporal maps of reported crimes in Dumaguete city, Negros Oriental, Philippines. They found out that the distribution of all crimes in the city is somewhat concentrated at or near the CBD. They also discovered that crime and some of its subtypes are clustered in some months and some hours of the day. Murray *et al,* (2005) conducted a study on Crime mapping and analysis in Lima and Columbus (Ohio) and integrated in a GIS environment. They were able to map out crime hot spots. Their findings revealed that certain areas have high concentration of crime than others depending on the land used type. The result of their analysis had helped to informed policy and decision making in Lima police department activities, particularly with respect to community policing in the state. Similar study was conducted by the Chicago Police.

Ahmadi (2003) conducted a study titled crime mapping and spatial analysis in in Tehran, Iran. He focused on a district called Bazar to investigate the relationship between crime and commercial environment. He analyzed crime in the area base on blocks and density population and also determined suitable blocks for establishing new police station. In crime assessment based on crime per block, he found out that there is direct relationship between crime values and distance from police stations. his findings also revealed that crime assessment bases on density of crime peaks occurred near the central business district and in the high population area. He was able to use the buffer analysis to identified areas suitable for siting new police stations in the study are.

Ahmed and Salihu 2013 conducted a similar study titled Spatiotemporal pattern of crime using GIS approach in Dala L.G.A of Kano State, They analyzed crime data between 2008, 2009 and 2010. They categorized offences into four types; offences against person, offences against property, offences against lawful authority and offences against local act. Their temporal analysis revealed that in 2008, offences against local act was the highest with 38% while offences against authority had the least with 5%. In 2009 offences against persons was the highest with 42% while offences against authority remained the least with 4.7%. In 2010 the scenario changed with offences against persons becoming the highest with 37% while offences against local act were the least with 28%. They also carried out a hot spot analysis using the clustering method for each year. Their findings revealed that hot spots of offences are located outside the city wall, which they stressed is attributed to the absence of police stations.

Another study was conducted in Katsina, Nigeria by Bala, Bawa, Hugga and Ajayi (2015) titled Geospatial Information System for crime analysis and crime zone identification. They analyzed crime data for six years (2004 -2009) and delineated the study area into thirteen zones. They identified thirteen crime types which included theft and other stealing, assault, armed robbery, rape, murder, house breaking, criminal force, motor vehicle theft, criminal intimidation, grievous hurt, unnatural offences store breaking, and kidnapping. The result of their analysis revealed six crime hotspots in the thirteen zones. They also rank the various crime types identified according to their frequency of occurrence. Their findings revealed that theft and other stealing was the first (highest) followed by assault and armed robbery respectively while kidnapping and store breaking were the least of all crimes committed in the study area. Their finding also agrees to that of Ferreira, *et al* (2012) that densely populated areas are areas with high crime incidence. Similarly, another study was conducted in Kaduna titled understanding the spatial pattern of urban crime by Umar, Cheshire and Joshua (2015). They identified only six crime types. These crimes were not documented crime but they were generated using questionnaires and their study focused on only Badarawa - Malali district. Their findings revealed that different types of crime show different spatial pattern in the study area.

From the various studies of crime analysis using GIS, the technology has proven to be an effective tool in crime mapping and analysis because it has help in understanding the spatial pattern of crime, and identification of crime hotspots which are useful information that help to curb and fight crime.

CHAPTER THREE

THE STUDY AREA AND METHODOLOGY

3.1 INTRODUCTION

This Chapter provides general overview of the study area and the methodological approach used to collect data, as well as the procedures employed to analyzed data in order to achieve the set objectives of the study.

3.2 THE STUDY AREA

3.2.1 Location and size

Kaduna metropolis is located in between latitudes10°25'15"N and 10°36'08"N and longitudes 7°23'31"E and 7°29'33"E. The metropolis is the State capital of Kaduna State of Nigeria. It covers an area of about 118km^2 and it covers two main Local Government Areas with some parts of Chikun and Igabi Local Government area, namely: Kaduna North comprising the following Localities: Abakpa, Badarawa, Badiko, HayinBanki, KurminMashi, Malali, Rigasa, TudunNupawa, Tudunwada, UngwaKanawa, UngwaRimi, UungwaSanusi, UngwaSarki, and UngwaShanu. Kaduna South with: Barnawa, Kakuri, Makera, Nasarawa, and parts of Chikun LGA: Television, Narayi and sabo and parts of Igabi LGA: Mando and rigachikun. The distance between the Eastern and Western limits of the metropolis is approximately 13.7 km and between the North and South is approximately 20 km. (Dodo, 2008). Figure 1 shows the study Area

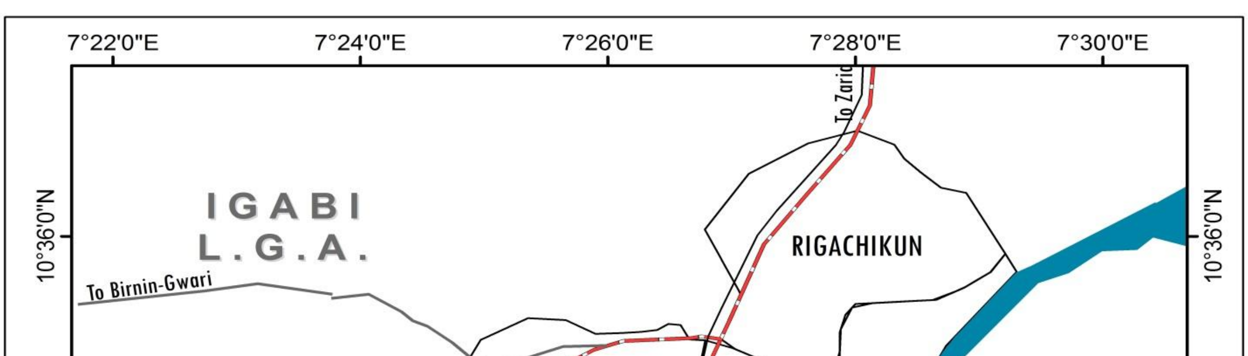


Figure 3.1: Kaduna Metropolis (Study Area)
Source: Modified from Administrative map of study area

3.2.2 Climate

Kaduna metropolis falls within the tropics and has a tropical climate with well-defined wet and dry seasons, according to the Koppens classification scheme. The town has an average rainfall of 1,300mm per annum, with relatively hot and humid weather and a temperature of 27^0c to 34^0c. The rainy season last for up to six months (May to October) with its peak in the month of July and August and a total of about 1,570mm. The dry season on the other hand begins in November and ends in March; temperature ranges from 37^0c to 40^0c with the harmattan period usually cool during the day and chilly at night and is experienced between the months of late November to January in which temperature falls as low as 11^0c. This occurs as a result of the influence of prevailing North-easterlies wind that originates from the Saharan desert which is very cold and dry. Relative humidity range between 10% and 30% in dry season, 70% and 90% in the wet season respectively (Nigerian Metrological Agency, 2006).

3.2.3 Relief and Geology

Kaduna Metropolis is on a gentle undulating plain with land ranging from 457m to 609m above sea level. The town is located on a peneplain consisting of various kinds of rocks such as older Granite, Schist, and quartzite, in variable composition which is basement complex outcrops of the Precambrian age. These rocks are hard and resistant, although they have undergone variable weathering and erosion processes. These processes have resulted in the formation of inselbergs and huge rocky granites, like the ones in Tudun wada area and Ungwan Rimi (Kaduna State Bureau of Land and Survey 2001).

3.2.4 Drainage

Kaduna town is well drained; the entire metropolis is drain by River Kaduna. The River Kaduna takes the form of North North East – South South West trend of the major fault plane, while numerous subsequent streams take the form of the basement fractures. It is thus believed that the river may be associated with one of the tectonic episodes. The river Kaduna takes its source from highlands of Jos

Plateau. The tributaries in Kaduna Metropolis are usually transient, that is they are seasonal (the water level increases during the rainy season and decreases and dry up during the dry season) (Kaduna State ministry of Economic planning, 2001).

3.2.5 Soil and Vegetation

The soils in Kaduna metropolis are predominantly lateritic in Nature. The soil is formed due to weathering of the rocks and is usually fine textured which becomes water logged when wet in the rainy season and dries up and cracks during the dry season. The soil type is suitable for the cultivation of mainly cereal crops like: sorghum, millet, groundnuts etc. A few black soil types found at the southern part of the town and along the river valleys favour the growth of crops like : maize, yam, potatoes, rice, beans, and vegetables like okra, pepper, onions e.tc.(Kaduna Agricultural Development Project 2001)

Kaduna lies in the Guinea savannah zone. The zone comprises savannah woodland with trees like shear butter, locusts bean, tamarind, and trees like baobab, silk cotton, date, daleb palm and dogon yaro. These trees are characterized by rough hard back to withstand the annual bush fire incidence and intense water loss during the dry season. The trees are deciduous in nature, i.e. the shade their leave in the dry season. They also have deep roots to obtain underground water.

The natural vegetation has been altered by man due to his intense activities and rapid process of urbanization, farming, building construction of roads etc. what we have today in Kaduna metropolis is a manmade vegetation mainly consisting of trees of economic importance such as mango, guava, cashew,. The only surviving trees in the town is azadiratha indica (dogon yaro) attributed to its medicinal value (Kaduna state Ministry of Economic Planning 2001)

3.2.6 Historical Development

The town derived its name from the Hausa word “Kada” Meaning Crocodile and that is why it is usually referred to as the ‘’Crocodile city’’ because these amphibians were dominant in the river, the cuts across the town

The British selected Kaduna as the capital of their colony of Northern Nigeria in 1911 and developed an expansive layout for the city. As an industrial and administrative centre, Kaduna Metropolis has drawn migrants from all over Nigeria, thereby making it one of the country’s most ethnically diverse cities (Dodo, 2008).

Kaduna state as a whole was widely scattered and sparse. Apart from Zaria, there was hardly any major area of high population concentration. Most of the settlements were along the banks of the Kaduna River. The establishment of the base of the Western African Frontier Force (WAFF) in Kaduna was an important landmark that led to migration into what are now Kaduna Metropolis and this mark the beginning of urbanization process and the creation of another complex city. Kaduna as a seat of regional government then became a pull factor that attracted migrants from all parts of the country in search of greener pastures and job opportunities. This contributed to the growth of the town, the development of infrastructures and increase in commercial activities. Presently, it is the capital of Kaduna state and the city’s political and economic elite have exerted great influence in national affairs since Nigeria gained independence in 1960 (Dodo, 2008).

3.2.7 Population Growth and Distribution

According to the 2006 census of the federal republic of Nigeria, Kaduna metropolis , comprising Kaduna north, Kaduna south parts of Chikun and Igabi had a projected population of about 907,907 at a growth rate of 10% per annum. The town is still one of the fastest growing towns in Nigeria. Movement of young and strong laborers in large numbers from rural agricultural villages to the town during dry season suggests a sizable seasonal labor force in the state. However, the seasonal labor migration has no effect on agricultural labor demand in the rural traditional skilled labour force for the growing industries in the state (Bello, 1993).

The concentration of government employment opportunities and infrastructures in the town attracted a lot of people from other part of the country to Kaduna. The changing economic and commercial status of the town also attracted investors and other professionals (Abubakar, 2006). Kaduna metropolis has a high level of social integration due to the assemblage of people from different societies in Nigeria and Africa.

3.2.8 Socio Economic Activities

Kaduna metropolis has a vibrant economy with agricultural activities and industrial manufacturing taking lead. However, most youths in the state are not economically viable because they are not employed. About 60% of them are dependent on their parents for survival (Abubakar 2006), this expose the youth to being vulnerable to some sort of juvenile Crime.

Trading of goods and services is the universal economic activity in Kaduna metropolis. Some engage in blacksmithing, clay work, mat- weaving etc. agriculture and grazing is also an important activity which is favoured by the nature of the land.

The place of Kaduna state as the former administrative headquarters of the old northern region should be taken as a catalytic drive that catapulted it to its present economic affluence. The legacy and the relics as a political satellite had given it the landmark upon which economic dormancy is built (Oboni 1999).

The metropolis serves as a major economic centre for trade in several goods, with a major rail and road junction. Kaduna metropolis is one of Nigeria's leading manufacturing centers, specializing in textile production, petroleum refining, vehicle assemblage, brewing, food processing, and printing and publishing. It is the major military center of northern Nigeria, home to large army and air force base and the Nigerian Defense academy , the police college, Kaduna polytechnic, the Nigerian institute of trypanosomiasis research, and the National Museum are all located here (Dodo, 2008**).**

The 2001 industrial statistics of Kaduna state shows that at least 65% of 2,696 establishments are located in Kaduna south and Kaduna north that comprises the metropolis. Manufacturing accounted for 22.8% while wholesale, retail trade accounted for 14.3%, private professional services accounted for well over 21% of all the establishments. Private and public Limited companies in Kaduna metropolis account for 16% and 9% respectively while almost 64% of the establishments available are sole proprietorship. Despite this figures, most inhabitants still remained unemployed. (Kaduna State Ministry of Economic Planning, 2001).

It is rather unfortunate however that these numerous industries, especially the textile industries which employ most of the workers are collapsing therefore, causing high rate of unemployment.

3.3 METHODOLOGY

3.3.1 Preparatory Stage and Reconnaissance survey

Prior to the commencement of this study, a reconnaissance survey of the study area was carried out to have an adequate knowledge of the study area. This was embarked upon to pave the way for a detailed field survey. During the survey, the researcher had discussions with the Police public relation officer and other relevant officers within the study area and was informed that there were 17 Police Divisional headquarters across the study area. In addition, the assemblage and review of the relevant literature materials; visitation to a number of related establishments and organisations for the generation of attribute datasets, and funding for this research work was equally done at this stage. Also, Contacts were made with some experts and professionals in the field of study for the purpose of gathering relevant literature materials.

3.3.2 Data Types and Sources

The data required for this study were as follows:

i. Political Map of Kaduna metropolis. This will be sourced from the Kaduna State Ministry of lands and survey and will be used to delineate the districts according to the Divisional Police Headquarters Jurisdiction in Kaduna Metropolis.

ii. Crime Records: this was obtained from the Police Divisional Head Quarters in Kaduna.There were Seventeen (17) Divisional head Quarters within the study area, However only 15 of these Divisional Headquarters provided consistent records on crime incidence. They are; Gabassawa, Sabon Gari (Magaji Gari), Kakuri, Kabala Doki, Kurmin Mashi, Kawo, Barnawa, Tudun Wada, UngwanSanusi, Rigasa, Malali, UngwanRimi, and Kabala West. Crime Data were collected from all these Divisional Headquarters. These data were used for the Crime Mapping Analysis.

iii. Relevant literatures were collected and used to review past studies on crime analysis.

3.3.3 Data Collection Procedures

The researcher collected the crime data from the various Divisional headquarters files provided at the police headquarters. This was then copied in Microsoft excel and saved as CSV (comma delimited) format which is recognizable and acceptable to the ArcCatalog extension of ArcGIS.

The administrative boundary map of the study area was scanned and imported into ArcGIS 9.3 for geo-referencing. The map was then converted to Universal Transverse Mercator (UTM) projection system with World Geodetic System (WGS) 84, 32N Minna datum, for easy distance measurement. Onscreen digitization was done with features such as roads, river, and rail-track in the study area were digitized as line features. The crime data received from the various police stations were without latitude and longitude information of the crime place, without which crime mapping in GIS platform is not possible. To get latitude and longitude coordinates of all the crime places was very challenging and this was done by assigning the crime spots randomly within the ward or divisional headquarters.

3.3.4 Techniques of Data Analysis

A combination of descriptive and overlay analysis was employed in the analysis of the data. The descriptive statistics such as appropriate maps, line graphs, bar graphs, and tables were employed to illustrate the distribution of the crime types and incidences in the study area.

To identify and map crime incidence and to examine the spatial distribution of crime incidence in the study area, crime records collected from police divisional offices were used to identify the various crime type and location. Geographic coordinates of the crimes were not available since crime is not reported with geographic coordinates. Alternatively, the geo-referenced map of the area was used to pinpoint the locations and record their grid coordinates. The coordinates and addresses of crime cases were copied to Microsoft excel and saved as CSV (comma delimited) format, and then imported into ArcGIS 9.3 using the add XY, Command at the tools menu. This overlaid the points (coordinates) on the geo-referenced map of the study area

To examine the temporal distribution of crime in the study area, a line graph was used to display the monthly trend of crime incidences over the period of 2010 and 2011.

To assess crime hot spots in the study area, attribute tables of crime data in ArcGIS was carried out to provide crime maps and high crime spots within the study area. Identifying hotspots at spot (point)level was difficult in the study area because crimes are not documented with geographic coordinates. The clustering method was used to identify crime hotspot as adopted by Bala, Bawa, Hugga and Ajayi (2015). They identified hotspots using crime average for the various wards. Wards that have crime above the average were marked or identified as hotspots. Therefor crime hotspots in this study were identified using the formula below

$$\text{Average Crime Incidence} = \frac{Total\ number\ of\ Crime\ Cases}{Total\ number\ of\ Areas}$$

Where Total crime case = 7201 while number of areas is 15. Therefore crime average = 480.

CHAPTER FOUR

RESULTS AND DISCUSSION

4.1 INTRODUCTION

This Chapter presents the result of crime data obtained in Kaduna metropolis between January 2010 to December 2011, the crime data was collected and analysed using Microsoft Excel and Arc GIS. The results were presented using descriptive statistics such as frequency tables and crime maps to identify crime pattern, hotspot and temporal occurrence of crime as well as to visualise the spatial distribution of crime in Kaduna Metropolis in order to know which area or areas require more effort to combat crime.

4.2CRIME TYPES IN THE STUDY AREA

There were eleven (11) crime types identified in Kaduna Metropolis between 2010 and 2011. These were, Armed Robbery, Murder/Homicide, Assault, Theft/Stealing, Rape, Forgery, Burglary/Home Breaking, Suicide, Cheating, Hurting/Fight, and Kidnapping. The crime types are presented in table 4.1

Table 4.1: Crime types in Kaduna Metropolis

S/N	Crime Types	No. of cases	%
1	Armed Robbery	550	7.65
2	Murder	201	2.8
3	Assault	984	13.69
4	Theft	1384	19.26
5	Rape	220	3.06
6	Forgery	499	6.94
7	Burglary	955	13.29
8	Suicide	98	1.37
9	Cheating	1054	14.66
10	Hurting/Fighting	1209	16.82
11	Kidnapping	33	0.46
	Total	**7187**	**100**

Source: Field Survey, 2014

From Table 4.1, it can be clearly seen that Theft/Stealing has the highest percentage with 19.29% in the study area and is closely followed by Hurting/Fight with 16.82%. it can also be observed that Kidnapping with 0.46% was the least crime committed within the study area. This result revealing crime types are similar with the ones identified by Bala, *et al* (2015) in Katsina State, and that identified in Benin City by Balogun, Okeke, and Chukwukere (2014).

4.3 GENERAL CRIME INCIDENCE IN KADUNA METROPOLIS

The general crime incidence in Kaduna Metropolis is shown in table 4.2

Table 4.2: General Crime Incidence in Kaduna Metropolis

S/N	**Area**	**NO.OF Cases**	**%**
1	Gabasawa	412	5.73
2	Tudun wada	1081	15.05
3	Kawo	314	4.37
4	Malali	314	4.37
5	Kabala Doki	282	3.92
6	Barnawa	346	4.81
7	Sabon Tasha	736	10.24
8	Rigachikun	730	10.16
9	Sabon Gari	235	3.27
10	Ungwan Rimi	389	5.41
11	Ugwan Sanusi	448	6.23
12	Kakuri	401	5.58
13	Rigasa	623	8.67
14	Kabala West	434	6.04
15	Kurmin Mashi	442	6.15
	Total	**7187**	**100**

Source: Field Survey, 2014.

Table 4.2 shows the general crime incidence within Kaduna metropolis. A close look at the figure revealed that crime incidence is highest in Tudun Wada with (15.05%), then followed by Sabon Tasha and Rigachikun with 10.24% and 10.16% respectively. If one is familiar with these areas one will not be surprised because these are areas with high population concentration and also because of the presence of large markets in Tudun Wada and Sabo areas, Such as Kasuwa Barchi, Popular Panteka Market and Sabo Markets as well as hanging out joints such as bars and hotels. Thus offences like cheating, theft, assaults, robbery, rape, among others will be frequently experienced because of the nature of activities in those areas. A close look at the figure shows that Sabon Gari, and Kabala Doki have low crime incidence with a percentage of 3.27% and 3.92% respectively. Figure 4.1 shows the general crime types and incidence in Kaduna metropolis.

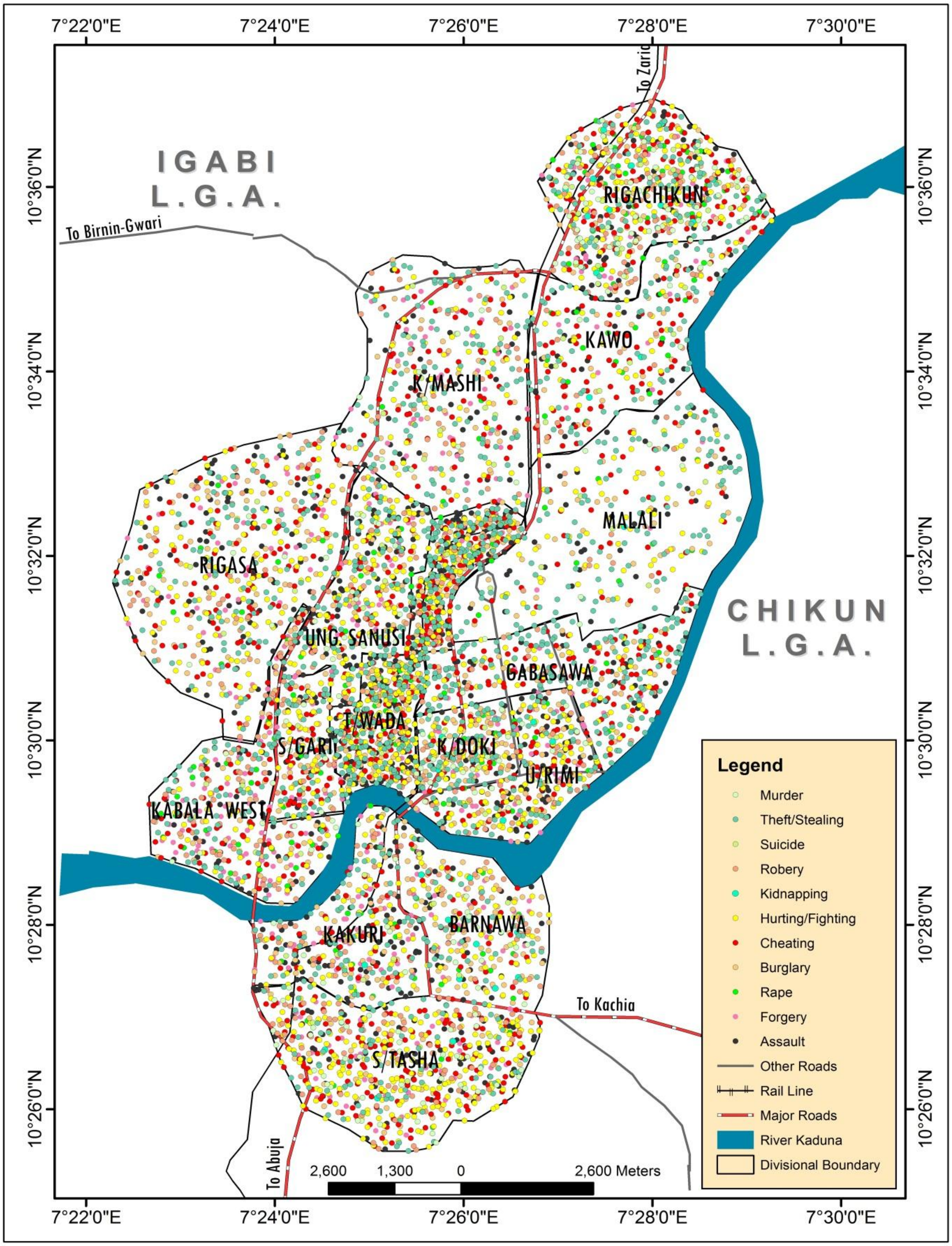


Figure 4.1: General crime Incidence in the study Area. ` Source: Author's Analysis, 2014.

4.4 SPATIAL DISTRIBUTION OF CRIME TYPE INCIDENCE

Identifying geographic patterns is important for understanding how geographic phenomena behave therefore, one can get a sense of the overall pattern of features and their associated values by mapping them. Geographic coordinate of each crime incidence were created and the concept of point on polygon overlay analysis was used to map the crime incidence for the individual crime type and the general crime incidence in the study area.

4.4.1 Armed Robbery

Table 4.3 and figure 4.4 presents the spatial distribution of armed robbery in Kaduna metropolis.

Table 4.3: Armed Robbery incidence in Kaduna Metropolis

S/N	Area	No. of Cases	%
1	Gabasawa	20	3.6
2	Tudun wada	28	5.1
3	Kawo	20	3.6
4	Malali	11	2
5	Kabala Doki	22	4
6	Barnawa	40	7.3
7	Sabon Tasha	75	13.64
8	Rigachikun	73	13.27
9	Sabon Gari	15	2.73
10	Ungwan Rimi	42	7.64
11	Ugwan Sanusi	34	6.2
12	Kakuri	34	6.2
13	Rigasa	48	8.73
14	Kabala West	49	8.91
15	Kurmin Mashi	39	7.1
Total		**550**	**100**

Source: Field Survey, 2014.

From table 4.3 above, out of a total of 550 cases of Armed Robbery incidence, Sabon Tasha has the highest rate of armed robbery recorded in the study area, with13.64% followed by Rigachikun with

13.27%and Kabala West with 8.93% closely followed by Rigasa with 8.73%. These are basically areas with highpopulation concentration in the study area most of whom are unemployed. The findings agree with that of Ferreira, João and Martins (2012) that there is a relationship between population and Armed Robbery. It has also confirmed the works of Aminu, *et al* (2013) that there is a link between crime and unemployment. From the table, areas with low records of armed robbery are Malali 2% and Sabon Gari 2.73%. The reason for low armed robbery cases in Malali could be because most part of the area is planned commonly called the Government Reserve Areas (GRA) that serves as residential houses for government officials. In the case of Sabon Gari, the presence of police divisional headquarters and other security organizations located very close to these areas explain the reason for the low rate of armed robbery in these areas. Figure 4.2 shows the spatial distribution of armed robbery in Kaduna Metropolis.

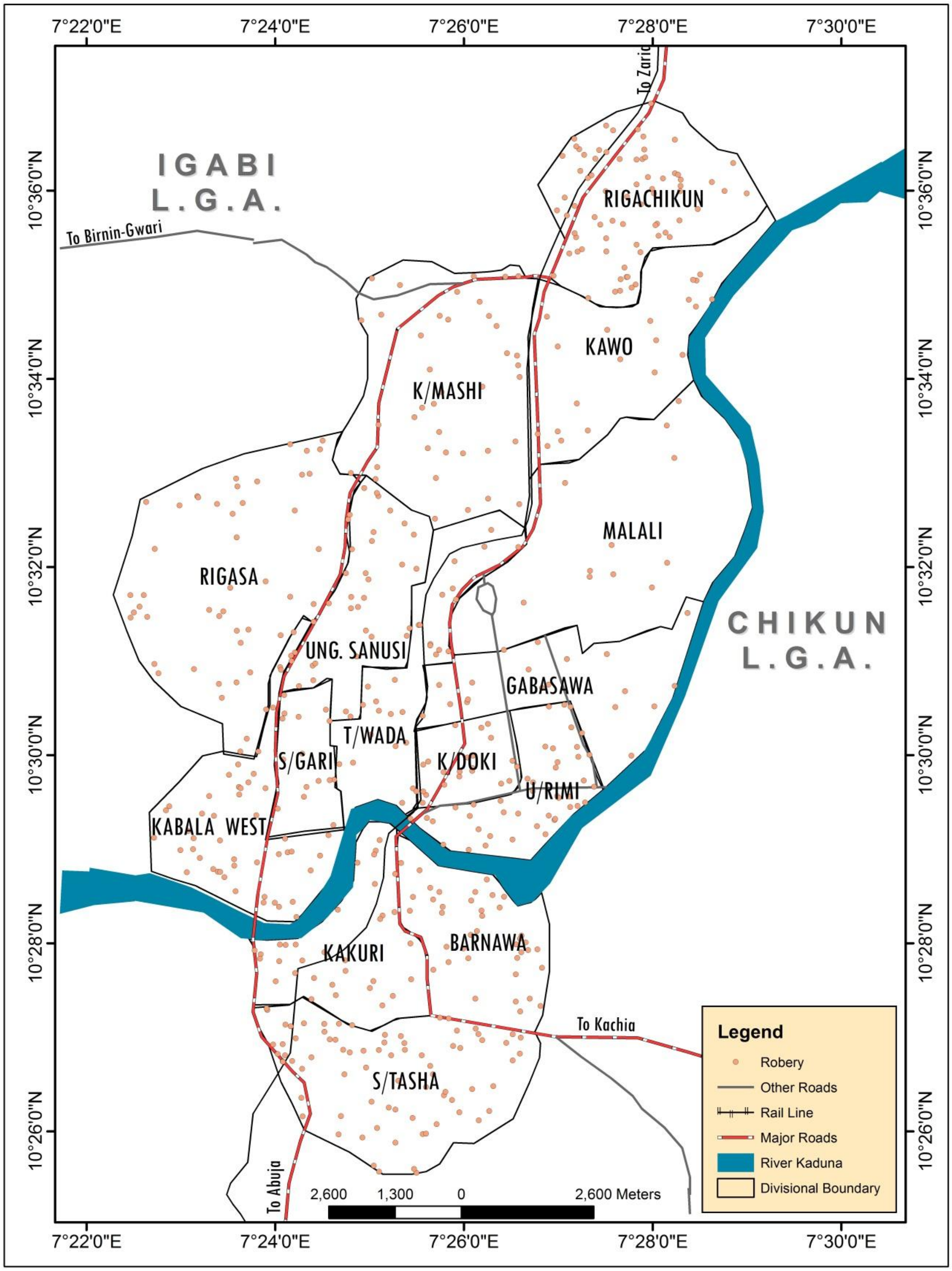


Figure 4.2: Spatial Distribution of Armed Robbery Incidence in the study area
Source: Author’s Analysis, 2014.

4.4.2 Murder

Table 4.4 and figure 4.3 gives the distribution of murder incidences in Kaduna Metropolis

Table 4.4: Murder incidence in Kaduna Metropolis

S/N	Area	No. of Cases	%
1	Gabasawa	3	1.49
2	Tudun wada	11	5.47
3	Kawo	4	1.98
4	Malali	6	2.99
5	Kabala Doki	14	6.97
6	Barnawa	12	5.97
7	Sabon Tasha	32	15.92
8	Rigachikun	55	27.36
9	Sabon Gari	5	2.49
10	Ungwan Rimi	9	4.48
11	Ugwan Sanusi	16	7.96
12	Kakuri	8	3.98
13	Rigasa	8	3.98
14	Kabala West	9	4.48
15	Kurmin Mashi	9	4.48
	Total	**201**	**100**

Source: Field Survey, 2014.

From table 4.4 it can be seen that Rigachikun community with 27.36% has the highest percentage of murder this was followed by Sabon Tasha and Ungwan Sanusi with 15.92% and 7.96% respectively. These areas are located towards the outskirt of the Metropolis and are also areas with high population concentrations, where majority of the population are unemployed. The findings of Sampson and Wilson (2005) identified that joblessness, deprivation and the social conditions of people are the possible causes of murder (homicide) helped to explained the possible causes of murder in the study area. Gabasawa and Kawo communities were observed to have the least murder incidences with 1.49% and 1.98% respectively. This could be due to the fact that there is a concentration of some security formations within these two areas. From Figure 4.3 the spatial distribution of Murder can be viewed.

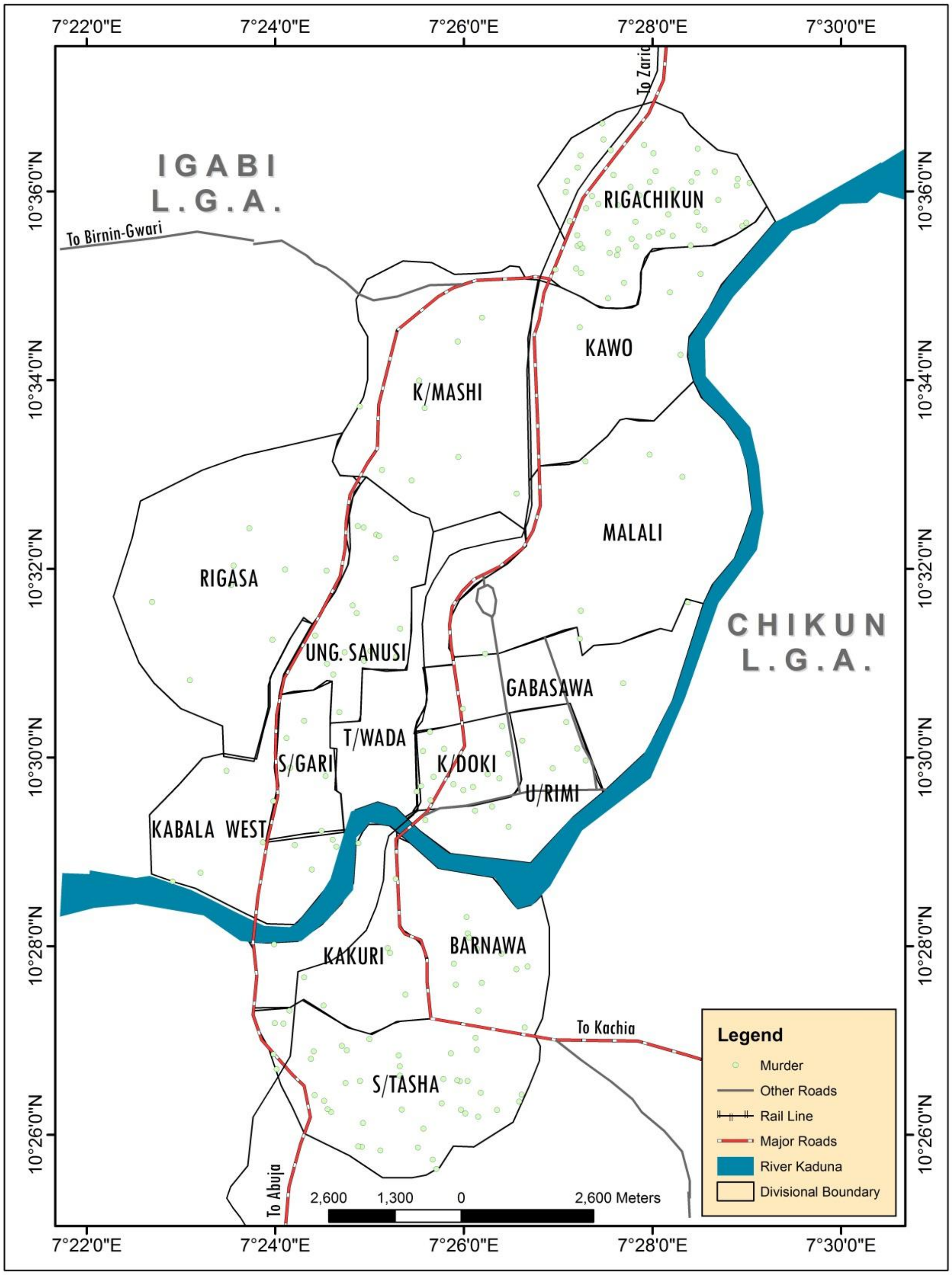


Figure 4.3: Spatial Distribution of Murder Incidence in the study area Source: Author's Analysis, 2014.

4.4.3 Assault

Table 4.5 and figure 4.4 gives the distribution of Assault incidences in Kaduna Metropolis

Table 4.5: Assault incidence in Kaduna Metropolis

S/N	Area	No. of Cases	%
1	Gabasawa	42	4.27
2	Tudun wada	214	21.75
3	Kawo	33	3.35
4	Malali	37	3.76
5	Kabala Doki	23	2.34
6	Barnawa	42	4.27
7	Sabon Tasha	86	8.74
8	Rigachikun	70	7.11
9	Sabon Gari	24	2.44
10	Ungwan Rimi	67	6.81
11	Ugwan Sanusi	81	8.23
12	Kakuri	77	7.83
13	Rigasa	94	9.55
14	Kabala West	52	5.28
15	Kurmin Mashi	42	4.27
Total		**984**	**100**

Source: Field Survey, 2014.

Table 4.5, reveals that Tudun Wada had the highest record of assault in Kaduna metropolis with 21.75% out of the total incidence of 984. This is followed by Rigasa with 9.55%, Sabon Tasha and ungwan Sanusi with 8.74%and 8.23%respectively. The reason for this high incidence of assault here could be attributed to inadequate police or security post, high concentration of population because of the presence of Markets as well as unplanned settlements.According to Sherman and Weisburd's (1988) Assault crime is usually tagged hard crime, and is essentially stranger-to stranger predatory crime. The location of security post is far from adequate in these areas. This also agrees with the finding of Ahmadi (2003) in his assessment of crime, based on crime per block discovered that there is a direct relationship between crime values and distance from police stations and also in assessing crime base on density of crime, peaks occurred in areas with high population. Findings also revealed that Kabala Doki and Sabon-Gari are areas with the least number of assaults with 2.34%and

2.44% respectively. if one is familiar with these two areas, one can easily attach the reason for this to the closeness of a number of security formations such as police barracks, Police College, police training school and prison. From Figure 4.4 the spatial distribution of assault can be viewed.

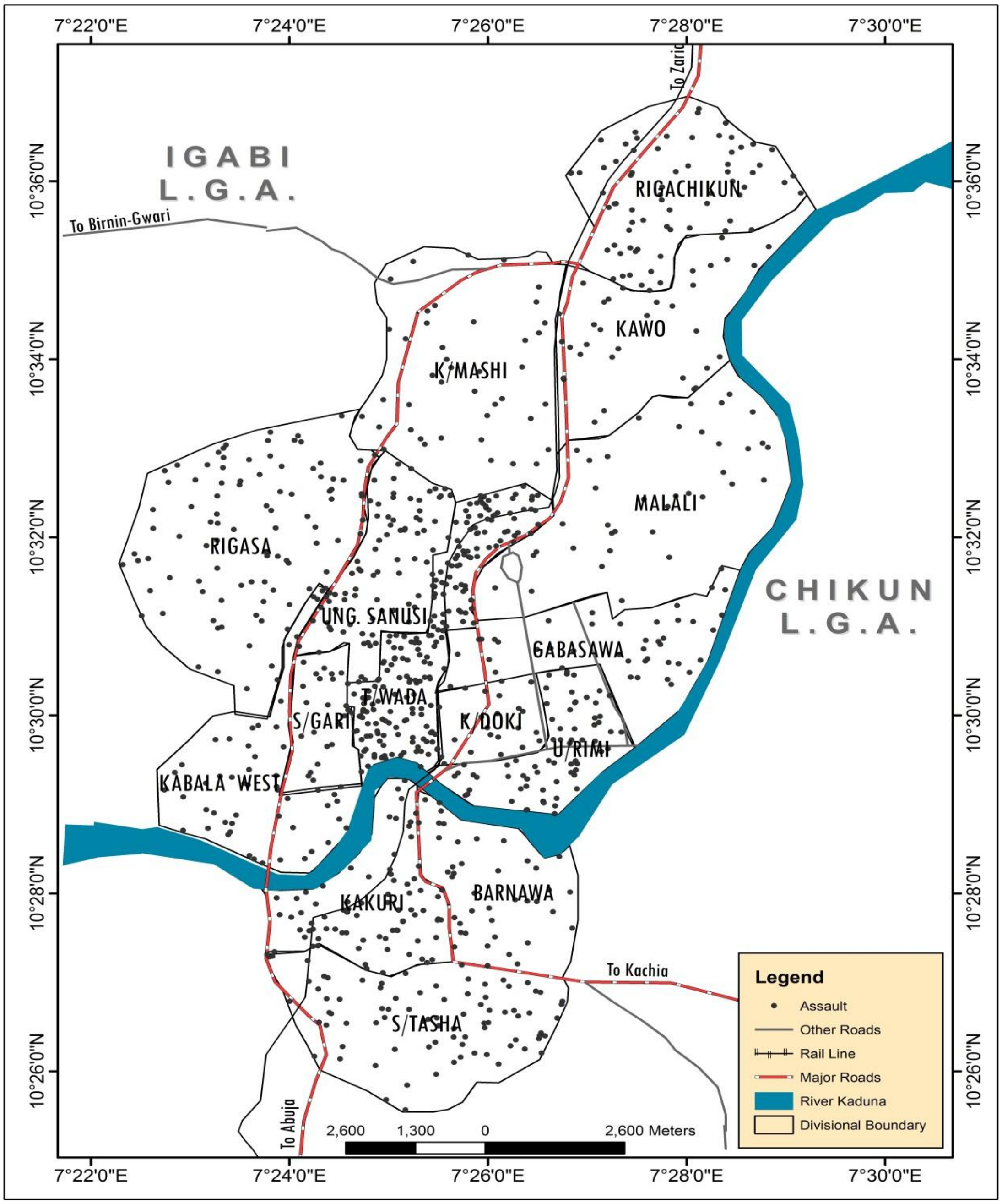


Figure 4.4: Spatial Distribution of Assault Incidence in the study area Source: Author's Analysis, 2014.

4.4.4 Theft/Stealing

Table 4.6 and figure 4.5 gives the distribution of Theft/Stealing incidences in Kaduna Metropolis

Table 4.6: Theft/Stealing incidence in Kaduna Metropolis

S/N	Area	No. of Cases	%
1	Gabasawa	147	10.6
2	Tudun wada	238	17.2
3	Kawo	76	5.49
4	Malali	104	7.51
5	Kabala Doki	62	4.48
6	Barnawa	41	3
7	Sabon Tasha	79	5.71
8	Rigachikun	98	7.08
9	Sabon Gari	44	3.18
10	Ungwan Rimi	56	4.05
11	Ugwan Sanusi	93	6.72
12	Kakuri	63	4.55
13	Rigasa	100	7.23
14	Kabala West	71	5.13
15	Kurmin Mashi	112	8.09
	Total	**1384**	**100**

Source: Field Survey, 2014.

From Table 4.6 above, findings has shown that Tudun wada has the highest crime of Theft/Stealing in the study area with 17.2% of the total rate followed by Gabasawa and Kurmin Mashi with 10.6% and 8.09 % respectively. The high population concentration of people in Tudun Wada and the presence of large markets could account for high rate of Theft/Stealing in Tudun Wada which agrees with the crime pattern theory posited by Brantingham and Brantingham (1993) that the presence of certain land uses are theoretically predictive of crime levels in the neighborhood surrounding them. In the case of Gabaswa despite the presence of security formations in the area, theft and stealing is also prevalent. This has clearly shown that theft/stealing has it's spatial occurrence within the study area. A close look at the table shows that Sabon Gari has the least incidence of theft/stealing with 3.18%, followed by

Kabala Doki and Kakuri with 4.48% and 4.55% respectively. These areas are all located within various security formations of either the Military or the police. From Figure 4.5 the spatial distribution of Theft/Stealing can be viewed.

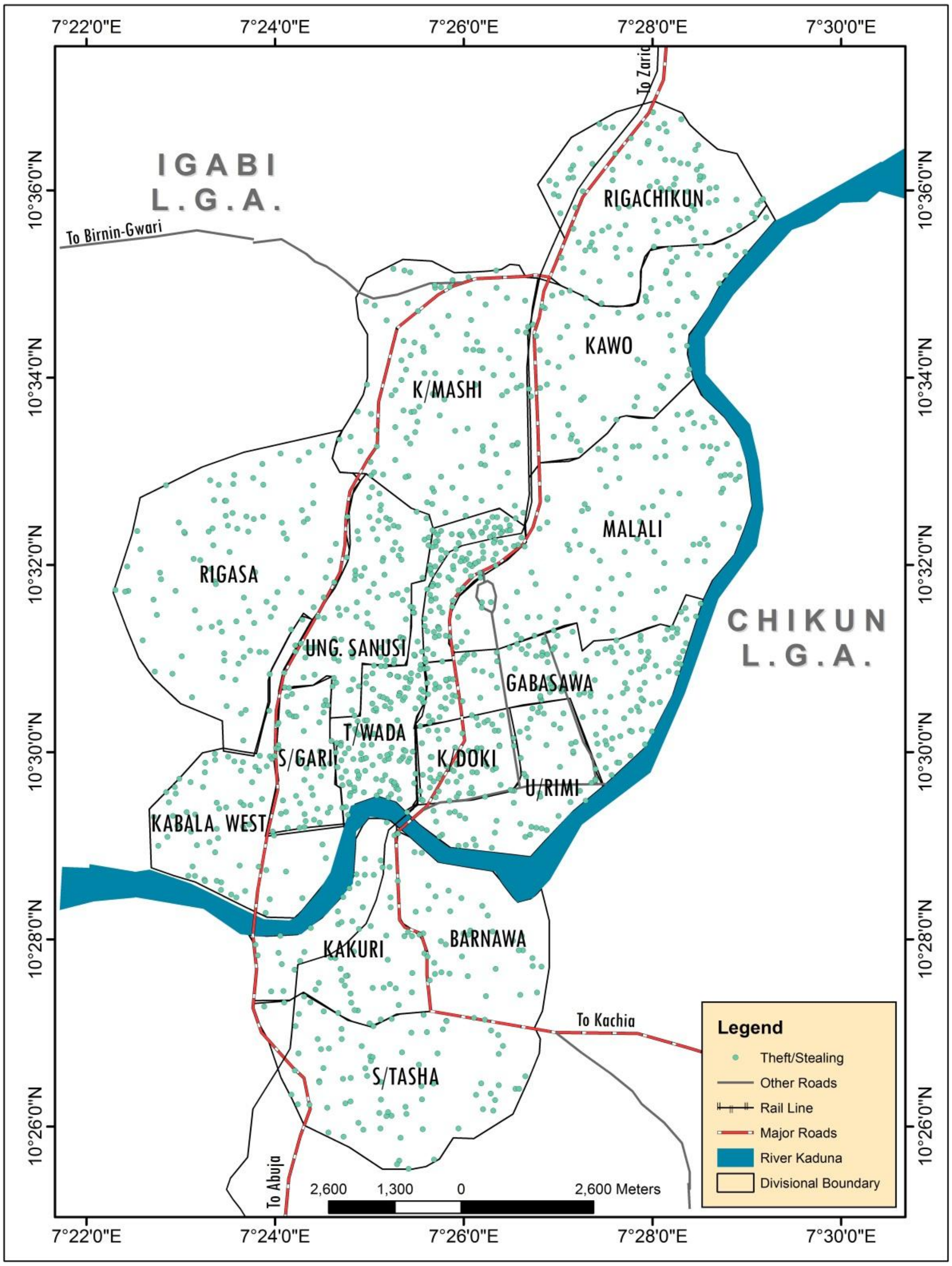


Figure 4.5: Spatial Distribution of Theft/Stealing Incidence in the study area Source: Author's Analysis, 2014.

4.4.5 Rape

Table 4.7 and figure 4.6 gives the distribution of Rape incidences in Kaduna Metropolis

Table 4.7: Rape incidence in Kaduna Metropolis

S/N	Area	No. of Cases	%
1	Gabasawa	5	2.3
2	Tudun wada	33	15
3	Kawo	20	9.1
4	Malali	9	4.1
5	Kabala Doki	12	5.5
6	Barnawa	14	6.4
7	Sabon Tasha	5	2.3
8	Rigachikun	42	19.1
9	Sabon Gari	4	1.8
10	Ungwan Rimi	10	4.5
11	Ugwan Sanusi	10	4.5
12	Kakuri	13	5.9
13	Rigasa	10	4.5
14	Kabala West	27	12.3
15	Kurmin Mashi	6	2.7
	Total	**220**	**100**

Source: Field Survey, 2014.

From Table 4.7, finding has shown that Rigachikun has the highest incidence of rape with a percentage of 19.1%closely followed by Tudun wada with 15% and kabala west 12.3%. These are usually busy areas during the day and at night less busy thus providing a condusive environment for such criminal offences. Findings also reveal that Sabon-Gari has the least of Rape incidence with 1.8%, followed by Gabasawa and Sabon Tasha with 2.3% each. The reason for low rape incidence in these areas could be because they are located right at the centre of the metropolis and looking at this type of crime, the criminals operate best in a less busy areas where they can attack their victims with few chances of being caught. Figure 4.6 shows the spatial distribution of rape incidence in the study area.

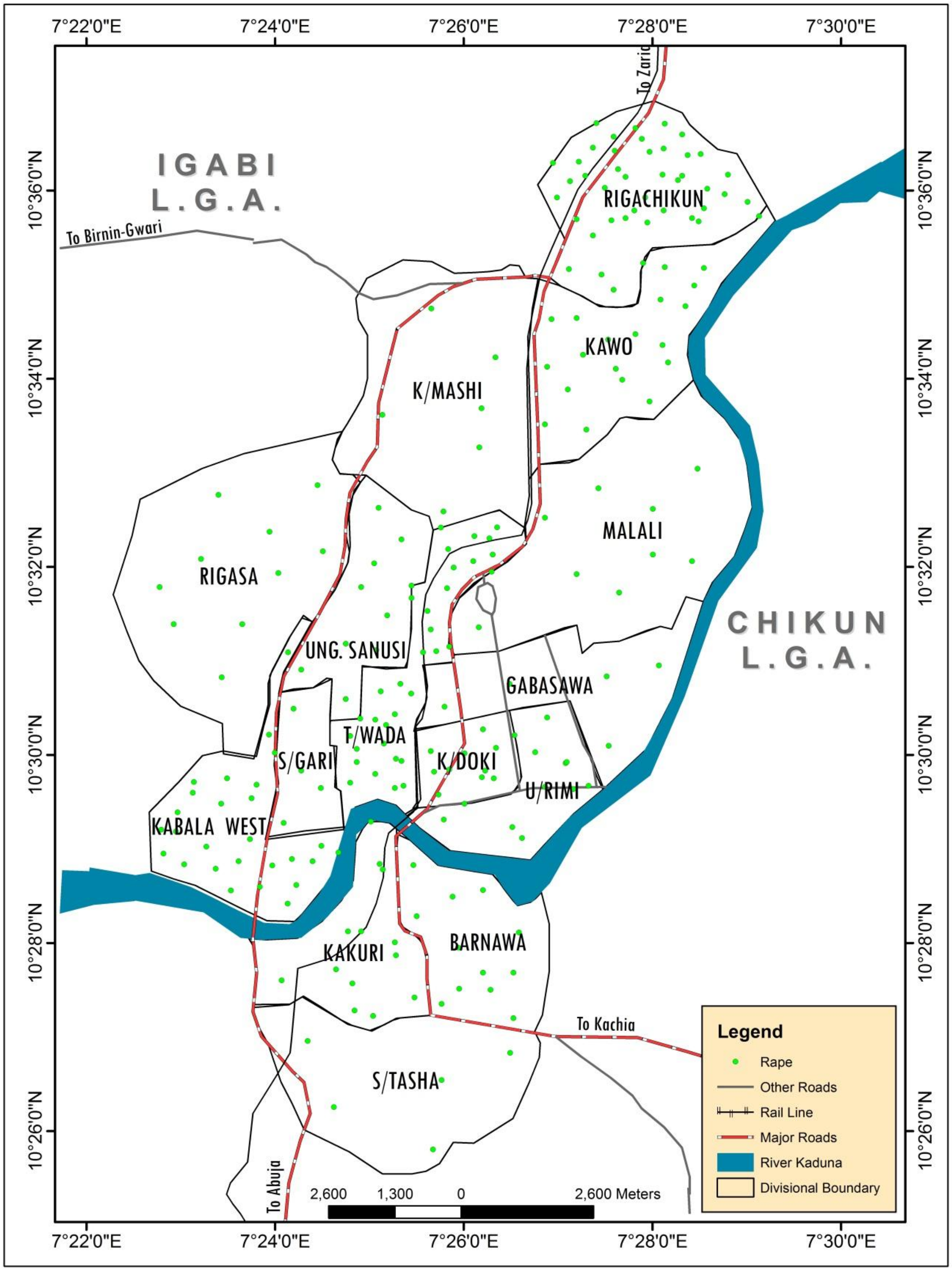


Figure 4.6: Spatial Distribution of Rape Incidence in the study area Source: Author's Analysis, 2014.

4.4.6 Forgery

Table 4.8 and figure 4.7 gives the distribution of Forgery incidences in Kaduna Metropolis

Table 4.8: Forgery incidence in Kaduna Metropolis

S/N	Area	No. of Cases	%
1	Gabasawa	10	2
2	Tudun wada	37	7.42
3	Kawo	9	1.8
4	Malali	3	0.6
5	Kabala Doki	20	4.01
6	Barnawa	27	5.41
7	Sabon Tasha	48	9.62
8	Rigachikun	53	10.62
9	Sabon Gari	20	4.01
10	Ungwan Rimi	26	5.21
11	Ugwan Sanusi	35	7.01
12	Kakuri	52	10.42
13	Rigasa	45	9.02
14	Kabala West	66	13.23
15	Kurmin Mashi	48	9.62
	Total	**499**	**100**

Source: Field Survey, 2014.

From table 4.8, it can be observed that out of the total of 499 Forgery incidence, Kabala west has the highest incidence with 12.23%, closely followed by Rigachikun and Kakuri with 10.62% and 10.42% respectively. The reason for this high forgery incidence could be because people living in these areas are trying to break away from the poverty line and are looking for the fastest means of making money i.e. "the get rich quick syndrome". Malali has the least of this crime type with only 0.6%. This could be to the fact that most Malali area is well planned and occupied by the well to do in the society (bourgeois) from the public and Private sector. From figure 4.7 the spatial distribution of Forgery can be view in Kaduna metropolis.

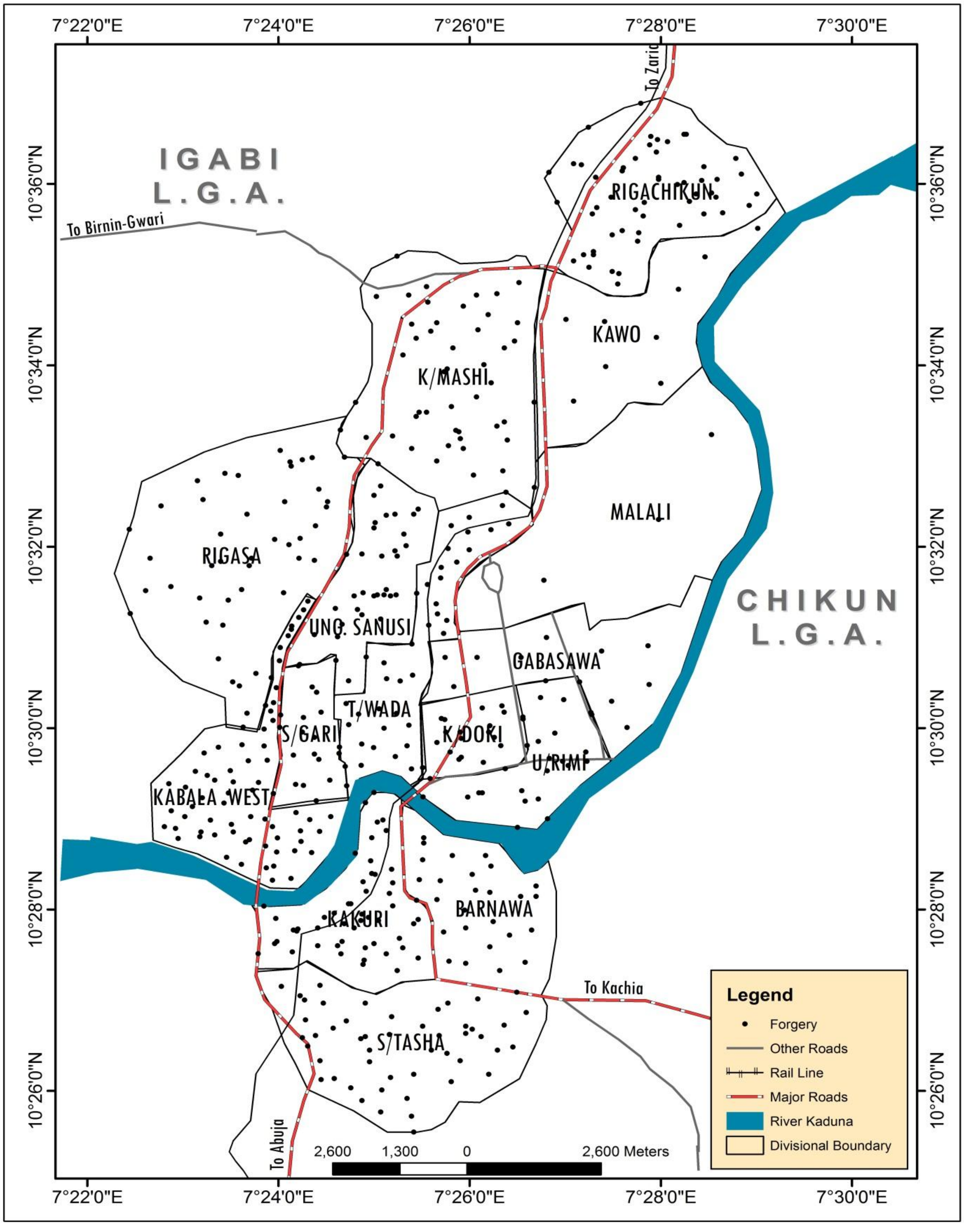


Figure 4.7: Spatial Distribution of Forgery Incidence in the study area . Source: Author's Analysis, 2014.

4.4.7. Burglary

Table 4.9 and figure 4.8 gives the distribution of Burglary/Home breaking incidences in Kaduna Metropolis

Table 4.9: Burglary/Home breaking incidence in Kaduna Metropolis

S/N	Area	No.of Cases	%
1	Gabasawa	41	4.3
2	Tudun wada	183	19.2
3	Kawo	36	3.8
4	Malali	49	5.13
5	Kabala Doki	53	5.55
6	Barnawa	78	8.17
7	Sabon Tasha	46	4.82
8	Rigachikun	79	8.3
9	Sabon Gari	41	4.29
10	Ungwan Rimi	46	4.82
11	Ugwan Sanusi	40	4.19
12	Kakuri	62	6.5
13	Rigasa	99	10.4
14	Kabala West	54	5.7
15	Kurmin Mashi	48	5.03
	Total	**955**	**100**

Source: Field Survey, 2014.

From table 4.9, Tudun Wada has the highest percentage of Burglary/Home breaking crime with a rate of 19.2% , followed by Rigasa with 10.4% and Rigachikun with 8.3% .The commercial activities, and the busy nature of Tudun Wada is attributed to the reason why such a crime is high in the area. Commercial activities serves as pull factor to such criminals activities because burglars targets either cash or expensive household belongings. Another reason could be due to population concentration and insufficient police formations in the area. Places with such commercial activities will demand police personnel to be on a patrol as this will impose fear in the mind of the criminals. Looking at the other areas with high incidence of burglary/home breaking, one can easily attribute the reason for frequent burglary/home breaking to their location, as they are located towards the outskirt of the metropolis. A Keen look at the table shows that Kawo has the least of burglary/Home breaking with 3.8%. This is not surprising because Kawo has lots of Security formations majority of which are military. Other areas with least cases of burglary incidence are Ungwan Sanusi closely followed with 4.19%. Figure 4.8 show the spatial distribution of Burglary/Home braking crime incidence in the study area.

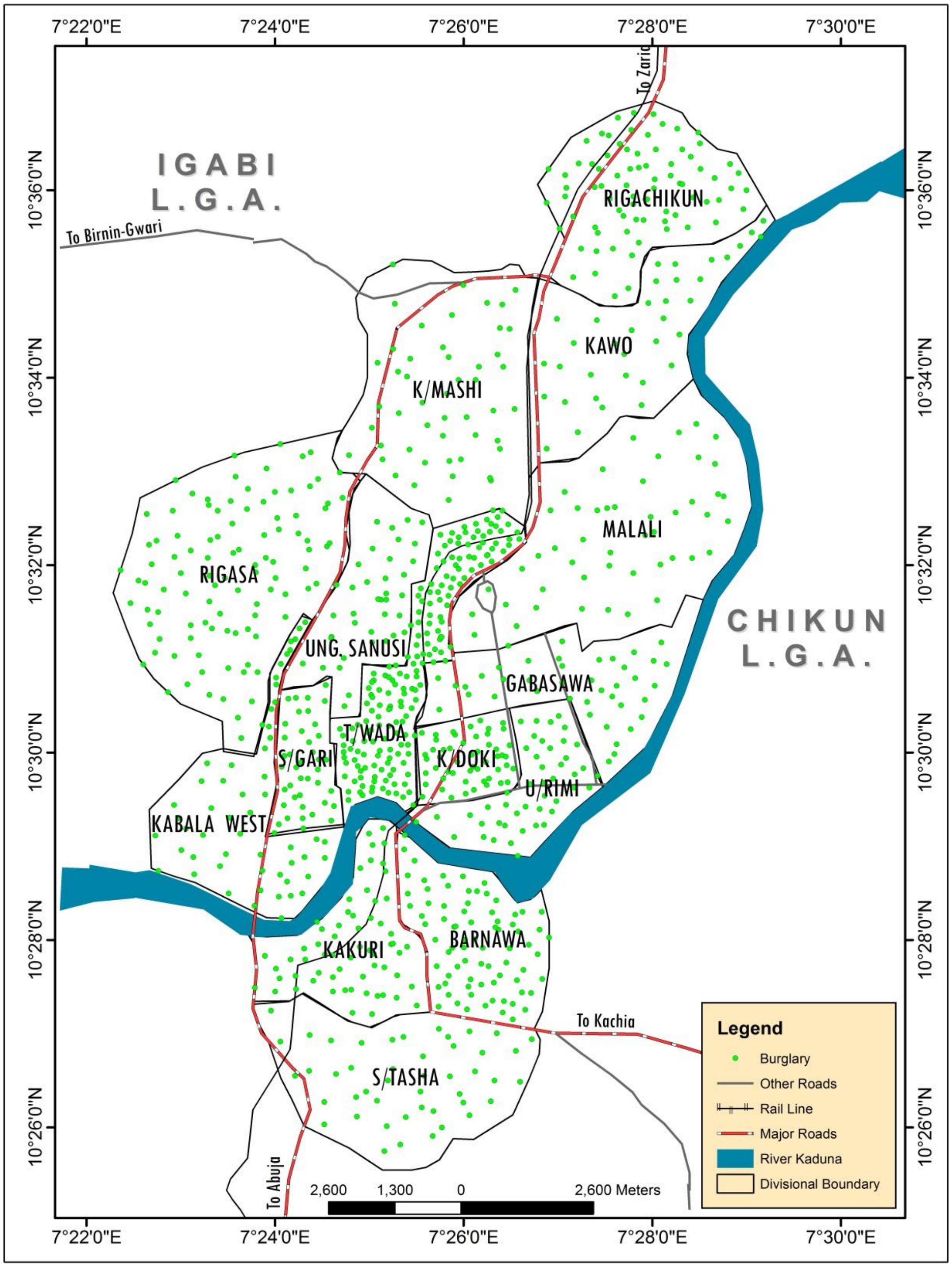


Figure 4.8:Spatial Distribution of Burglary Incidence in the Study area.
Source: Author's Analysis, 2014.

4.4.8 Suicide

Table 4.10 and figure 4.9 gives the distribution of Suicide incidences in Kaduna Metropolis

Table 4.10: Suicide incidence in Kaduna Metropolis

S/N	Area	No. of Cases	%
1	Gabasawa	0	0
2	Tudun wada	4	4.08
3	Kawo	9	9.2
4	Malali	6	6.12
5	Kabala Doki	6	6.12
6	Barnawa	5	5.1
7	Sabon Tasha	4	4.08
8	Rigachikun	26	26.54
9	Sabon Gari	2	2.04
10	Ungwan Rimi	5	5.1
11	Ugwan Sanusi	4	4.08
12	Kakuri	5	5.1
13	Rigasa	4	4.08
14	Kabala West	5	5.1
15	Kurmin Mashi	13	13.26
	Total	**98**	**100**

Source: Field Survey, 2014.

Table 4.10 shows the findings of the distribution of suicide incidence in Kaduna metropolis. Rigachikun has the highest incidence of suicide with 26.54% followed by Kurmin Mashi with 13.26% then closely followed by Malali and Kabala Doki with 6.12% each respectively. There are lots of reasons why people chose to commit suicide. Such reasons among others are poverty, frustration, depression and disappointment. The reason for high rate in Rigachikun could be because of economic hardship although suicide is generally not peculiar to a class of people, It is more likely to affect the poor. A close look at the table reveal that Gabasawa has no record of such crime while Sabon Gari had only 2.04% of the total rate of suicide incidence in the study area. Figure 4.9 shows the distribution of suicides in Kaduna Metropolis.

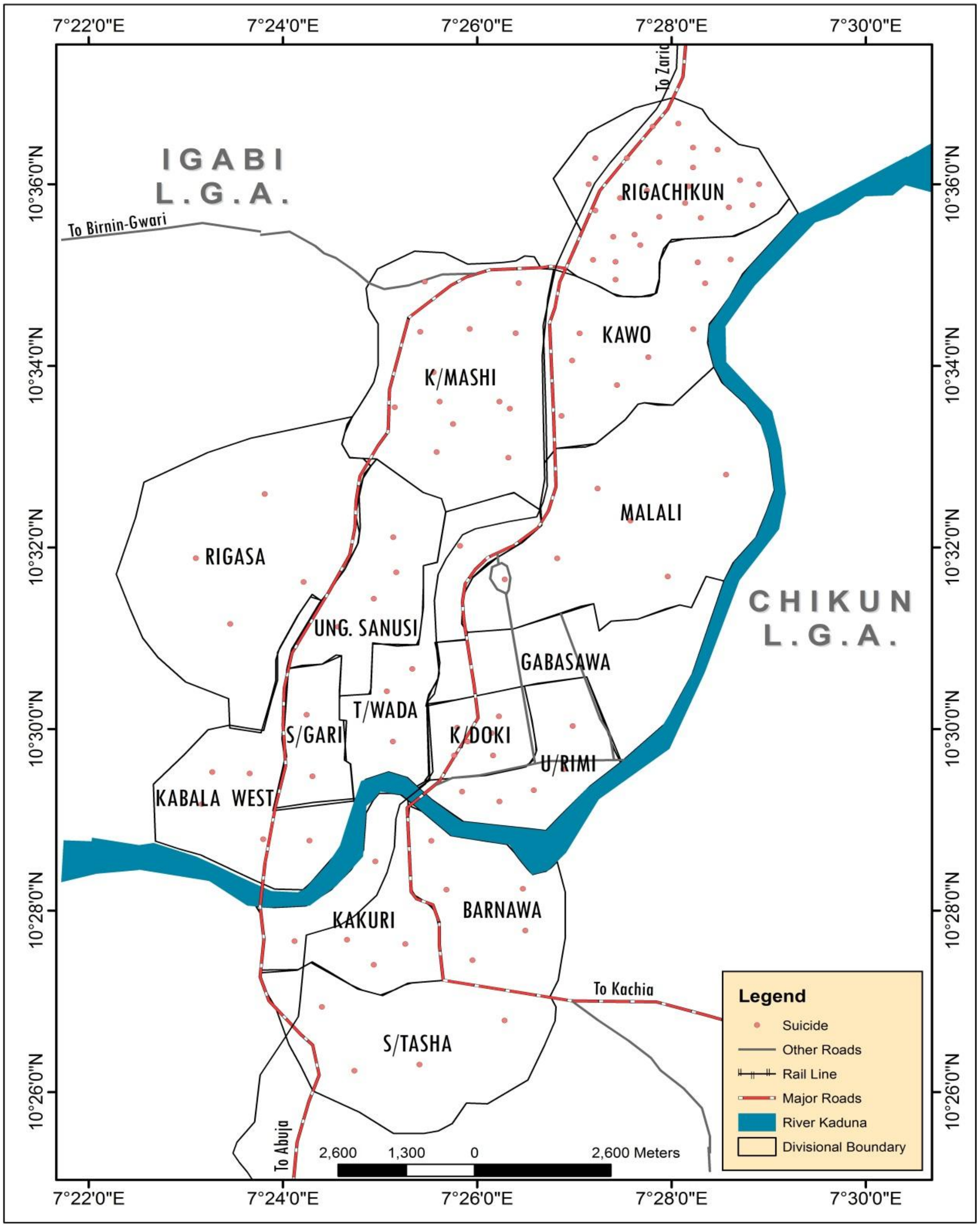


Figure 4.9: Spatial Distribution of Suicide Incidence in the study area . Source: Author's Analysis, 2014.

4.4.9 Cheating

Table 4.11 and figure 4.10 gives the distribution of Cheating incidences in Kaduna Metropolis

Table 4.11: Cheating incidence in Kaduna Metropolis

S/N	Area	No. of Cases	%
1	Gabasawa	90	8.54
2	Tudun wada	153	14.52
3	Kawo	75	7.12
4	Malali	36	3.41
5	Kabala Doki	21	1.99
6	Barnawa	24	2.28
7	Sabon Tasha	151	14.33
8	Rigachikun	113	10.71
9	Sabon Gari	42	3.98
10	Ungwan Rimi	47	4.46
11	Ugwan Sanusi	42	3.98
12	Kakuri	36	3.41
13	Rigasa	98	9.3
14	Kabala West	62	5.9
15	Kurmin Mashi	64	6.07
	Total	**1054**	**100**

Source: Field Survey, 2014.

From Table 4.11, it shows that Tudun Wada has the higest percentage of cheating in the entire Kaduna metropolis with 14.52%, followed by Sabon Tasha with 14.33% and Rigachikun with 10.71%. Again these are areas of high population concentration it provides a good atmosphere (environment) for the criminals to perpetuate their acts because of low chances of being caught. People cheat to gain favour or advantage at the expense of their victim. These areas are busy areas with large markets for trading or commercial activities. These areas lure criminals of such dubious character. The table also reveals that Kabala Doki has the least record of cheating with 1.99%. This area is not as populated as those with high incidence and the presence of a number of security formations pose a fear to criminals as their chances of being caught and can easily be handed over to the authority is high. Figure 4.10 shows the spatial distribution of cheating incidence in Kaduna metropolis.

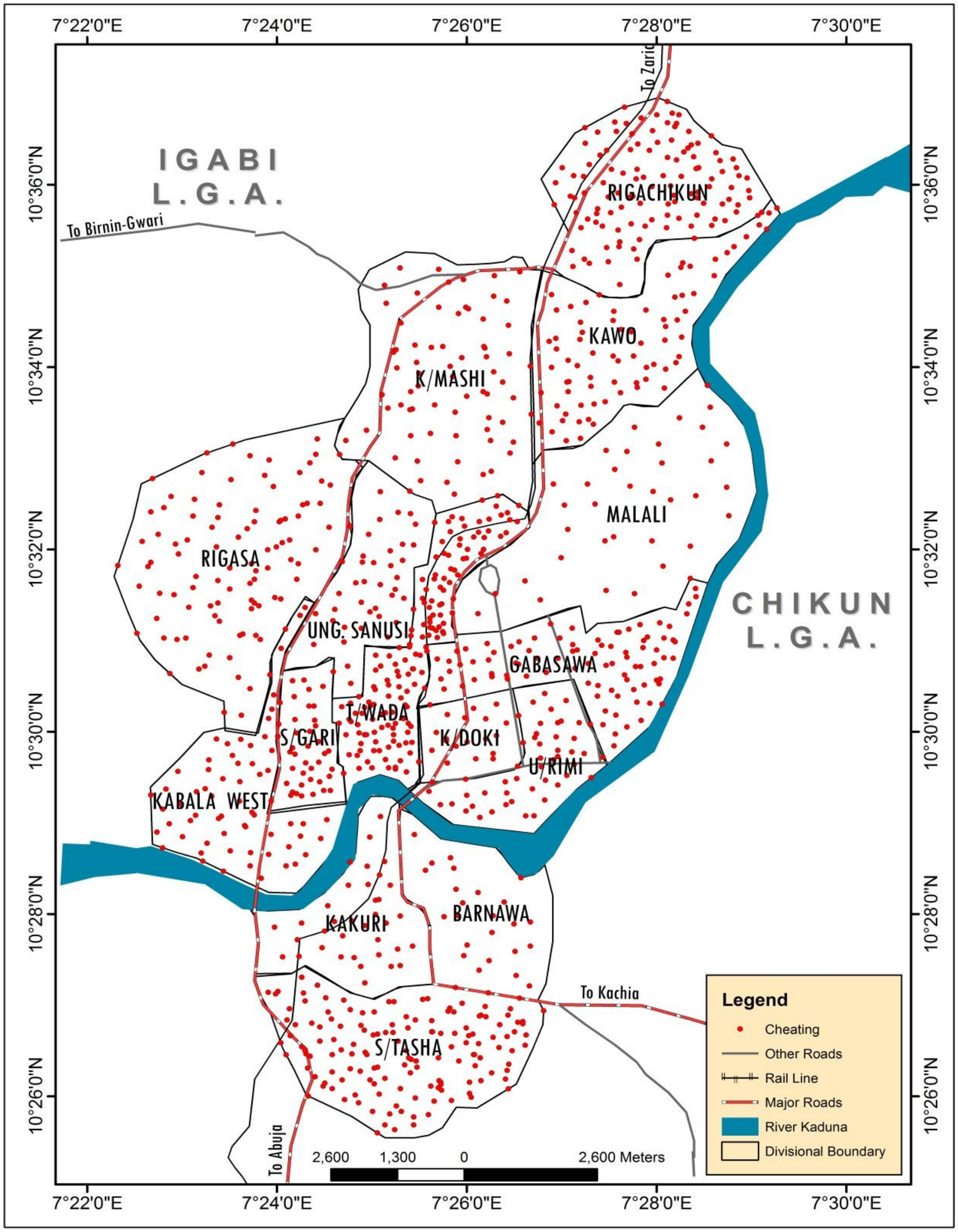


Figure 4.10: Spatial Distribution of Cheating Incidence in the study area. Source: Author's Analysis, 2014.

4.4.10 Hurting/Fighting

Table 4.12 and figure 4.11 gives the distribution of Hurting/Fighting incidences in Kaduna Metropolis

Table 4.12 Hurting/Fighting incidence in Kaduna Metropolis

S/N	Area	No. of Cases	%
1	Gabasawa	54	4.5
2	Tudun wada	180	14.9
3	Kawo	30	2.5
4	Malali	52	4.3
5	Kabala Doki	46	3.8
6	Barnawa	54	4.5
7	Sabon Tasha	207	17.1
8	Rigachikun	110	9.1
9	Sabon Gari	38	3.1
10	Ungwan Rimi	78	6.5
11	Ugwan Sanusi	93	7.7
12	Kakuri	50	4.1
13	Rigasa	117	9.7
14	Kabala West	39	3.2
15	Kurmin Mashi	61	5
	Total	**1209**	**100**

Source: Field Survey, 2014.

From table 4.12, Sabon Tasha has the highest incidence of Hurting/fighting, with 17.1%, followed by Tudun Wada with 14.9%. These are busy areas with high population concentration and commercial activities. Where there is high population concentration and trading activities, it is likely that people will disagree with one another especially when it comes to bargaining and could lead to exchange of vulgar words that could eventually lead to fighting. These are areas that one can come across people with different temperament and inability to tolerate each other could lead to a fight. A close look at the table also shows that Kawo area has the least incidence of Fighting/Hurting with just 2.5%, followed by Sabon Gari and Kabala west with 3.1% and 3.2% respectively. The reason for this low incidence here may be that the people tolerate and understand one another. From figure 4.11 the spatial distribution of fighting/hurting can be viewed.

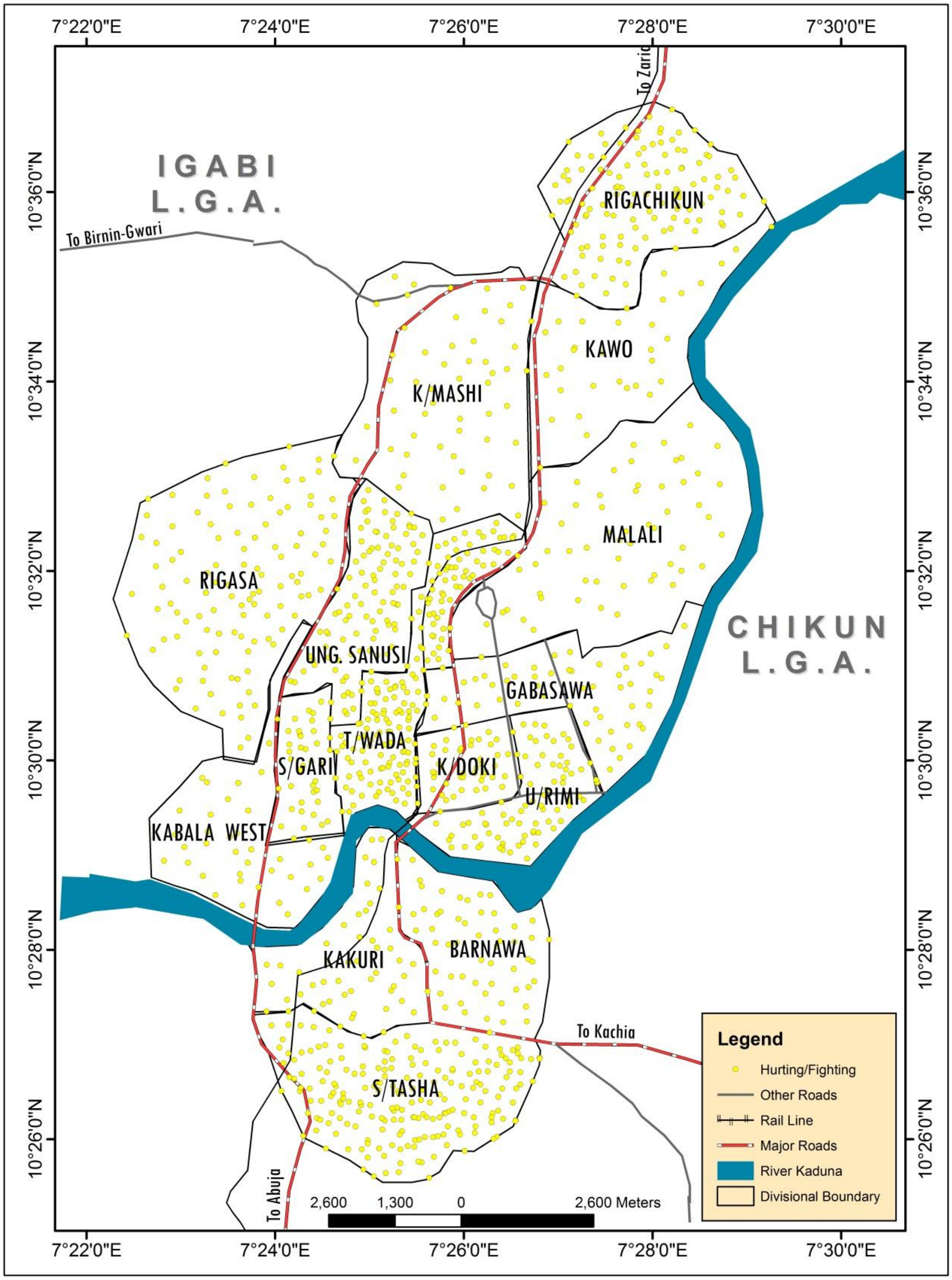


Figure 4.11: Spatial Distribution of Hurting/Fighting Incidence in the study area
Source: Author's Analysis, 2014.

4.4.11 Kidnapping

Table 4.13 and figure 4.12 gives the distribution of kidnapping incidences in Kaduna Metropolis

Table 4.13 Kidnapping incidence in Kaduna Metropolis

S/N	Area	No. of Cases	%
1	Gabasawa	0	0
2	Tudun wada	0	0
3	Kawo	2	6.1
4	Malali	1	3
5	Kabala Doki	3	9.1
6	Barnawa	9	27.3
7	Sabon Tasha	3	9.1
8	Rigachikun	11	33.3
9	Sabon Gari	0	0
10	Ungwan Rimi	3	9.1
11	Ugwan Sanusi	0	0
12	Kakuri	1	3
13	Rigasa	0	0
14	Kabala West	0	0
15	Kurmin Mashi	0	0
	Total	**33**	**100**

Source: Field Survey, 2014.

From table 4.13, Rigachikun has the highest Kidnapping incidence in the metropolis with a rate of 33.3% incidences, closely followed by Barnawa with 27.3%. This crime can be perpetuated anywhere regardless of where the adopted persons resides, all that the criminals need to do is to keep a close eye (track) on their victims. Adibe (2009) attributed the unacceptable level of unemployment an inefficient and corrupt police force that is ill equipped to fight crime as the reason for high rate of kidnapping. It is high in Rigachikun because it is the gate way that connects the metropolis to Zaria. Criminals can easily adopt their victims without any difficulty so long the keep their eyes on the victim. In the case of Barnawa, it could be because of the high income earners that resides there, therefore their children or family members become the target because it is believed that they can afford to pay the ransom demanded by the criminals. Here the economic status of the victims is what usually lures the criminals. Also from the table, Tudun Wada, Sabon Gari, Ungwan Sanusi, Rigasa, Kabala West and Kurmin Mashi are areas with no kidnapping incidence. If one is familiar with these areas, one can attach the reason of this low kidnapping incidence to the high population concentration of the middle and low income class status of the residents, in the case of Gabasawa, the reason could be because of a number of security formations such as Police headquarters, police college, Nigerian prison, and Immigration service all located very close to the area hence, this pose a great fear in the minds of the criminals. From figure 4.12, the spatial distribution of kidnapping incidence in Kaduna metropolis can be viewed.

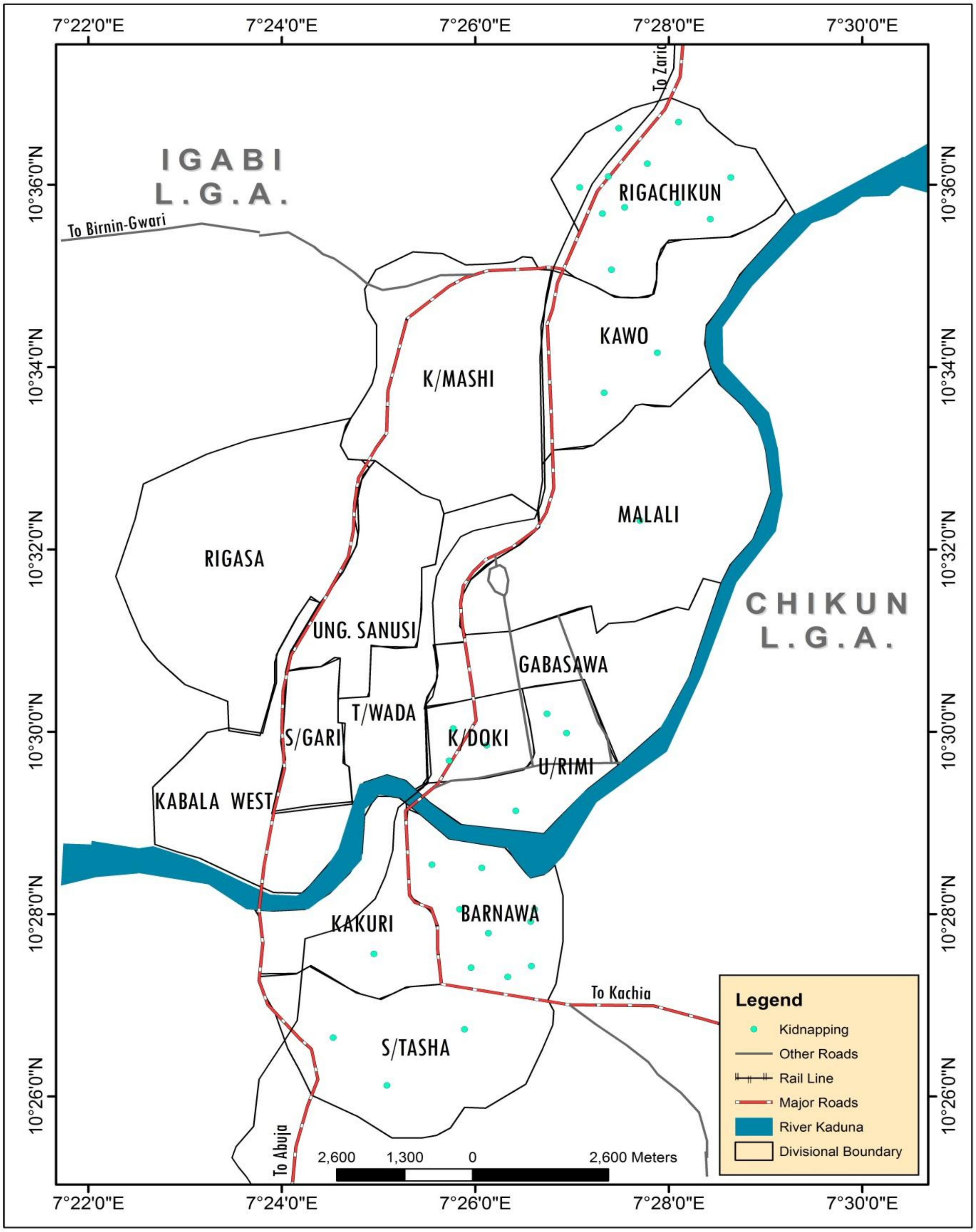


Figure 4.12: Spatial Distribution of Kidnapping Incidence in the study area Source: Author's Analysis, 2014.

4.5 THE TEMPORAL DISTRIBUTION OF CRIME IN THE STUDY AREA

The temporal distribution of crime in the study area between 2010 and 2011 is presented on table 4.12 and figure 4.13. According to Brantigham and Brantingham (1997), patterns are conceivable at different levels. Hence, crimes can be analysed across centuries, years, months or across hour.

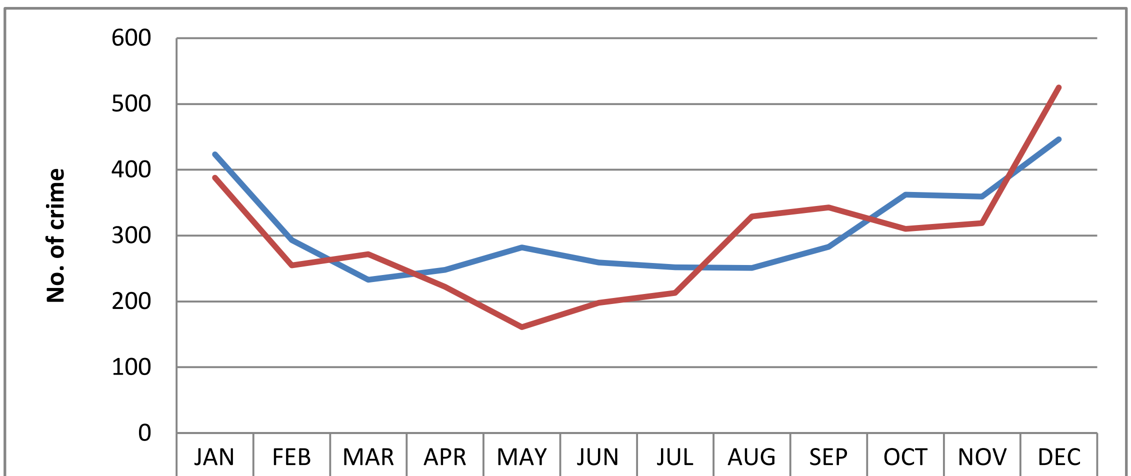
Table 4.14: Temporal Distribution of Crime

		2010		**2011**	
S/N	**Months**	**No.of Crime**	**%**	**No. of crime**	**%**
1	JAN	423	11.46	388	10.97
2	FEB	293	7.94	255	7.21
3	MAR	233	6.31	272	7.69
4	APR	248	6.72	222	6.28
5	MAY	282	7.64	161	4.55
6	JUN	259	7.02	198	5.6
7	JUL	252	6.83	213	6.04
8	AUG	251	6.8	329	9.32
9	SEP	283	7.67	343	9.7
10	OCT	362	9.8	310	8.77
11	NOV	359	9.73	319	9.02
12	DEC	446	12.08	525	14.85
	Total	**3691**	**100**	**3535**	**100**

Source: Field Survey, 2014.

Table 4.14, reveals the temporal distribution of crime in Kaduna Metropolis, in 2010, December has the highest crime incidence with 12.08% closely followed by January with crime incidence of 11.46%. October is the month with third highest crime record with 9.81%. A close look at the table also reveals that the month of March has the least crime record with a rate of 6.37%. In 2011, the month of December still maintain the month with the highest crime incidence with a percentage of 14.85% slightly higher than 2010. Again January has the second highest crime incidence with a percentage of 10.97%, closely followed by the month of August with 9.70%. Unlike 2010, in 2011 May has the least of crime incidence with 4.55%. There was also an increase in crime incidence within the last four months of the year with the peak of crime incidence recorded in the last month of the year.

From the two year records, it was discovered that crime incidence was highest in December and January for both 2010 and 2011. This could be true because December is usually festive period in Kaduna and most part of the country. This periods marks the yuletide or Christmas season as well as many wedding celebrations within that period. Hence criminals are on the rampage in other to have money or property to show off during the festivity. Another reason for high crime incidence in January is because January is usually tagged "hard times", it is believed that people must have lavished their savings during the festive time and will resolved to some sort of criminal activities to make ends meet. Figure 4.13 shows the trend of crime incidence in Kaduna metropolis.



	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
2010	423	293	233	248	282	259	252	251	283	362	359	446
2011	388	255	272	222	161	198	213	329	343	310	319	525

Figure 4.13: Temporal Distribution of Crime In The Study Area.
Source: Author's Analysis, 2014

4.6 CRIME HOT SPOTS

Areas with crime incidence more than the average were considered hot spots. Cool spots are places or areas with less than the average amount of crime or disorder. Some hot spots may be hotter than others. Table 4.15 and figure 4.14 shows the crime hot spots in Kaduna Metropolis.

Table 4.15: Crime Hot Spot

S/N	Area	No. OF CASES	DIFF. BWT AVC AND NO OF CRIME CASES	REMARKS
1	Gabasawa	412	-68	NOT HOT SPOT
2	Tudun wada	1081	601	HOT SPOT
3	Kawo	314	-166	NOT HOT SPOT
4	Malali	314	-166	NOT HOT SPOT
5	Kabala Doki	282	-198	NOT HOT SPOT
6	Barnawa	346	-134	NOT HOT SPOT
7	Sabon Tasha	736	256	HOT SPOT
8	Rigachikun	736	256	HOT SPOT
9	Sabon Gari	235	-245	NOT HOT SPOT
10	Ungwan Rimi	387	-93	NOT HOT SPOT
11	Ugwan Sanusi	448	-32	NOT HOT SPOT
12	Kakuri	401	-79	NOT HOT SPOT
13	Rigasa	623	143	HOT SPOT
14	Kabala West	434	-46	NOT HOT SPOT
15	Kurmin Mashi	452	-28	NOT HOT SPOT

Source: Field Survey

From Table 4.15, Four hot spots were identified in the study Area. They are Tudun wada, Sabon Tasha, Rigachikun and Rigasa. These are areas within the metropolis with crime above the average in the study area between 2010 and 2013. While others have less than average thus classified not hot spot or cold spot. This can be viewed from figure 4.14

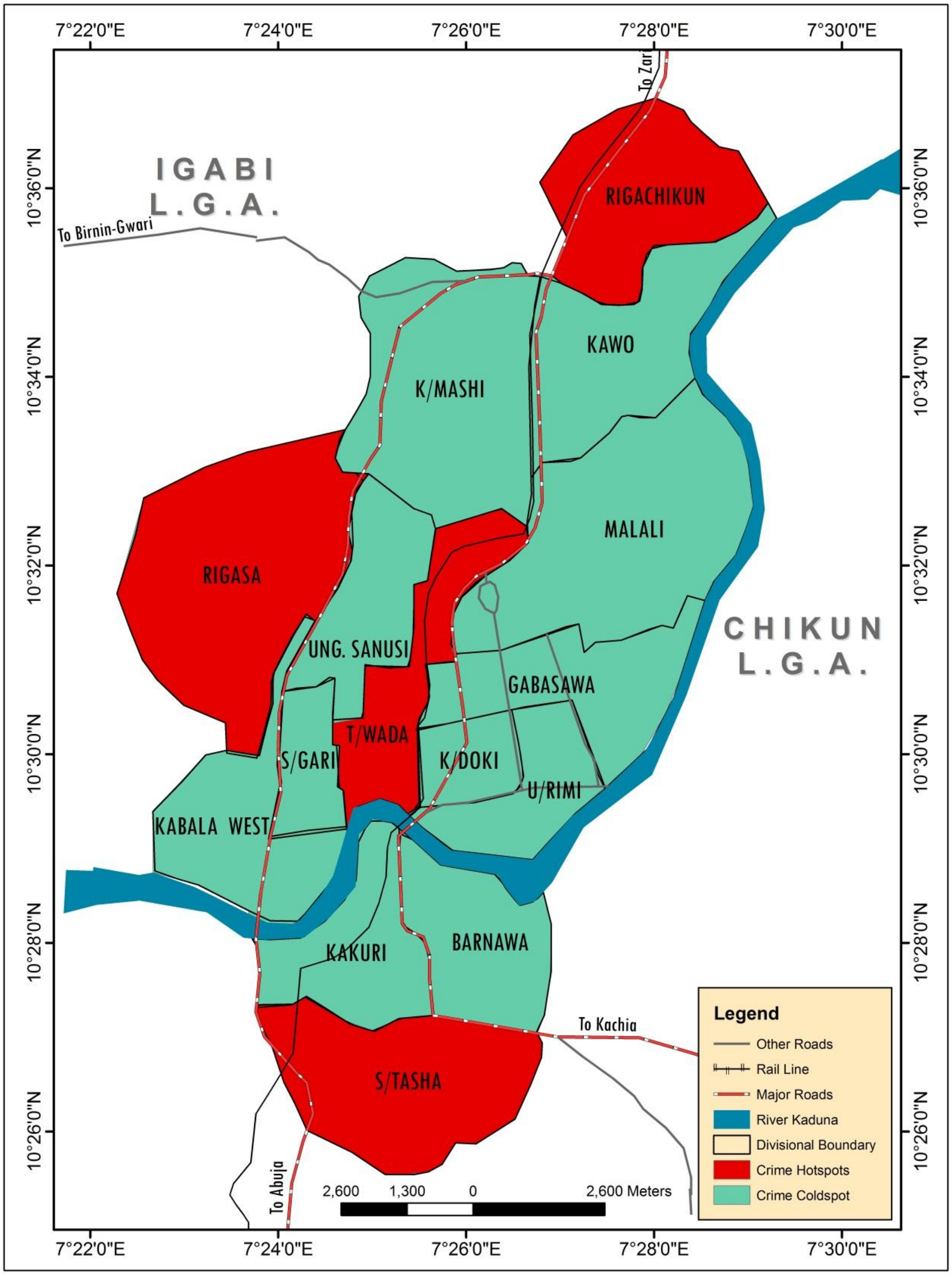


Figure 4.14: Crime Hotspots in the Study Area
Source: Author's Analysis

CHAPTER FIVE

SUMMARY, CONCLUSION AND RECOMMENDATIONS

5.1 INTRODUCTION

This chapter presents the summary of the major findings of this study. The conclusions drawn from the findings and the recommendations made were also presented in this chapter.

5.2 SUMMARY OF FINDINGS

The overall aim of the research was to map and analyse crime of Kaduna Metropolis using Geographic Information System using crime data of 2010 and 2011. The Study identified eleven major crime types in Kaduna metropolis which are Armed Robbery, Murder, Assault, Theft/Stealing, Rape, Forgery, Burglary/Home breaking, Suicide, Cheating, Fighting/Hurting and Kidnapping. Findings revealed that theft/stealing is the most crime committed, followed by hurting/fighting while kidnapping and suicide where the least of crime committed. An analysis of crime incidence within the study area showed that Tudun Wada area has the most crime committed on a general incidence, this is attributed to the commercial activities found in the area, high population concentration, and inadequate security formations, while Sabon Gari area has the least.

The study also successfully mapped out the various crime types and display their spatial distribution within the study area. The results showed that crimes are not randomly distributed across the geographical areas, some crimes are found in clusters at some areas while at some they are almost absent. The spatial analysis of individual crime types shows that armed robbery is highest in Sabon Tasha and Rigachikun while it is almost absent in Malali. Murder is high in Rigachikun while Gabasawa recorded the least. Assault is high in Tudun Wada while Kabala Doki has the least with. Theft/Stealing has the highest incidence in Tudun Wada while Barnawa has the least with. Rigachikun has the highest incidence of Rape while Sabon Gari has the least of this crime with. Forgery is high in

Kaba West while Kawo has the least of it. Tudun Wada recorded the highest crime of Burglary while the least of it was recorded in Kawo area. Suicide was high in Rigachikun while it was completely absent in Gabasawa. The crime of Cheating has it highest incidence in Tudun Wada while Kabala Doki has the least. Hurting/Fighting was high in Sabon Tasha while Kawo has the least incidence. Kidnapping was high in Rigachikun while it is completely absent in Gabasawa, Tudun Wada, Sabon Gari, Ungwan Sanusi, Rigasa, Kabala West, and Kurmin Mashi.

An analysis of the Temporal occurrence of crime within Kaduna Metropolis showed that in 2010 December and January has the highest incidences of crime while March has the lowest incidence. In 2011, December and January still remained the months with the highest incidences. On a general analysis of crime hot spots, the study was not able to analyse crime hot spots at spot level because crime incidences in the study area were not recorded with their spot location however base on clustering of crime. Areas with a total incidence above crime average in the study area, the study identified Tudun Wada, Sabon Tasha, Rigachikun and Rigasa to be crime hot spots in the metropolis. These are areas where almost all crime types are prevalent.

Although the study did not focus on the distribution and location of police station, but from the field survey or visits it has also been discovered that police formations are far from being adequate especially in the populated areas of the metropolis like Tudun wada Sabon Tasha and Riga-Chikun.

5.3 CONCLUSION

Crime is not spread evenly across the landscape. It clumps in some areas and is almost absent in others. People use this knowledge in their daily activities. They avoid some places and seek out others. Their choices of neighbourhoods, schools, stores, streets, and recreation are governed partially by the understanding that their chances of being victims are greater in some of these places than in others. The study has shown how GIS as a tool can be used effectively to analyse crime and display crime maps for adequate planning in terms of resources and personnel deployment towards combating crime in the study area. The three basic categories of GIS functions (database management, spatial analysis and visualization) in a single computer-based system created an environment that is better than the present method of analysis by the law enforcement agencies.

Not only can GIS applications benefit law enforcement agencies in their efforts to analyse crime patterns, but it also has the potential to help the public target high crime areas with preventative measures. Through GIS, communities could be provided with better information on crime in their immediate areas and work with law enforcement officials to determine the best means to reduce the crime rates in their neighborhoods. Other public agencies could benefit from GIS in determining the allocation of resources and initiating new programs.

5.4 RECOMMENDATIONS

The following recommendations were made based on the findings:

- Crime cases should be recorded in Details alongside geographical coordinate of crime incidence spots by the Nigerian police so as to allow hot spot analysis of the place theory that seek to identify hot spots at spots level rather than streets or neighbourhood level.
- Crime documentation should also be done alongside the timing on hourly basis and day of the week to allow for better and effective temporal analysis which can be done on either hourly or daily basis.
- More effort should be put towards fighting crime especially towards December and January as the two months have the highest number of crimes committed, revealed by the temporal distribution of crime.

- More security formations should be establish with in the metropolis as this will help reduce crime. This was revealed by findings that areas with more security formations have lesser crime compared to areas with fewer security formations.

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S/N	NATURE OF CRIME	JAN	FEB	MAR	APRI	MAY	JUN	JULY	AUG	SEP	OCT	NOV	DEC	GABASAWA DIVISION 2011
1.	Armed Robbery	-	-	1	-	-	-	-	-	1	1	1	1	
2.	Murder /Homicide	-	-	-	-	-	-	-	-	1	-	1	-	
3.	Assault	-	1	4	1	2	5	4	1	1	3	2	2	
4.	Theft/Stealing	7	7	11	6	6	7	8	3	5	6	7	7	
5.	Rape Case	-	-	-	-	-	-	-	-	-	-	-	-	
6.	Forgery	1	-	-	1	-	-	-	-	1	-	1	-	
7.	Burglary/Home Breaking	2	1	2	2	-	-	2	2	1	1	2	3	
8.	Suicide	-	-	-	-	-	-	-	-	-	-	-	-	
9.	Cheating	3	3	4	4	2	2	1	3	8	7	2	2	
10.	Hurting/Fight	2	7	-	1	-	-	1	1	1	1	3	1	
11.	Kidnapping	-	-	-	-	-	-	-	-	-	-	-	-	

S/N	NATUR OF CRIME	JAN	FEB	MAR	APRI	MAY	JUN	JULY	AUG	SEP	OCT	NOV	DEC	GABASAWA DIVISION 2010
1.	Armed Robbery	1	3	-	1	-	-	-	-	1	3	5	1	
2.	Murder /Homicide	-	-	-	-	-	-	-	-	1	-	-	-	
3.	Assault	-	-	-	3	1	2	3	2	3	1	-	1	
4.	Theft/Stealing	-	3	-	3	5	8	3	11	10	10	8	6	
5.	Rape Case	1	-	-	2	1	-	-	-	1	-	-	1	
6.	Forgery	-	-	-	-	-	-	-	-	2	-	3	1	
7.	Burglary/ Home Breaking	1	-	2	2	-	2	4	4	2	-	4	2	
8.	Suicide	-	-	-	-	-	-	-	-	-	-	-	-	
9.	Cheating	-	11	-	10	1	5	3	6	5	3	3	2	
10.	Hurting/Fight	2	-	-	6	1	3	1	6	5	4	7	1	
11.	Kidnapping	-	-	-	-	-	-	-	-	-	-	-	-	

S/N	NATURE OF CRIME	JAN	FEB	MAR	APRI	MAY	JUN	JULY	AUG	SEP	OCT	NOV	DEC	TUDUN WADA 2011
1.	Armed Robbery	-	-	1	2	1	5	3	6	-	2	-	1	
2.	Murder/ Homicide	-	-	-	1	-	-	-	1	2	1	1	-	
3.	Assault	5	3	1	4	5	-	1	30	29	16	-	20	
4.	Theft/Stealing	4	3	2	-	-	1	12	29	25	-	30	15	
5.	Rape Case	1	-	1	4	-	1	-	7	5	-	6	-	
6.	Forgery	-	-	-	-	1	-	6	-	8	1	-	1	
7.	Burglary/ Home Breaking	1	-	9	5	-	-	11	20	10	3	15	20	
8.	Suicide	-	-	-	1	-	-	-	-	-	1	-	-	
9.	Cheating	2	4	6	1	8	1	-	9	8	-	10	-	
10.	Hurting/Fight	4	2	6	3	5	-	16	27	30	11	15	25	
11.	Kidnapping	-	-	-	-	-	-	-	-	-	-	-	-	

S/N	NATURE OF CRIME	JAN	FEB	MAR	APRI	MAY	JUN	JULY	AUG	SEP	OCT	NOV	DEC	TUDUN WADA 2010
1.	Armed Robbery	1	1	2					2	1				
2.	Murder /Homicide	-	-	1	-	1	1	-	-	-	-	2	-	
3.	Assault	3	4	6	10	15	2	-	-	5	25	-	30	
4.	Theft/Stealing	-	11	4	1	-	35	-	14	15	-	29	8	
5.	Rape Case	-	1	1	-	1	2	1	1	1	-	-	-	
6.	Forgery	6	-	-	-	1	-	1	1	-	1	10	-	
7.	Burglary /Home Breaking	-	1	7	-	8	-	10	1	1	29	32	-	
8.	Suicide	-	-	-	1	-	-	-	-	-	-	1	-	
9.	Cheating	8	9	13	-	15	6	2	10	10	20	11	-	
10.	Hurting/Fight	-	4	5	4	3	2	7	2	2	-	6	1	
11.	Kidnapping	-	-	-	-	-	-	-	-	-	-	-	-	

S/N	NATURE OF CRIME	JAN	FEB	MAR	APRI	MAY	JUN	JULY	AUG	SEP	OCT	NOV	DEC	KAWO DIVISION 2011
1.	Armed Robbery	1	1	1	-	-	-	1	1	1	2	3	-	
2.	Murder/ Homicide	-	-	1	-	-	-	-	1	-	-	-	-	
3.	Assault	2	1	1	1	1	-	3		-	2	1	1	
4.	Theft/Stealing	3	3	1	1	4	3	4	2	3	2			
5.	Rape Case	1	1	1	1	-	1	1	1	-	3	-	-	
6.	Forgery	-	-	-	-	-	1	-	-	-	-	1	-	
7.	Burglary /Home Breaking	1	1	2	-	1	-	1	1	2	1	-	5	
8.	Suicide	-	-		-	-	-	-	1	-	1	-	-	
9.	Cheating	1	3	2	3	2	2	2	3	1	4	6	7	
10.	Hurting/Fight	4	1	1	3	1	1	2	1	1	1	3	2	
11.	Kidnapping	-	-	1	-	-	-	-	-	-	-	-	-	

S/N	NATURE OF CRIME	JAN	FEB	MAR	APRI	MAY	JUN	JULY	AUG	SEP	OCT	NOV	DEC	KAWO DIVISION 2010
1.	Armed Robbery	1	1	1	-	2	-	1	1	1	-	1	-	
2.	Murder/ Homicide	-	-	-	-	1	-	1	-	1	-	1	-	
3.	Assault	1	3	1	1	1	-	1	3	3	3	2	1	
4.	Theft/Stealing	5	2	5	3	8	3	1	1	4	6	5	7	
5.	Rape Case	-	-	1	1	-	2	-	-	1	2	-	3	
6.	Forgery	-	-	-	-	-	-	-	-	4	2	1	-	
7.	Burglary /Home Breaking	-	2	-	-	4	1	3	2	1	5	2	1	
8.	Suicide	-	-	-	-	1	-	-	-	3	1	2	-	
9.	Cheating	1	5	4	4	7	3	2	8	4	-	1	-	
10.	Hurting/Fight	-	-	-	-	1	1	1	1	1	3	-	1	
11.	Kidnapping	1	-	-	-	1	-	-	-					

S/N	NATURE OF CRIME	JAN	FEB	MAR	APRI	MAY	JUN	JULY	AUG	SEP	OCT	NOV	DEC	MALALI DIVISION 2011
1.	Armed Robbery	1	-	-	-		-	-	1	-	-	1	-	
2.	Murder/ Homicide	-	-	-	-	1	1	-	-	-	-	3	-	
3.	Assault	2	-	1	2	2	1	1	2	-	3	-	1	
4.	Theft/Stealing	4	4	4	5	4	4	4	5	4	1	-	3	
5.	Rape Case	2	-	-	1	-	-	3	-	-	-	1	1	
6.	Forgery	-	-	-	-	-	-	-	-	-	-	1	1	
7.	Burglary /Home Breaking	2	1	-	-	2	-	2	2	4	4	6	7	
8.	Suicide	-	-	-	-	-	-	1	-	1	1	-	-	
9.	Cheating	1	-	2	1	-	-	-	3	-	-	1	-	
10.	Hurting/Fight	2	3	3	-	1	3	-	1	-	2	5	6	
11.	Kidnapping	-	-	-	-	-	-	-	-	-	1	-	-	

S/N	NATURE OF CRIME	JAN	FEB	MAR	APRI	MAY	JUN	JULY	AUG	SEP	OCT	NOV	DEC	MALALI DIVISION 2010
1.	Armed Robbery	2	-	-	-	-	1	-	1	1	1	1	1	
2.	Murder /Homicide	-	-	-	1	-	-	-	-	-	-	-		
3.	Assault	3	1	2	2	-	-	1	3	3	3	2	2	
4.	Theft/Stealing	6	4	5	4	5	4	4	6	10	7	3	4	
5.	Rape Case	1	-	-	-	-	-	-	-	-	-	-	-	
6.	Forgery	-	-	-	1	-	-	-	-	-	-	-	-	
7.	Burglary/ Home Breaking	-	3	2	1	2	3	3	1	1	1	2	-	
8.	Suicide	2	-	-	1	-	-	-	-	-	-	-	-	
9.	Cheating	2	6	4	2	4	2	3	1	1	-	1	2	
10.	Hurting/Fight	-	-	2	2	1	3	3	4	3	3	1	4	
11.	Kidnapping	-	-	-	-	-	-	-	-	-	-	-	-	

S/N	NATURE OF CRIME	JAN	FEB	MAR	APRI	MAY	JUN	JULY	AUG	SEP	OCT	NOV	DEC	KABALA DOKI DIVISION 2011
1.	Armed Robbery	-	-	2	4	3	-	-	-	1	-	3	2	
2.	Murder /Homicide	1	-	-	1	-	1	-	1	-	-	1	-	
3.	Assault	2	-	2	-	1	3	-	-	-	-	-	-	
4.	Theft/Stealing	1	1	4	1	2	-	-	3	4	4	-	5	
5.	Rape Case	1	-	-	1	-	1	-	-	-	-	-	-	
6.	Forgery	-	-	-	-	-	-	-	2	3	3	4	-	
7.	Burglary Home Breaking	-	3	-	2	-	1	3	-	1	1	1	6	
8.	Suicide	-	1	-	1	-	-	-	-	-	-	-	-	
9.	Cheating	-	8	1	-	-	2	-	-	-	-	-	-	
10.	Hurting/Fight	3	-	7	-	2	3	2	2	-	-	1	1	
11.	Kidnapping	-	1	-	-	-	-	1	1	-	-	-	-	

S/N	NATURE OF CRIME	JAN	FEB	MAR	APRI	MAY	JUN	JULY	AUG	SEP	OCT	NOV	DEC	KABALA DOKI DIVISION 2010
1.	Armed Robbery	-	-	1	3	-	1	-	-	-	1	-	1	
2.	Murder/ Homicide	1	-	-	-	-	1	-	3	-	-	4	-	
3.	Assault	2	-	1	1	1	1	-	1	3	2	2	1	
4.	Theft/Stealing	3	8	2	2	-	2	3	7	2	3	1	4	
5.	Rape Case	1	-	-	2	1	2	-	-	1	1	-	1	
6.	Forgery	-	-	2	-	-	3	-	-	1	-	1	1	
7.	Burglary/ Home Breaking	8	6	4	1	2	1	-	-	1	3	2	7	
8.	Suicide	-	-	1	1	1	-	-	-	1	-	-	-	
9.	Cheating	-	4	-	-	2	-	1	-	2	-	1	-	
10.	Hurting/Fight	6	2	1	1	1	2	2	-	3	1	1	5	
11.	Kidnapping	-	-	-	-	-	-	-	-	-	-	-	-	

S/N	NATURE OF CRIME	JAN	FEB	MAR	APRI	MAY	JUN	JULY	AUG	SEP	OCT	NOV	DEC	BARNAWA DIVISION 2011
1.	Armed Robbery	1	3	-	-	1	-	-	-	1	2	3	6	
2.	Murder /Homicide	-	1	1	-	-	-	1	-	2	-	-	-	
3.	Assault	3	1	1	-	-	4	1	-	-	1	1	2	
4.	Theft/Stealing	4	2	1	1	-	-	-	1	-	3	5	1	
5.	Rape Case	-	2	1	-	-	-	1	-	-	2	-	-	
6.	Forgery	6	2	-	1	-	-	1	-	1	-	-	-	
7.	Burglary /Home Breaking	3	2	2	1	-	7	-	5	-	-	2	4	
8.	Suicide	-	-	1	-	-	-	-	1	-	-	1	-	
9.	Cheating	2	-	1	1	-	-	-	-	-	-	-	-	
10.	Hurting/Fight	6	3	2	-	-	1	-	2	-	3	-	5	
11.	Kidnapping	-	1	-	-	-	1	-	1	-	2	-	-	

S/N	NATURE OF CRIME	JAN	FEB	MAR	APRI	MAY	JUN	JULY	AUG	SEP	OCT	NOV	DEC	BARNAWA DIVISION 2010
1.	Armed Robbery	-	2	-	-	3	-	-	2	1	6	4	5	
2.	Murder /Homicide	-	-	-	1	-	-	1	2	-	-	3	-	
3.	Assault	3	4	-	6	-	-	4	-	-	3	-	8	
4.	Theft/Stealing	3	-	-	7	-	1	-	1	1	-	3	7	
5.	Rape Case	-	2	1	-	-	1	1	-	-	-	-	3	
6.	Forgery	8	3	-	2	-	1	1	-	-	-	-	1	
7.	Burglary /Home Breaking	-	6	-	-	3	-	10	-	15	11	7	-	
8.	Suicide	-	-	-	1	-	-	1	-	-	-	-	-	
9.	Cheating	4	-	-	-	-	2	-	-	3	-	11	-	
10.	Hurting/Fight	7	5	4	6	-	1	-	3	-	2	-	4	
11.	Kidnapping	-	1	-	-	2	-	-	1	-	-	-	-	

S/N	NATURE OF CRIME	JAN	FEB	MAR	APRI	MAY	JUN	JULY	AUG	SEP	OCT	NOV	DEC	SABON TASHA DIVISION 2011
1.	Armed Robbery	-	-	1	2	1	-	-	1	2	3	-	-	
2.	Murder /Homicide	-	-	-	-	-	-	-	-	-	-	-	-	
3.	Assault	4	5	6	7	3	2	3	1	4	4	5	10	
4.	Theft/Stealing	2	3	2	3	4	5	6	3	1	1	2	3	
5.	Rape Case	-	-	-	-	-	-	-	1	-	-	-	-	
6.	Forgery	-	-	3	8	-	-	1	-	1	-	2	3	
7.	Burglary /Home Breaking	3	2	1	2	1	2	3	1	1	1	2	3	
8.	Suicide	-	-	-	-	-	-	-	-	-	-	1	-	
9.	Cheating	5	4	3	2	1	3	2	4	5	5	6	10	
10.	Hurting/Fight	10	11	15	20	11	9	8	2	3	3	8	25	
11.	Kidnapping	-	-	-	-	-	-	-	-	-	1	-	1	

S/N	NATURE OF CRIME	JAN	FEB	MAR	APRI	MAY	JUN	JULY	AUG	SEP	OCT	NOV	DEC	SABON TASHA DIVISION 2010
1.	Armed Robbery	3	-	5	-	8	-	9	11	1	1	13	14	
2.	Murder/Homicide	2	-	7	-	9	-	2	3	-	4	5	-	
3.	Assault	2	-	-	3	5	8	-	-	-	11	2	1	
4.	Theft/Stealing	5	4	9	8	7	1	1	1	2	1	3	2	
5.	Rape Case	-	-	-	-	1	-	-	2	-	-	-	1	
6.	Forgery	4	3	2	1	5	-	6	7	-	-	-	2	
7.	Burglary /Home Breaking	5	4	3	-	-	2	1	1	1	-	-7	-	
8.	Suicide	-	-	-	-	-	1	-	-	-	-	2	-	
9.	Cheating	5	8	9	13	15	14	13	-	-	9	8	7	
10.	Hurting/Fight	2	4	5	6	8	10	11	12	20	2	1	1	
11.	Kidnapping	-	-	-	-	1	-	-	-	-	-	-	-	

S/N	NATURE OF CRIME	JAN	FEB	MAR	APRI	MAY	JUN	JULY	AUG	SEP	OCT	NOV	DEC	RIGACHUKUN DIVISION 2011
1.	Armed Robbery	4	-	-	8	-	3	3	2	1	-	-	11	
2.	Murder/ Homicide	3	2	1	1	-	-	3	3	-	-	-	8	
3.	Assault	3	-	6	1	3	8	-	1	2	-	-	6	
4.	Theft/Stealing	6	1	1	8	-	11	-	10	-	6	-	15	
5.	Rape Case	-	-	2	-	-	3	-	1	-	3	-	2	
6.	Forgery	-	1	3	-	1	3	-	4	-	-	-	8	
7.	Burglary/ Home Breaking	7	-	11	3	6	5	4	6	8	-	-	15	
8.	Suicide	-	-	1	-	-	-	-	-	3	-	-	-	
9.	Cheating	6	8	1	6	6	-	-	4	3	5	-	11	
10.	Hurting/Fight	-	-	15	6	5	6	6	1	-	6	5	10	
11.	Kidnapping	1	-	3	-	-	1	-	-	1	-	2	-	

S/N	NATURE OF CRIME	JAN	FEB	MAR	APRI	MAY	JUN	JULY	AUG	SEP	OCT	NOV	DEC	RIGACHUKUN DIVISION 2010
1.	Armed Robbery	5	-	2	5	4	3	5	-	4	2	1	10	
2.	Murder/ Homicide	5	2	1	3	4	2	-	5	2	5	3	2	
3.	Assault	2	-	3	2	5	2	3	4	5	6	5	3	
4.	Theft/Stealing	3	2	1	2	6	3	5	4	5	4	2	3	
5.	Rape Case	5	2	-	3	2	3	4	-	-	3	4	5	
6.	Forgery	5	4	3	2	5	4	2	3	-	2	3	-	
7.	Burglary /Home Breaking	-	2	1	2	1	2	-	2	1	-	2	1	
8.	Suicide	-	-	2	3	2	1	2	2	5	2	1	2	
9.	Cheating	5	5	6	7	8	5	4	2	3	5	6	7	
10.	Hurting/Fight	5	4	5	4	6	2	3	5	6	7	5	4	
11.	Kidnapping	1	-	-	-	-	-	-	-	-1	-	-	1	

S/N	NATURE OF CRIME	JAN	FEB	MAR	APRI	MAY	JUN	JULY	AUG	SEP	OCT	NOV	DEC	SABON GARI DIVISION 2011
1.	Armed Robbery	3	-	1	-	-	-	-	-	2	-	3	5	
2.	Murder/ Homicide	1	-	-	1	-	-	1	-	-	-	1	1	
3.	Assault	2	1	3	1	-	1	-	2	-	1	1	1	
4.	Theft/Stealing	8	1	2	3	1	-	-	1	1	2	4	7	
5.	Rape Case	-	-	1	-	-	-	-	-	-	-	-	-	
6.	Forgery	3	-	2	3	-	1	-	-	-	2	1	1	
7.	Burglary/ Home Breaking	4	1	3	1	-	-	1	-	-	1	3	5	
8.	Suicide	-	-	-	-	-	-	-	-	-	-	-	1	
9.	Cheating	5	3	1	1	-	-	-	3	1	1	4	7	
10.	Hurting/Fight	2	1	3	1	1	-	1	4	6	1	1	1	
11.	Kidnapping	-	-	-	-	-	-	-	-	-	-	-	-	

S/N	NATURE OF CRIME	JAN	FEB	MAR	APRI	MAY	JUN	JULY	AUG	SEP	OCT	NOV	DEC	SABON GARI DIVISION2010
1.	Armed Robbery	-	-	1	-	-	-	-	-	-	-	-	-	
2.	Murder/ Homicide	-	-	-	-	-	-	-	-	-	-	-	-	
3.	Assault	2	3	1	-	2	-	-	1	1	1	-	-	
4.	Theft/Stealing	4	3	2	-	-	3	-	1	1	-	-	-	
5.	Rape Case	-	1	-	-	-	1	-	-	-	-	-	1	
6.	Forgery	1	1	2	1	-	-	-	1	-	-	1	-	
7.	Burglary/ Home Breaking	7	3	6	1	-	-	1	-	-	-	1	3	
8.	Suicide	-	-	-	-	-	-	1	-	-	-	-	-	
9.	Cheating	-	2	-	-	4	-	2	1	-	-	3	4	
10.	Hurting/Fight	4	-	-	-	3	-	2	3	1	-	3	-	
11.	Kidnapping	-	-	-	-	-	-	-	-	-	-	-	-	

S/N	NATURE OF CRIME	JAN	FEB	MAR	APRI	MAY	JUN	JULY	AUG	SEP	OCT	NOV	DEC	UNGWA RIMI DIVISION 2011
1.	Armed Robbery	3	-	-	2	3	-	1	-	-	1	1	3	
2.	Murder/ Homicide	-	-	-	-	-	1	-	-	-	1	1	-	
3.	Assault	2	3	1	4	-	3	-	-	1	6	7	11	
4.	Theft/Stealing	4	2	2	-	1	1	-	3	1	1	3	1	
5.	Rape Case	-	-	-	1	-	1	-	-	-	-	2	3	
6.	Forgery	4	1	-	-	-	-	-	-	3	2	1	5	
7.	Burglary/ Home Breaking	6	1	-	-	2	1	1	1	-	-	3	2	
8.	Suicide	1	-	-	-	1	-	-	-	-	-	1	-	
9.	Cheating	5	7	2	1	1	1	-	-	-	4	-	2	
10.	Hurting/Fight	2	-	1	1	1	-	6	4	-	-	5	4	
11.	Kidnapping	-	-	-	-	-	1	-	-	-	-	1	-	

S/N	NATURE OF CRIME	JAN	FEB	MAR	APRI	MAY	JUN	JULY	AUG	SEP	OCT	NOV	DEC	UNGWA RIMI DIVISION2010
1.	Armed Robbery	5	1	1	2	-	-	3	1	4	-	3	6	
2.	Murder/ Homicide	1	-	-	-	-	-	3	-	-	-	-	2	
3.	Assault	3	-	4	5	8	-	-	-	3	3	2	1	
4.	Theft/Stealing	4	4	1	1	4	5	3	4	2	1	4	4	
5.	Rape Case	1	1	-	-	-	-	-	-	-	-	1	-	
6.	Forgery	1	2	-	-	-	3	-	-	-	2	1	1	
7.	Burglary/ Home Breaking	6	1	3	4	-	-	6	-	-	1	3	5	
8.	Suicide	1	-	-	-	-	-	-	-	-	-	-	1	
9.	Cheating	2	3	1	1	-	-	-	3	1	1	4	8	
10.	Hurting/Fight	10	8	3	6	4	-	10	4	6	1	1	1	
11.	Kidnapping	1	-	-	-	-	-	-	-	-	-	-	-	

S/N	NATURE OF CRIME	JAN	FEB	MAR	APRI	MAY	JUN	JULY	AUG	SEP	OCT	NOV	DEC	UNGWAN SANUSI DIVISION 2011
1.	Armed Robbery	5	3	1	2	-	1	-	-	1	1	-	-	
2.	Murder/ Homicide	2	1	-	1	-	1	1	1	-	-	-	-	
3.	Assault	1	3	4	6	1	-	-	1	2	3	-	-	
4.	Theft/Stealing	10	8	5	4	3	1	6	-	1	8	2	-	
5.	Rape Case	-	-	-	-	1	-	1	-	-	1	-	1	
6.	Forgery	3	-	-	-	5	-	2	1	2	3	-	-	
7.	Burglary/ Home Breaking	1	1	1	1	-	-	-	6	4	7	1	-	
8.	Suicide	-	-	1	-	-	-	-	-	1	-	-	-	
9.	Cheating	1	3	-	2	1	1	-	-	5	4	-	3	
10.	Hurting/Fight	12	3	-	-	-	1	6	-	4	15	11	6	
11.	Kidnapping	-	-	-	-	-	-	-	-	-	-	-	-	

S/N	NATURE OF CRIME	JAN	FEB	MAR	APRI	MAY	JUN	JULY	AUG	SEP	OCT	NOV	DEC	UNGWAN SANUSI DIVISION 2010
1.	Armed Robbery	3	4	2	1	1	-	-	-	3	5	-	1	
2.	Murder/ Homicide	1	-	-	-	-	-	-	2	2	4	-	-	
3.	Assault	14	10	7	3	2	2	8	5	-	8	-	1	
4.	Theft/Stealing	15	-	-	-	-	10	4	1	-	10	-	5	
5.	Rape Case	1	-	-	-	-	1	-	-	1	2	-	1	
6.	Forgery	4	-	-	-	-	5	6	-	-	2	1	1	
7.	Burglary/ Home Breaking	5	1	-	-	2	1	1	-	-	2	2	4	
8.	Suicide	1	-	-	-	-	-	-	-	-	1	-	-	
9.	Cheating	-	3	-	2	-	-	-	-	4	8	2	3	
10.	Hurting/Fight	8	6	1	-	1	2	-	-		12	2	3	
11.	Kidnapping	-	-	-	-	-	-	-	-	-	-	-	-	

S/N	NATURE OF CRIME	JAN	FEB	MAR	APRI	MAY	JUN	JULY	AUG	SEP	OCT	NOV	DEC	KAKURI DIVISION 2011
1.	Armed Robbery	-	-	-	1	3	-	4	-	1	1	6	8	
2.	Murder/ Homicide	-	-	-	-	1	-	1	1	-	-	1	-	
3.	Assault	3	6	5	-	1	3	2	3	8	1	4	10	
4.	Theft/Stealing	8	-	-	1	-	2	2	3	-	1	6	8	
5.	Rape Case	-	1	-	-	-	1	-	2	-	-	-	3	
6.	Forgery	2	1	2	-	-	7	-	6	1	3	-	3	
7.	Burglary/ Home Breaking	2	1	1	1	2	1	1	-	-	2	-	2	
8.	Suicide	1	-	-	-	-	-	1	-	-	-	-	-	
9.	Cheating	4	6	3	-	-	-	2	3	4	-	-	-	
10.	Hurting/Fight	3	2	1	1	-	1	-	1	3	2	1	3	
11.	Kidnapping	-	-	-	-	-	-	-	-	-	-	-	-	

S/N	NATURE OF CRIME	JAN	FEB	MAR	APRI	MAY	JUN	JULY	AUG	SEP	OCT	NOV	DEC	KAKURI DIVISION 2010
1.	Armed Robbery	2	1	-	-	1	2	-	-	-	-	1	3	
2.	Murder/ Homicide	1	-	1	-	2	-	-	-	-	-	-	-	
3.	Assault	5	1	4	3	6	1	-	-	-	2	4	5	
4.	Theft/Stealing	1	5	-	3	-	4	2	1	-	-	2	14	
5.	Rape Case	-	-	-	1	-	1	1	-	-	-	-	3	
6.	Forgery	6	-	-	1	-	-	1	2	4	6	-	7	
7.	Burglary/ Home Breaking	15	8	3	-	2	-	4	4	3	-	1	9	
8.	Suicide	1	-	-	-	-	1	-	-	-	-	-	1	
9.	Cheating	2	1	-	1	1	-	-	6	-	-	-	3	
10.	Hurting/Fight	5	-	1	3	-	-	8	-	-	-	-	15	
11.	Kidnapping	-	-	-	-	-	-	-	-	-	1	-	-	

S/N	NATURE OF CRIME	JAN	FEB	MAR	APRI	MAY	JUN	JULY	AUG	SEP	OCT	NOV	DEC	RIGASA DIVISION 2011
1.	Armed Robbery	2	2	4	-	-	5	-	-	6	1	3	5	
2.	Murder/ Homicide	1	-	-	-	-	-	1	1	-	1	-	1	
3.	Assault	6	6	3	4	2	1	3	3	8	9	-	3	
4.	Theft/Stealing	4	-	5	8	3	2	1	3	6	4	8	10	
5.	Rape Case	1	-	1	-	-	-	-	1	1	1	-	-	
6.	Forgery	2	1	2	-	3	-	-	6	7	4	3	2	
7.	Burglary/ Home Breaking	10	8	4	5	-	-	6	3	9	10	-	5	
8.	Suicide	1	-	-	-	-	1	-	-	-	1	-	1	
9.	Cheating	20	5	-	-	8	2	-	-	3	11	1	8	
10.	Hurting/Fight	15	8	4	-	-	-	4	-	2	10	12	18	
11.	Kidnapping	-	-	-	-	-	-	-	-	-		-	-	

S/N	NATURE OF CRIME	JAN	FEB	MAR	APRI	MAY	JUN	JULY	AUG	SEP	OCT	NOV	DEC	RIGASA DIVISION 2010
1.	Armed Robbery	3	4	2	1	-	1	2	3	-	-	1	3	
2.	Murder/ Homicide	-	-	-	-	-	1	-	-	-	1	-	1	
3.	Assault	10	-	2	-	-	6	-	-	7	2	4	15	
4.	Theft/Stealing	8	1	-	4	-	10	2	3	1	6	6	5	
5.	Rape Case	-	-	-	-	-	-	-	3	-	1	-	1	
6.	Forgery	2	1	-	-	-	3	-	-	4	-	-	5	
7.	Burglary/ Home Breaking	8	2	2	3	1	3	-	2	9	1	1	7	
8.	Suicide	-	-	-	-	-	-	-	-	-	-	-	-	
9.	Cheating	10	3	4	3	1	2	6	-	3	-	-	8	
10.	Hurting/Fight	11	3	1	9	2	1	-	-	-	3	8	6	
11.	Kidnapping	-	-	-	-	-	-	-	-	-	-	-	-	

S/N	NATURE OF CRIME	JAN	FEB	MAR	APRI	MAY	JUN	JULY	AUG	SEP	OCT	NOV	DEC	KABALA WEST DIVISION 2011
1.	Armed Robbery	2	1	-	-	2	-	-	6	4	8	1	3	
2.	Murder/ Homicide	-	-	2	-	-	1	-	-	-	-	1	1	
3.	Assault	3	4	2	-	-	1	6	-	-	-	-	-	
4.	Theft/Stealing	6	3	5	-	6	-	-	2	2	1	1	2	
5.	Rape Case	1	-	-	-	2	-	-	-	1	-	-	-	
6.	Forgery	3	2	6	9	-	-	2	1	8	7	2	3	
7.	Burglary/ Home Breaking	4	2	5	3	-	2	1	7	2	1	1	1	
8.	Suicide	-	-	-	-	-	-	-	-	1	1	-	-	
9.	Cheating	3	6	-	-	3	-	-	7	5	6	8	3	
10.	Hurting/Fight	2	6	3	2	-	1	-	-	6	2	3	-	
11.	Kidnapping	-	-	-	-	-	-	-	-	-	-	-	-	

S/N	NATURE OF CRIME	JAN	FEB	MAR	APRI	MAY	JUN	JULY	AUG	SEP	OCT	NOV	DEC	RIGASA DIVISION 2010
1.	Armed Robbery	3	-	2	2	2	-	-	4	-	1	3	5	
2.	Murder/ Homicide	1	-	-	-	-	-	-	1	-	1	-	1	
3.	Assault	6	3	5	-	4	3	2	1	3	4	-	5	
4.	Theft/Stealing	7	5	3	4	2	-	1	3	3	6	5	4	
5.	Rape Case	1	-	-	-	-	-	1	3	3	6	5	4	
6.	Forgery	4	-	-	6	-	2	2	-	1	2	2	4	
7.	Burglary/ Home Breaking	5	3	2	1	2	-	-	1	2	3	4	2	
8.	Suicide	1	-	-	-	-	-	-	-	1	-	1	-	
9.	Cheating	4	5	2	1	1	1	-	-	-	3	4	-	
10.	Hurting/Fight	-	2	-	-	-	-	3	4	3	2	-	-	
11.	Kidnapping	-	-	-	-	-	-	-	-	-	-	-	-	

S/N	NATURE OF CRIME	JAN	FEB	MAR	APRI	MAY	JUN	JULY	AUG	SEP	OCT	NOV	DEC	KURMIN MASHI DIVISION 2011
1.	Armed Robbery	3	-	-	1	-	-	3	6	1	4	4	2	
2.	Murder/ Homicide	1	-	-	-	-	-	1	-	-	2	-	1	
3.	Assault	-	2	1	1	-	-	1	-	5	-	1	8	
4.	Theft/Stealing	12	8	4	-	-	7	3	2	4	-	6	10	
5.	Rape Case	-	1	-	-	-	-	-	1	-	1	-	1	
6.	Forgery	3	-	-	-	1	4	2	2	3	-	-	8	
7.	Burglary/ Home Breaking	8	-	-	3	-	1	-	-	7	5	2	6	
8.	Suicide	1	-	-	1	-	1	-	-	-	1	1	1	
9.	Cheating	10	5	-	-	-	11	-	1	-	2	3	4	
10.	Hurting/Fight	6	7	10	-	2	4	-	4	-	1	2	6	
11.	Kidnapping	-	-	-	-	-	-	-	-	-	-	-	-	

S/N	NATURE OF CRIME	JAN	FEB	MAR	APRI	MAY	JUN	JULY	AUG	SEP	OCT	NOV	DEC	KURMIN MASHI DIVISION 2010
1.	Armed Robbery	4	2	-	1	1	1	2	-	-	3	-	1	
2.	Murder/ Homicide	1	1	-	-	-	-	-	-	-	1	-	1	
3.	Assault	2	1	-	-	3	1	4	2	1	3	1	5	
4.	Theft/Stealing	10	6	7	1	-	3	2	1	-	6	8	12	
5.	Rape Case	1	-	-	-	-	-	-	-	-	-	-	1	
6.	Forgery	3	2	1	5	-	-	2	4	5	-	2	1	
7.	Burglary/ Home Breaking	2	3	-	1	3	1	-	-	1	1	2	2	
8.	Suicide	1	4	-	-	-	-	-	-	-	1	-	1	
9.	Cheating	6	3	3	-	8	5	3	-	3	2	1	4	
10.	Hurting/Fight	8	4	4	3									
11.	Kidnapping	-	-	-	-	-	-	-	-	-	-	-	-	