ANALYSIS OF CRIME IN KATSINA METROPOLITAN AREA, KATSINA STATE, NIGERIA

BY

Ahmed Barde, ABDULLAHI
B.Sc (A.B.U. Zaria)

A DISSERTATION SUBMITTED TO THE SCHOOL OF POSTGRADUATE STUDIES, AHMADU BELLO UNIVERSITY, ZARIA, NIGERIA IN PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR THE AWARD OF MASTER OF SCIENCE DEGREE IN REMOTE SENSING AND GEOGRAPHICAL INFORMATION SYSTEM

DEPARTMENT OF GEOGRAPHY AND ENVIRONMENTAL STUDIES,
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DECLARATION

I declare that this project research titled' "ANALYSIS OF CRIME IN KATSINA METROPOLITAN AREA, KATSINA STATE NIGERIA" Wasconducted by me under the supervision of DR. A.K Usman and DR.B. AkpuDepartment of Geography and Environmental Management and it is a record of my own work and has not been submitted for the award of Masters Degree, diploma or any other qualification in any other institution. All information and excerpts from the work of any other has been acknowledged by means of references.

ABDULLAHI AHMED BARDE _____ _____

Signature Date

CERTIFICATION

This dissertation entitled "ANALYSIS OF CRIME IN KATSINA METROPOLITAN AREA, KATSINA STATE NIGERIA" meets the regulations governing the award of masters' degree of Remote Sensing and GIS of Ahmadu Bello University and approved for its contribution to knowledge and literary presentation.

Dr. A.K Usman _____
(Chairman Supervisory Committee) Signature Date

Dr. B. Akpu _____ _____
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Dr. A.K Usman _____
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(DeanSchool of Postgraduate studies) Signature Date

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ABSTRACT

In recent times, the incidences of murder, armed robbery, rape, automobile theft among other crimes have been on the increase in Katsina metropolis. These have adverse effects on the development of the city especially the location characteristics of the criminal activities need tobe understood. This present study applied geospatial technique to analyze crime in Katsina Metropolis. A random and systematic sampling was used in selecting respondents in the study with 400 sample size. The aim of the study achieved by identifying the various types of crime committed in the study area from 2012 to 2016, determining crime hostpots, the causes and effect of crime and finally the accessibility of police stations to crime hotspot was also determined. The results of the analysis revealed that five (5) different types of crime were common in the study area they include automobile theft, grievous hurt, robbery, rape and murder. The result also revealed that location such as WakilinArewa B, WakilinGabasI, Wakilin Kudu II and Wakilin Kudu III with highest automobile theft of 15.6%. BakinKasuwa, Gobarau, GaladanciKerau Quarters, TashanGagareKwalanKwalan, KofarMarusa, KofarGuga, TsohuwarKasuwa, FillinBugu and Gambarawa were location with very highest crime hostpots. The high crime spots were found within KofarSauri, Iyatanchi, DutsenAmare, KofarSoro, TudunYanlihida and Yantaba. WakilinGabas I had the highest for grievous hurt accounting for 20.6%. The case of murder was highest at the WakilinGabas II accountingfor 19.4% of the entire crime. Also, rape was found to be high at WakilinGabas I with 18.8% of the total crime. WakilinGabas I recorded the highest number of robbery with 22.9%.The study further reveals that about 93.7% of the respondents agreed that unemployment is the major causal factor of crime, 86.5%were of the view that poverty is also cause while 86.2% of the respondents opined that peer group is the cause of crime in Katsina Metropolis. It therefore recommended that police stations and police outpost should be provided in areas with high concentration of crime**.**

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CHAPTER ONE

INTRODUCTION

1.1 BACKGROUND TO THE STUDY

Criminal activity continues to be a major concern in contemporary society and most nations are faced with unacceptable levels of delinquency and crime (Ackerman and Murray, 2004). All over the world, threats from terrorism, drug cartel, and organized crimes have been on the increase at alarming rate (Mishral, 2003). Consequently, the events of 9/11 has clearly illustrated that no nation, however politically and economically powerful is immune to crime and act of terror (Innocent, Isi, Ganiy and Steve, 2013).

According to the Longmans Dictionary of Contemporary English, a crime is an illegal activity in general. Resulting from this definitions is the fact that any activity being carried out by an individual or group of persons within a particular time and space, which does not follow the guiding principles of the rule of law amounts to a crime (Bello, Ikhuoria, Agbaje and Ogedegbe, 2013). The global upsurge in crime and criminality is alarming such that effort is being intensified daily by concerned individuals and governments to combat the menace.

Research on the geographic distribution and the determinants of urban crime has long been an important area of interest for criminologists, sociologists, and geographers. Criminologists and sociologists believe that crime largely results from social stress and conflicts and the rates of crime in urban neighbourhood are highly affected by the demographic and socio-economic contexts (Reith, 1996). From the perspective of spatial analysis, geographers consider that crime has a geographic dimension and it is disproportionately distributed across different geographic scales (e.g., national, regional, and local).

The impression of what constitutes crime varies widely, depending on differences in human societies or the peculiarity of their legal systems. For instance, abortion and homosexual behaviors are criminal offences in Nigeria, but are legalized in some other countries. However, attempts to characterize and group the different types of crimes common in all human societies have yielded a diverse category of crimes such; crime against persons, crime against property and crime against order (Roncek, 2004). This provides the basis for the mapping.

According to Soneye (2002) crime mapping plays an important role in pro-active policing and crime prevention in stages of data collection, data evaluation and data analysis. The application areas of crime mapping are recording and mapping crime activities, predicting crime, identifying crime hot spots and patterns, monitoring the impact of crime reduction measures and communicating with stakeholders. Crime mapping is used by analysts in law enforcement agencies to map, visualize, and analyse crime incident patterns. In addition it enabled them to identify crime hot spots along with other trends and patterns.

Over the past two decades, the use of GIS in crime mapping has increased dramatically (Vann and Garson, 2001). Previous researchers on various crime dimension have been faced with problem of relevant data, but with the introduction of remote sensing and GIS techniques, data is now available for effective crime mapping at global, regional and local scales.

Katsina metropolis has witnessed several kinds of crime ranging from house and shop breaking, car and property theft, robbery, rape, assault, grievous hurt, threat to life and property, unlawful possession, forgery, vandalization, capable homicide, violation of traffic rules, disturbance of public peace, conspiracy, trespassing. Election violence and terrorism is another type of crime already suffered in Katsina metropolis. Mapping and analyzing these crimes using

Remote Sensing and GIS techniques is necessary for prevention and control of crime. This is the basis for this study.

1.2 STATEMENT OF THE RESEARCH PROBLEM

In recent times, the incidences of murder, armed robbery, rape, automobile theft among other crimes have been on the increase in Katsina metropolis. This increase in crime is attributed to the rising number of unemployed youths and the poor economic situation of the country (Gulumbe, *et al.,* 2012). Based on observation, Katsina metropolis is facing problem of cattle rustling, which had led to loss of animals and in some cases human lives and property. Also, kidnapping, rape and robbery are experienced. The area is grappling with challenges posed by miscreants popularly known as Kauraye or Yan'daba.

Katsina metropolis is one of the most densely populated cities in northern Nigeria (Gulumbe, *et al,* 2012). Like many cities in developing nations, the city battles with criminal acts due to influx of people. According to Ahmed, Muhammad and Muhammed (2013) the city has too many *almajiris*, who are stranded people that are neither employed nor employable; this group contributes incidents of crime. Crime is a threat to the economic, political and social security of a nation and a major factor associated with underdevelopment; because it discourages both local and foreign investments, reduces the quality of life, destroys human and social capital, damages relationship between citizens and the states, thus undermining democracy, rule of law and the ability of the country to promote development (Onoge, 1988).

Adepoju, *et. al*. (2014) mapped and analysed crime hotspot. The NigeriaSat-2 and Ortho-rectified Quick-Bird images, basemap, master plan and questionnaires were used to generate the crime dataset which was later aggregated to show the crime hotspots and cold spots within the residential districts of Abuja Federal Capital City. They were also able to use geospatial

technologies to ascertain a proximity analysis, the relationship between crime hotspots and cold spots, and police divisional stations, slum settlement as well as the various parks and gardens in the study area. The result showed significant correlation between parks and gardens and crime as well as positive correlation between slum settlement and crime in the study area.

In Katsina state, Gulumbe, *et al,* (2012) analysed crime data using Principal Component Analysis (PCA) to determine the distribution of the crimes across the local government areas of Katsina State for the period 2006 to 2008. The crimes consist of robbery, auto theft, house and store breakings, theft/stealing, grievous hurt and wounding, murder, rape, and assault. The result shows that Musawa Local Government Area had the lowest crime rate, while Katsina Local Government Area has the highest crime rate in the State. Robbery was more prevalent in Danmusa Local Government Area, rape in Jibia Local Government Area, and grievous hurt and wounding in Dandume Local Government Area.

Bello, Batsari and Charanchi (2014) also used Principal Component Analysis to determine the spatial pattern of criminal victimization in Katsina Senatorial Zone, Katsina State. The method of data collection was face-to-face personal interview using a stratified multistage random selection procedure to select the sample. The results revealed that thuggery victimizations and theft of manufactured products are more prevalent in the urban centre-Katsina, and the surrounding LGAs. This research was not focused on Katsina metropolis and did not use geospatial techniques to study crime.

The study of Bala, Bawa, Lugga and Ajayi (2015) is the one which GIS was used to classify crime zones in the area, with a view to create crime database of the study area. An analogue map of the study area at scale 1:15,000 and crime records of six years (January, 2004 to

December, 2009) were used in the geospatial classification of types of crime with respect to the spots of occurrences. Areas of high and low frequency of crime occurrence were also highlighted. The study revealed that there is a marked variation in the distribution of crime between and within the zones. Theft and stealing cases accounted for about 45.17% while House Breaking had 5.90% of the total crime cases between 2004 and 2009. Other crime categories contributed less than 5%.

Though, several studies have been carried out on crime hot spots in the study area, however it is of a great interest to note that despite the challenges of crime on humans none of the previous studies has attempted to use GIS and human perception techniques in assessing crime hot spots. This is the gap in knowledge which this current research intend to fill.

To effectively do this, the following question will be answered:

1. What are the various types of crimes being committed in the study area?
2. Where are the main hotspots of crime in the study area?
3. What are the causes of crimes in the study area?
4. What are the effect of crimes in the study area?
5. How accessible are the police stations to the people?

1.3 AIM AND OBJECTIVES

The aim of this study is to analyze crime in Katsina Metropolis, using Geo-Spatial technique for effective crime management in the study area. In order to achieve this aim, the objectives being pursued are to:

i. identify and map the various types of crime committed in the study area.

ii. determine and map the crime hotspots in the area.

iii. examine the causes of crime in the study area.

iv. examine the effect of crime in the study area.

v. determine the accessibility of police stations to crime hotspot in the study area

1.4 SCOPE OF THE STUDY

The study analyzed crime in Katsina metropolis. Katsina metropolis police divisions are divided into Central Police Station (CPS), Government Reserve Area (GRA), Sabon Gari (SG) and Batagarawa (BT). However the content scope of the research is to identify and map the crime hotspot, the causes and effect of crime in the study area. The temporal scope of the study was based on police record from 2012 to 2016, because this period is the most current available data.

1.5 SIGNIFICANCE OF THE STUDY

This research can lead to a more efficient and effective allocation of Police resources in Katsina metropolis because crime hotspots was identified across the Katsina metropolis. This information will allow the Police stations in the metropolis to deploy their resources to the right place with the intention of preventing crime from occurring. More accurate and focused deployment will result in a reduction of serious violence.

Geographic Information System (GIS) analysis of crime data together with qualitative on-the-ground information and intelligence from frontline Police, can be used to produce a comprehensive intelligence report on crime in the Katsina metropolis. The analysis can identify previously unknown crime patterns which may result in the creation of a new unit to address the identified issues. The value of such GIS crime analysis may be recognised by Police, as it can lead to significantly improved decision making.

This research can assist the Police and law enforcement decision makers realise the value of good geographical information. This will assist the decision makers recognise the importance of having accurately recorded geographical information and effective recordkeeping. For example the geo-coding of crime occurrences to a street address location rather than just the street, suburb or local police station enables detailed analysis that would otherwise not be possible. As a result of this, Police practices will change to encourage the accurate locational recording of events.

CHAPTER TWO

CONCEPTUAL AND THEORETICAL FRAMEWORK AND LITERATURE REVIEW

2.1 INTRODUCTION

This chapter reviews crime from different perspective, the theories on the causes of crime, crime hotspots, crime analysis and finally reviewed literatures on crime mapping and analysis.

2.2 CONCEPTUAL ISSUES

2.2.1 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 whole. Crime is thus the intentional commission of an act deemed socially harmful; or dangerous and the reason for making any given act a crime is the public injury that would result from its frequent participation (Edward, 2005). The society therefore takes steps for its prevention by prescribing specific punishments for each crime. The word 'crime' is of origin viz; 'Crimean' which means 'charge' or 'offence' Crime is a social fact. The Waverly Encyclopaedia defines it as, "An act forbidden by law and for performing which the perpetrator is liable to punishment". According to the Italian school of criminologists, crime is abnormal in so for as it is atavistic or pathological in its nature (Edward, 2005). The concise Encyclopaedia of crime and criminals, has defined 'crime' as an act or default which prejudices the interests of the community and is forbidden by law under pain of punishment. It is an offence against the State, as contrasted with loot or a civil wrong, which is a violation of a right of an individual and which does not lead to punishment. Crime in international context-"crime is complex, multidimensional event that occurs when the law,

offender on target (refers to a person in personal crime and or object in property) converge in time and place (such as a street, corner, address, building or street segment) (Edward, 2005).

2.2.2 Classification of Crimes

All crimes are not similar. There are many types of crimes. In some crimes, only one individual is involved and in some other crimes there are many persons who are organized for the purpose of crime. There are such bands of criminals working at the national level and even there are bands of criminals whose field of crime is international. It is not only the males that are criminals but there are females and children also involved in criminal acts. So, in order to classify crime there is a need have to consider the personality of the criminal, the purpose and the type of crime. Criminologist considers the seriousness of crimes and divides broadly into two types of crimes (National Incident-Based Reporting System Resource Guide [NIBRS], 2010).

1) Ordinary types of crime, and 2) serious types of crime. Experts, classifies crimes into four main types depending upon their purpose or objective.

1. Monetary crimes: Crimes done to get money e.g. Theft, fraud, forgery, contraband currency, etc.
2. Sexual crimes: Rapes, homosexuality.
3. Political crimes: Espionage (international), treachery, treason etc.
4. Miscellaneous crimes: Crimes other than the above three types e.g. quarrels, fights, kidnapping or addiction to narcotics etc.

Also crimes are classified on the base of their antisocial or anti personal aspects by (NIBRS, 2010):

i. Murderous crimes:

It is the prime need of an individual or community to be safe. Any behavior bringing this safety into danger may be called as murderous crime e.g. thrashing, enforcing starvation, causing physical, injuries, inducing some to suicide, victimizing, attempting to murder.

ii. Crimes against moveable or immoveable possessions:

Whether an individual or a community, the property or possessions are important. The basic human needs are food, shelter and clothing on which human welfare, establishment and safety depend. Naturally every community approves the legal ownership of possessions by individuals. Hence, theft, looting, fraud, forgery are crimes regarding possessions. Every human being has the right to protect his/her possessions. So, getting back the possessions from the criminals and punishing them are considered as personal issues. This tradition is even found to exist among savage natives. But, this system is not practicable for all the persons and hence not effective always. On the other hand, vengeance and conflict arise and the peace and administration of the community are endangered. Therefore, crime against possessions is considered as logically coming under criminality.

Individual or social welfare depends upon the peaceful running of family. Therefore, any behavior bringing the family to danger is positively considered as crime e.g. Negligence of the parents regarding the care taking of their wards, breaking the traditional social concepts of marriages, having many husbands or many wives, extramarital relations, neglecting the helpless old and so on.

iii. Crimes against moral values:

The every organization of each community is based on certain morals and breach of this moral faith by misbehavior is considered as crime. In various communities there are family relations, marital relations are governed by certain moral rules. Going against these rules is condemned.

iv. Crimes against public peace and order:-

For the welfare of humans and peaceful life, safety of the people in community is essential. Almost all the communities are alert in keeping their constituent institutes active and therefore they are attentive regarding safety and order within the community. Any behaviour against these is considered as crime. Any political party's government basically considers safety and order in the community and any anti-communal behaviour is treated as political crime.

v. Crimes regarding Natural Resources:-

Just as the personal belongings and property are valuable, the natural resources are also very valuable to the community. The resources like, rivers, oceans, forests, mines, birds, cattle and other animals and also human population are considered as the national property. Any behavior engaged in destroying the above items is considered as crime against national resources.

Considering the criminals in their social status, there are two kinds of criminals.

a. Criminals of low status:

b. White collared criminals.

Individuals of low status in society may involve themselves in criminal activities. The reasons are obvious. Financial difficulties, the favourable crime-provoking surroundings, ignorance, illiteracy, uncultured life etc. induce criminality.

White collar people have better financial conditions. They are in most cases well-bred and well- educated and having good company. Such persons take the advantage of their position and commit crimes. Such people are called white collar criminals. During their professional life these respectable and high class people do commit crimes. Unnecessary, but the increasing unnatural needs and greediness make these people to manhandle the powers vested in them and thus they become white collared criminals. Officers, clerks, professors, teachers, judges, doctors, ministers, public workers, police, advocates etc. are relatively enjoying high social status and are respectable. Their duties carry responsibility. In order to carry out their duties they are vested with some authority. But many such people misuse their authoritative powers for their selfish motives (NIBRS, 2010).

There might be a person applying for loan for his selfish purposes, and to get the loan sanctioned, he may bribe the loan sanctioning officer. Such examples are experienced more and more in the present days. The persons involved in such crimes are highly educated and are sometimes and holding higher positions. Therefore, they are looked upon with faith because these persons are generally well versed with the legal aspects. They know the loopholes and they have an established relation with higher authorities and politicians. Hence the crimes do not come up or they are suppressed and the involved persons are ready to escape from the crime accusation. Such criminals of the white colla class get a lot of easy money which is in turn utilized for more luxury like drinking, betting, buying costly furniture and gold ornaments and spending their time in super hotels. These persons involve their money in anonymous

investments to get more money. And this surplus money is used again to capture higher positions by bribing. The main aim is to earn more money by corruption. The persons concerned in higher promotions are kept pleased by bribing. The white collared people convert illegal operations into legal affairs by bribing and committing fraud. In addition, such criminal minded people support and help smuggling, corruption, misusing the authority, distributing false licenses or certificates and avoiding income tax or any legal tax. In this way the white collared criminals amass enormous amount of money which is utilized for their luxurious living. Such person doesn't have the social conscience, and there is no effective law to stop these persons, who always keep abusing the powers made available to them. These may be taken as the main reasons of white collared crimes (NIBRS, 2010).

2.2.3 Types of Crime in Nigeria

Some of the emerging and special categories of crimes in Nigeria are corruption, money laundering, cyber-crime, terrorism, human trafficking, assassination, kidnapping etc.

2.2.3.1 Corruption

Corruption is very widespread in Nigeria and it manifests itself in virtually all aspects of national life. Nigeria was some time ago rated by the Transparency International as the most corrupt country in the world. Corruption is a worldwide phenomenon, which has been with societies throughout history. It has caused political and economic instability in societies and, depending on the scale, it has led to social conflict and violence, as competing groups vie for state power which is the source of distribution of resources and other amenities in society (Ibrahim 2001 and Adenuga 2001).

Otite (1986) described corruption as "the perversion of integrity or state of affairs through bribery, favor, or moral depravity. The author stated that corruption takes place when at

least two parties have interacted to change the structure or processes of society or the behavior of functionaries in order to produce dishonest, unfaithful or defiled situations.

The United Nations is of the view that corruption in government increases poverty in many ways. Most directly, it diverts resources to the rich people, who can afford to pay bribes and away from the poor, who cannot. Corruption also weakens a Government and lessens its ability to fight poverty. It reduces tax revenues and, thus, the resources available for public services (Mills, 2001). The immediate impact on the poor people is that there will be higher prices of goods and fewer employment opportunities, because of the distortions that corruption has caused. Corrupt officials will be willing to demand payment for public services, which are supposed to be free.

Corruption makes it possible for senior public officials to acquire massive personal wealth from states. This has negative impact to development.

2.2.3.2 Money Laundering and Online Banking

Many financial institutions are now providing banking service through the Internet. Most of these are established financial institutions that offer only part of their services online. The concern with respect to money laundering, is that there is no face-to-face contact between the customer and financial institution. The customer accesses his or her account on the website of the financial institution by providing a password. Since no face-to-face contact is required, the financial institution has no means of verifying the identity of the individual. Moreover, a customer can access her account from anywhere in the world. In addition, as access is gained through an internet service provider, the institution has no way of verifying the location from which the account was accessed. An individual desiring to conceal his or her identity, including money launderers, would be able to have unrestricted online access to and control of his or her

bank accounts in any location. The EFCC (Economic and Financial Crimes Commission) in Nigeria has been able to tackle a few cases where online banking has been used for money laundering (Redpath, 2001).

2.2.3.3 Cyber crime

Online computers via the internet can be used to plan and co-ordinate activities, and to facilitate illegal acts, as well as to distribute tools for committing crimes. Instructions for building bombs and deadly weapons and instructions for building "red boxes" used in stealing telephone services, have all been found on the internet. Software for hacking into other computer systems is also available online. Pirated software, child pornography, scams and offshore tax evasion schemes are all available or operated via the internet (Redpath, 2001).

Internet crimes are raising international concern. Every terrorist organization has its own internet website "to propagate it, recruit manpower, purchase firearms and even sell children for sexual purposes". Cyber-crimes are serious sophisticated crimes like swindling, embezzlement and money laundering. These crimes are being committed all the time and often traces are covered up or erased instantly, making the police unable to track them (Radpath, 2001).

According to Abdullahi (2004) cyber-crimes can be categorized into five: Data bidding is the most common, easiest and fastest method. It involves changing the data that will be put into the computer or that are already in the computer. The Trojan horse technique involves instructing the computer to perform unauthorized functions as well as its intended function. This refers to taking small amounts of money from a larger source without significantly reducing the whole. For example, one might in a bank account situation, instruct the computer to reduce some accounts by certain percentage (usually small) and place such amount in another account. Super zapping: To take care of potential problem of malfunction there is the need for what is

sometimes called break glass in case of emergency computer programme. This programme will bypass all controls to modify or disclose any of the contents of a computer. This is powerful for committing crime in the hands of dubious people. Data leakage refers to removing information from the computer system or computer facility.

2.2.3.4 Human Trafficking

Human trafficking, according to Article 3a of the United Nations Protocol is defined as the "recruitment, transportation, transfer, harboring, or receipt of persons by means of threat or use of force or other forms of coercion, of abduction, of fraud, of deception, of the abuse of power or of a position of vulnerability or of giving or receiving of payments or benefits to achieve the consent of a person having control over another person for the purpose of exploitation. The trafficking in persons (Prohibition) Law Enforcement and Administration Act (2003), defines trafficking as all acts and attempted acts involved in the recruitment, transportation within or across Nigerian borders, purchases, sales, transfer, receipt or harboring of a person involving the use of deception, coercion or debt bondage for the purpose of placing or holding the person, whether for or not involuntary servitude (domestic, sexual or reproductive) in forced or bonded labor, or in slavery-like conditions". Victims of human trafficking include the poor, weak powerless, ignorant, desperate and vulnerable adults mostly women, youth and children. Human trafficking can be either internal or external. Human trafficking is internal when it takes place within a country, while it is external when it takes place across international boundaries. It was discovered that human trafficking started in Nigeria from the second half of the 1980's when people engaged in it to escape the hardship by the Structural adjustment Programme (SAP) (NAPTIP Newsletter, 2006).

Human trafficking is a modern slavery. Those who engaged in trafficking of persons are often friends, relatives, neighbours and familiar people to victims. Human trafficking is an organized crime. It has a chain of syndicate. In this organized crime, there are the Sponsors, financers and facilitators; there are madams or bosses, supervisors, accomplices or collaborators, aiders and a betters; victims or persons who are trafficked and exploited.

Some of the causes on the part of the victims and traffickers are poverty, ignorance, greed, get-rich quick syndrome, illiteracy, identity or moral bankruptcy, high demand for cheap and submissive child labourers, false impression of preparation for marriage, unemployment, child fostering, inequalities in the society, disregard for education, conflicts, those orphaned by the HIV/AIDS pandemic, large family size etc. It is apparent that trafficking in persons has, over the years, changed its form, colour and style. It has always been abhorred and denigrated by well-meaning members of the society as uncivilized, brutal and primitive. Government has demonstrated its political will by enacting the Anti-Trafficking in Persons Law, 2003 to deal with the problem. It is expected that the civil society, the judiciary, faith-based groups and even the victim, should join hands in ensuring that the law works and offenders are put out of circulation for a better society (Ndaguba, 2005).

2.2.3.5 Assassination

As the world advances and the stakes in political clashes or will continue to grow on a global scale, the number of assassinations concomitantly multiplies. Assassination is the deliberate killing of an important person, usually a political figure or other strategically important individuals. An assassin is the person who carries out an assassination (Wikipedia, 2006). Assassins have a wide range of reasons for their action. Reasons for attacks include: to achieve notoriety or fame, to avenge a perceived wrong, to end personal pains; to be killed by

law enforcement agent, to bring national attention to a perceived problem, to save the country or the world, to achieve a special relationship with the target, to make money, to bring about political change and to settle scores.

Many writers on assassinations asserted that most assassins have been mentally ill. Some say that mental illness is the cause of assassination. Others argued that mental illness is a key factor in understanding assassination behaviour. This argument can be seen in four ways: Assassination is inherently an irrational act. Those who assert that assassins have been mentally ill are implying of a few assassins. Many who consider assassins and attackers to be mentally ill look at the nature of the act itself. Reasonable people abhor the thought of assassination. It is hard to accept the idea that a few persons might see assassinations as acceptable way to resolve their problems and to achieve their goals. With rare exception, trails of assassins and attackers of leaders and celebrities in the past 30 years have featured testimony by mental health professionals to the effect that the defendant was suffering from mental illness at the time of this or her attack and should not be held criminally responsible (Agbola, 2006).

Many scholars such as Freedman (1966), Goode (2002) and Madunagu (2006), are of the opinion that political assassinations are failure of the political system. Inability to penetrate the ruling class frequently results in political assassinations of public figures connected with politics. Failure in politics carries high costs often in relation to loss of human lives. Political assassination occurs when people want to settle scores. This may come in two ways: It is either there is a design, which is calculated to undermine the authority of the government of the day, or Government is using its authority to stifle opposition. In this context, lives are lost, properties are destroyed and people are displaced. Thus, displaced people eventually become refugees in their own country.

Assassination is the end result of a process of thinking and behaviour. Many attackers move through life on a path that leads them to consider assassination of one or another prominent person as an acceptable or even necessary way to improve their situations or resolve their problems. These persons are often relatively bright and well educated. They may appear to be socially isolated, but they often look, dress, and act in ways that do not readily distinguish them from others. At some point, attackers begin to see the idea of assassination as acceptable and desirable. They may gather information about previous assassins, take special interest in one or more potential public officials or figure targets, and becoming famous and notorious. Persons who continue along the path to attack often carefully consider how to carry out an attack. They may visit an office, home or temporary visiting place of their target. Their travels may take them far from home. They may try to learn about security arrangements and see the presence or absence of security as a deterrent or as an opportunity.

2.2.5 Crime Analysis

The book Exploring Crime Analysis published by the International Association of Crime Analysts (2005) presents a more precise definition for a crime analyst in conducting crime analysis which "focuses on the study of crime incidents, the identification of patterns, trends, and problems; and the dissemination of information to develop tactics and strategies to solve patterns, trends, and problems." In the same book, crime pattern can be defined as when two or more incidents are related by a common casual factor, usually to do with an offender. Trend represents long-term increases, decreases or changes in crime. The concepts of pattern and trend provide an overarching framework to identify relationships of crimes.

There are five major types of crime analysis conducted on a regular basis by law enforcement agencies: tactical crime analysis, strategic crime analysis, administrative crime analysis, criminal investigative analysis, and police operations analysis.

a) Tactical Crime Analysis:

Tactical analysis provides information to assist operations personnel (patrol investigative officers) in the identification of specific and immediate crime problems and the arrest of criminal offenders. Analysis data is used to promote response to field situations (Gottlieb 1994). The goal of tactical analysis is to: (1) identify emerging crime patterns as soon as possible; (2) complete comprehensive analysis of any patterns; (3) notify the agency of the pattern' existence; and (4) work with the agency to develop the best strategies to address the pattern (Bruce, 2004). In comparison with all the related crime incidents, it is always possible to identify some commonalities among them. The most significant element in tactical crime analysis is to identify the pattern and that can be achieved in a number of ways, from tabulation comparison to statistical analysis and from simple pin map to automated GIS mapping. This timely qualitative analysis enables the frontline officers to make good use of the available resources for interdicting recent criminal and potential criminal activity and leading to the apprehension of offenders. After all, tactical crime analysis relies totally on the methods however refined and scientific, flexible and intuitive that the analyst can utilize (Bruce, 2004).

GIS has an important role to play in the compilation of tactical crime analysis mapping – a common process of using GIS in combination with crime analysis techniques to focus on the spatial context of criminal and law enforcement activity (Boba, 2001).

b) Strategic Crime Analysis:

Strategic analysis is concerned with long-range problems and projections of long-term increases or decreases in crime (crime trends). Strategic analysis also includes the preparation of crime statistical summaries, which are generally referred to as exception reports (Gottlieb, 1994). Since there are always changes in the operations of criminal activity, such as spatial and temporal modification, targeting properties and modus operandi. From time to time, resources allocated for tackling will vary according to the crime situation. Exception reports are an effective means to deliver the information for better communication. Strategic crime analysis incorporates two primary functions: (1) to assist in the identification and analysis of long-term problems; and (2) to conduct studies to investigate or evaluate responses and procedures (Boba, 2001). After a long-term study, trends can be mapped and tested by repeated hypothesis and subsequently provide a findings of the correlation of a specific crime. From the perspective of the management, these crime projections are useful in the anticipation of crime trends and future challenges and the assessment can assist them to have an insight to initiate strategies, priorities, resource deployment and organizational and planning needs (Baker, 2005). Crime trend is the focal point of compiling a sound strategic crime analysis.

c) Administrative/Academic Crime Analysis:

This is different from the previous types of analysis in that administrative crime analysis helps facilitate strategic goals (Baker, 2005) and focuses on the provision of economic, geographic, or social information to administrators (Gottlieb, 1994). It refers more to presentation of findings rather than to statistical analysis or research (Boba, 2001) and it is a broad category including an eclectic selection of administrative and statistical reports,

research and other projects not focused on the immediate or long-term reduction or elimination of a pattern or trend (Bruce 2004). Administrative crime analysis supports law enforcement agencies to initiate special research projects, feasibility studies and questionnaire surveys which ultimately provide additional information to the administration for better crime prevention responses. Its subsidiary outcome may improve and promote public relationships by making available a picture of the overall crime situation for publication to the public.

d. Operations Analysis:

Police operations analysis depicts the review of the organization and operations of a police department. Generally speaking, it involves the measurement of effective allocation of police resources in deterrence of crime and disorder (Bruce, 2004).

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

f. Investigative Analysis:

Criminal investigative analysis is the study of criminal personality behaviour, especially in violent crimes. It involves profiling of offenders, victims and geographical features with a view to linking and solving current serial criminal activity. This is a very specific

type of crime analysis that is primarily carried out by law enforcement agencies (Boba 2001) as it requires professional skills and a high degree of expertise.

2.2.6 Crime 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 the user specify the time period they want to examine, they can also display events of a certain type or that meet specific criteria. By enabling the visualization of subsets of information, mapping provides an invaluable tool for revealing clusters and patterns of crime that are not readily apparent from a list of crime events in a report. Another important function that mapping enable is the visualization of the concentration of events at a single address. This is accomplished by tying the size of the symbol at a location to the number of events occurring there: the more events, the larger the symbol. This method for identifying report events at a single address supports problem-oriented policing efforts by making locations with several calls easily identifiable (Eck, 2005).

2.2.6 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. A crime

pattern could occur over a large geographic region, or it may occur in a relatively small area. A crime 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.

2.2.7 Crime Hotspots

In crime analysis, hot spots are always referred to as clusters of crimes. Even though there is no fixed definition for hot spot, a common interpretation recognized by most is that hot spot is a small place where crime occurred repeatedly, such that it becomes highly predictable over a period of one year at least (Sherman 1995). Some criminologists and analysts generally define hot spot as a somewhat larger area in size that even the extended surroundings of a building are included (Vann and Garson, 2003).

In order to determine whether there is a hot spot or not, the crime data has to satisfy that crimes occurred frequently in an area at least once during a one year period. Initial review of the data set apparently indicated that there are clusters of crime incidents more contagious than other areas in a long span of time. In short, hot spots are detected where the density of crimes is high (Sherman 1995).

2.3 THEORIES OF CRIME

There are many criminological theories providing a basic explanation for constructing a theory of crime places. Three recent and prominent theories: crime pattern theory, rational choice

theory and routine activity theory have influenced the basic understanding of the relationships between crime and place.

2.3.2 Crime Pattern Theory

Brantingham and Brantingham, who are the founders of environmental criminology, developed the Crime Pattern Theory. They hypothesize that crime is the result of people's (both offenders and potential victims) interaction and movement in the urban landscape in space or time (Brantingham and Brantingham 1984). So, for a crime to take place it must consist of four essential elements: a law, an offender, a target and a place (Brantingham and Brantingham1981). The theory they developed suggests that criminal opportunities at a location open to the attention of offenders have an increased risk to become targets (Eck and Weisburd 1995). Their further research on location quotients and crime hot spots reiterated that crime occurs in spatial patterns and therefore some parts of a city experience more crimes than others, and that some crimes seem to congregate near certain types of locations. They also affirm that crime has never occurred randomly in time and in space and there are temporal patterns, for example, bar assaults are evening events (Brantingham and Brantingham, 1995). From their observation, there is always a cognitive connection or potential link between certain crimes and designated places. Likewise, certain crimes occur at a particular time.

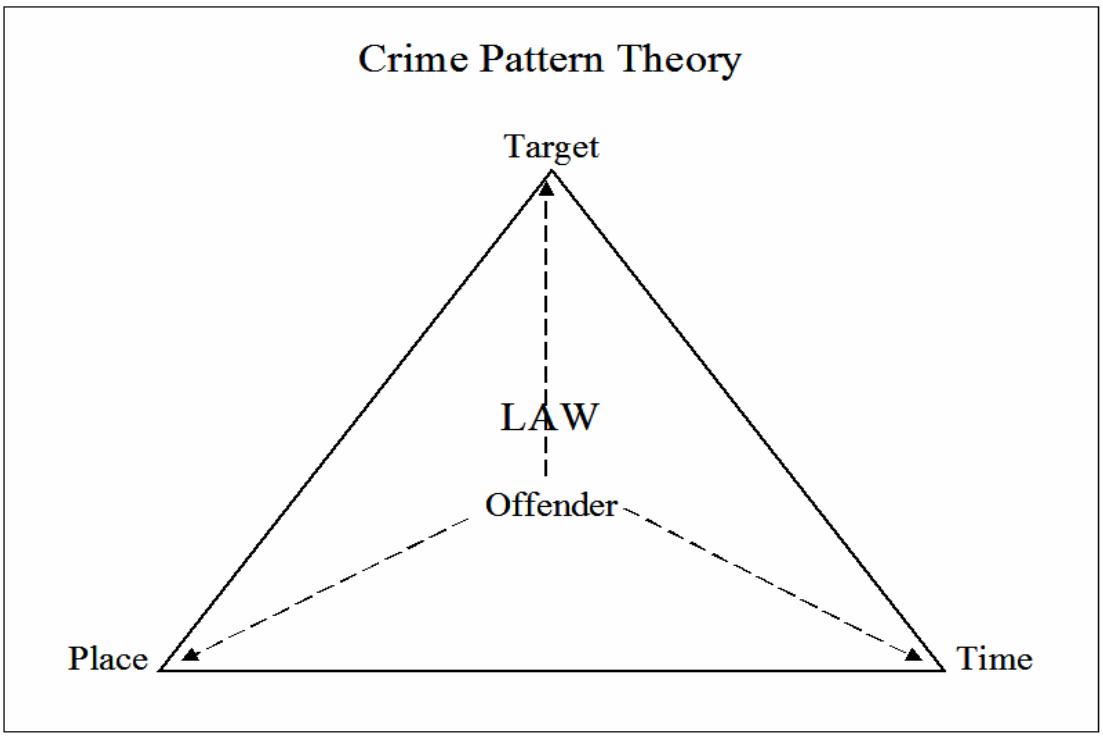


Figure 2.1: Interaction of Crime Pattern Theory

Source: Brantingham and Brantingham, (1995)

2.3.3 Rational Choice Theory

Rational choice theory constructed by Cornish and Clarke (1986) suggests that offenders will weigh the risk involved in committing a criminal act before selecting target and the basic rationale for selecting a place is important to achieve their goals. In other words, successful crime prevention measures will increase the cost of offending and at the same time reduce the likelihood of rewards. However, this theory may well be able to explain target selection for some types of crime and for some types of offenders but is less helpful in explaining target selection in other forms of crime (Ainsworth, 2001). For example, some burglars, the steal-to-order type burglars in particular, may ignore any preventive measures, such as CCTV, or any other forms of risk and still attack the targeted premise which appears to offer them fruitful results.

2.3.4 Routine Activity Theory

Another well-known theory is routine activity theory (or crime triangle) formulated by Cohen and Felson (1979) in which they explain that predatory crime occurs when a likely offender and potential target come together in time and place without the presence or effectiveness of other types of controllers. An intimate handler, such as parents or friends; or a capable guardian which includes human actors, such as police or security guards, or physical devices, such as CCTV monitors; or a place manager, such as bartenders or shop managers, who is capable of protecting their belongings and security devices (Eck and Weisburd, 1995). That is to say, in order for a crime to develop, there must be a motivated offender and a desirable target at the same place and at the same time while the controller is absent or ineffective (Felson, 1995).

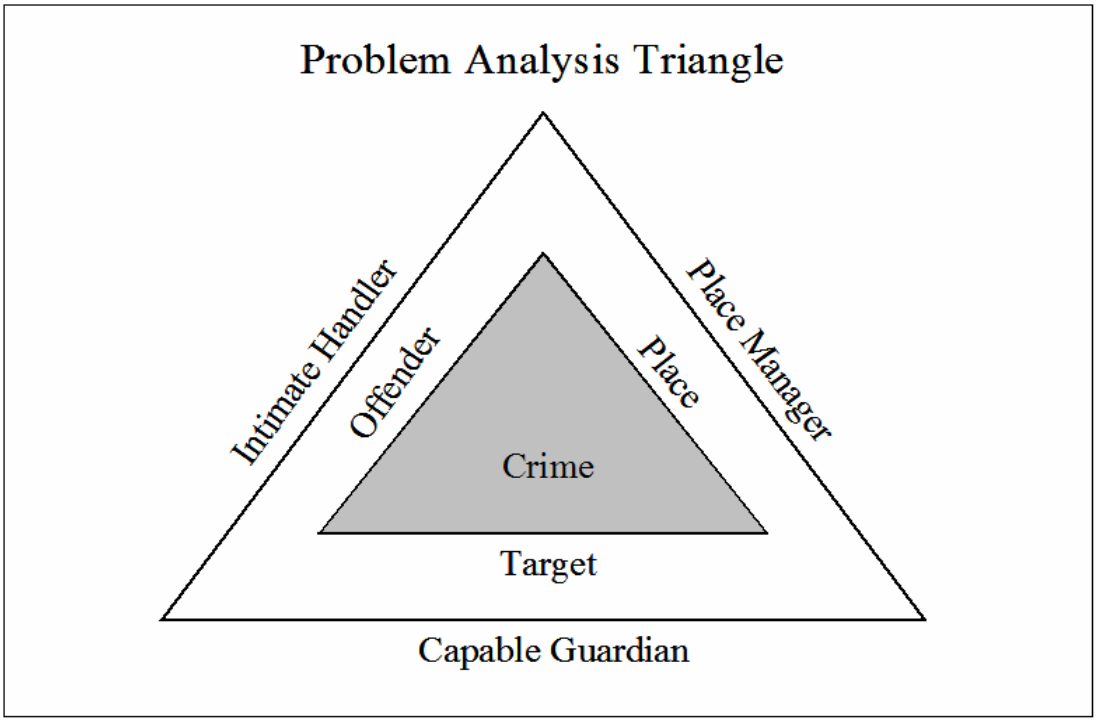


Figure 2.2: Problem Analysis Triangle

Source: Goldstein (2001)

Obviously, all of these three theories can be valid in their contexts and situations. But of greater importance is that all three theories conclude that place has a direct connection to crime. Only through comprehension of these theories will analyst be able to investigate the interaction of the physical and social environment with the choice of targeting.

2.4 LITERATURE REVIEW

2.4.1 Crime Rate in Nigeria

Nigeria has witnessed high rates of crime and victimization that have defied the measures, introduced by successive regimes, for its management during the past two decades. According to Osalor (2009), the scariest undertone of Nigeria's socio-economic underachievement, by far, is the steady rise in youth crime, nurtured in a climate of increasing national income and the simultaneous failure of employment-generation and poverty alleviation programmes. Armed insurgencies ravaging the oil-rich and volatile Niger Delta region are now competing for space in international headlines with a proliferation of terrorist offshoots. The season of discontent has especial ramifications for a nation with unemployed millions, and the net effect has been a tragic precipitation of violent crimes: assault, burglary, extortion and kidnapping. Further, decades of social and political turmoil helped turn this strategically located African nation into an established junction for international drug smugglers. Other highlights of Nigeria's prolific crime syndicates are economic fraud – usually in the form of innovative Internet schemes; money laundering and racketeering". The author stated further that human development indices for Africa's second largest economy continue to be appalling despite the country's bountiful resources, escalating oil fortunes and a vigorous reforms programme initiated after the return of democracy in 1999. The author stated further that a 2007 UNDP survey on

poverty and extreme deprivation of 108 countries ranked Nigeria at the 80th position, giving it a Human Poverty Index of 37.3 – among the lowest for the entire continent Per capital GDP stands at a meager $1,400 with 54$ of the population living on less than $1 per day, 50 million people, most of them women and children, suffer from nutritional deficiencies. 10% of Nigerians are malnourished and half the population does not have access to safe drinking water. 25% of children below the age of 5 are underweight and 42% display stunted growth. Over 3% of adults in the age group 15 – 49 are infected with HIV/AIDS.

In 1980, the poverty level in Nigerian households with a female head was 27%. The figure rose to 58% by 2015. For a country that earns an estimated $2.2 Million in daily petrodollar revenue, these figures reflect an impudent malaise that has invaded every aspect of Nigerian life.

There are several reasons adduced for increase in crime rate in the country. Akparanta (1994) attempted to provide reasons for urban violence/crime in post-civil war Nigeria, arguing that following the war, there was an abundance of guns in private hands and times were hard economically. Accompanied by deterioration in the standard of education, and the lack of specific training in areas relevant for sustaining both the agricultural and the industrial sector, many youths went astray. Another argument was that the continuously unpredictable political atmosphere and lack of progressive management of the economy brought about galloping inflation, ad concentration of wealth in the hands of the few who were in positions of public authority fueled a sense of hopeless desperation among the masses.

2.4.2 Crime and Development

Odekunle (2005) observed that criminal victimization has serious consequences for the citizens and society. Individual and societal aspirations for democracy, development, human

rights, high standard of living are undermined by high level of criminal victimization. Nigeria has witnessed high rates of crime and victimization that have defied the measures, introduced by successive regimes, for its management during the past two decades. The cost and consequences of crime for the population and these are manifold. In addition to the material loss and/or personal distress caused by actual criminal victimization, there is the debilitating reality of the population's unquantifiable but costly expenditure of energy and scarce resources on anxious fear of, and precautionary care against potential criminal victimization – fear and care that must arise out of feelings of insecurity and helplessness and out of a situation they must have assessed as probably hopeless. This cost of precaution is one major indication of the population's perception of the reality of the situation: it should suffice to consider the amount of money and energy expended now-a-days, particularly in urban and semi-urban areas, on the security of a house or a car, not to mention the inconveniences and curtailment of freedom of movement suffered. For the government itself, there is the cost in terms of credibility.

Government's enjoyment of public confidence depends (in part, at least) on some apparent effectiveness in preventing/controlling criminal victimization of its population and thereby increasing that population's feeling of security with regard to their individual persons and property, the provision of security is one of the main functions of the state. A state that cannot protect the lives and properties of its nationals is not entitled to their loyalty, it is well on the way to becoming a failed state.

2.4.3 Geographic Information System in Crime Analysis

Ahmed and Salihu (2004) analysed the socio-temporal pattern of crime in Dala L.G.A of Kano State, Nigeria. 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.

Dukiya (2004) carried out a study titled 'Digital mapping of crime statistics in Minna'. The study of types and pattern of crime in Minna reveals that the city recorded varying degrees of crime across the twenty six (26) neighborhoods between year 2000 and 2003. Although, the study observed that the incidence of serious crime like Murder, Manslaughter, armed robbery and rape are not high. The predominant forms of personal and property induced crimes in the neighbourhood, which were classified as hot spots and high crime areas constituted a major threat to security.

Fajemirokun, Adewale, Idowu, Oyewusi and Maiyegun (2006) used GIS in mapping crime in Victoria Island, Lagos. The data for the study was collected from police station in Victoria Island, Lagos. They demarcated the study area into 6 zones for the analysis and the level of the crime was mapped using dot density in ArcView 3.1. The study revealed that zone 4 has the largest concentration of residential and business/office areas and has the greatest proportion of the total crime incidences especially crimes that relate to properties. Zones 2 and 4 also have the largest number of crime incidences against persons and zone 1 has the lowest incidences of reported crime in the study area.

Usman, Yakubu, and Bello (2012) investigated crime rate in Sokoto State, Nigeria. The study made used of data acquired from Sokoto police headquarters and applied Principal Component Analysis to analyse the data. The result revealed that major crimes were armed robbery (29%), Burglary (22%) rape (19%) pick pocket (15%) Murder assassination (4%) and other petty crimes; put together (11%).

Jinadu, Morenikeji, Sanusi, Dukiya and Owoyele (2012) undertoook on digital mapping of crime statistics in Minna, Niger State. The research work relied on data collated from the records of the Niger State Police Headquarters in Minna and other secondary data sourced from relevant literature. A total of 909 crime cases by type, location, age and gender of offenders for between January 2000 and September, 2011 were collected and used in the analysis. The frequency and cross tabulation functions of the SPSS were used to analyze the characteristic of offenders by location in the study area. The findings of the study shows that a wide variety of crimes were committed in Minna between 2000 and 2010. The offences fall into three major categories of crime against persons, property crime and crime against public order. Crime against persons and property were predominant (75.6%) with theft, house breaking and assault being the most common crimes. The crimes were mostly committed by young adults (18 – 35 years), mostly of the male gender. The trend analysis of crime incidences reveals that the city witnessed high cases in the election years of 2003 and 2007, confirming the assertion that election years in Nigeria are characterized by high crime rate.

Ahmed, Muhammad, Mohammed, and Idris (2013) examined the spatial distribution of police station in Kano Metropolis. Global Positioning System (GPS) was used to capture the coordinates (latitude and longitude) of the stations in the area, while the data pertaining to the number of police personnel in each station were sourced from interview and documented data

sourced. The data were anlysed using simple and inferential statistics. Also ArcGIS 9.3(Version) Software was used to generate the map of the distribution. Nearest neighbourhood analysis shows that the distribution of stations is random in the area. One and two kilometer buffer zones were generated and the result shows that the old city of Kano and the eastern part of the metropolis were fully served while the west and southern part were underserved. The ratio of police officer to population in the area is 1: 539 in the area which is far below the United Nation recommended figure of 450. It was also discovered that there is neither significant relationships between the numbers of the station nor between the number of personnel in the station and population in the area.

Adepoju *et al.* (2014) studied 'Geospatial technologies for Nigerian urban security and crime management' which was a study on Abuja crime hotspots mapping and analysis. The study was conducted using proximity analysis to ascertain relationship between crime hotspots, cold spots, police divisional stations, slum settlements as well as various parks and gardens in the study area. The result reveals a significant correlation between slum settlement and crime in the Abuja City. The result also showed significant correlation between parks/gardens and crime. It also reveals a positive correlation between slum settlement and crime in the study area.

Adepoju, *et. al*. (2014) mapped and analysed crime hotspot. The NigeriaSat-2 and Ortho-rectified Quick-Bird images, basemap, master plan and questionnaires were used to generate the crime dataset which was later aggregated to show the crime hotspots and cold spots areas within the residential districts of Abuja Federal Capital City They were also able to use geospatial technologies to ascertain a proximity analysis, the relationship between crime hotspots and cold spots, and police divisional stations, slum settlement as well as the various parks and gardens in

the study area. The result showed significant correlation between parks and gardens and crime as well as positive correlation between slum settlement and crime in the study area.

In Katsina State, Gulumbe, Dikko and Bello (2012) analysed crime data using Principal Component Analysis (PCA) to determine the distribution of the crimes over the local government areas of Katsina State for the period 2006 – 2008. The crimes consist of robbery, auto theft, house and store breakings, theft/stealing, grievous hurt and wounding, murder, rape, and assault. The result shows that Musawa Local Government Area had the lowest crime rate, Katsina Local Government Area has the highest crime rate in the State. Robbery was more prevalent in Danmusa Local Government Area, rape in Jibia Local Government Area, and grievous hurt and wounding in Dandume Local Government Area.

Bello, Batsari and Charanchi (2014) applied Principal Component Analysis to determine the spatial pattern of criminal victimization in Katsina Senatorial Zone, Katsina State. The method of data collection was face-to-face personal interview using a stratified multistage random selection procedure to select the sample. The results revealed that thuggery victimizations and theft of manufactured products are more prevalent in the urban centre-Katsina, and the surrounding LGAs. This research was not focused on Katsina metropolis and did not use geospatial techniques to study crime.

Ayuba, (2015) mapped and analyzed crime incidences between 2010 and 2011 in Kaduna Metropolis, Kaduna state, Nigeria using Remote Sensing and Geographic Information System (GIS) techniques. The data on crime were obtained from the 15 Police Divisional Headquarters within the metropolis. Microsoft excel and ArcGIS version 9.3 was used to analyze the data. A total of eleven (11) crime types were 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 that Tudun Wada had the highest crime with 15.05% while Sabon Gari 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 Tudun wada with 21.75%, theft/stealing in Tudun wada 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 Sabon Tasha 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.

Bala, Bawa, Lugga and Ajayi (2015) in which GIS was used to classify crime zones in the area, with a view to create crime database of the study area. An analogue map of the study area at scale 1:15,000 and crime records of six years (January, 2004 to December, 2009) were used in the geospatial classification of types of crime with respect to the spots of occurrences. Areas of high and low frequency of crime occurrence were also highlighted. The study revealed that there is a marked variation in the distribution of crime between and within the zones. Theft and stealing cases accounted for about 45.17% while house breaking had 5.90% of the total crime cases between 2004 and 2009. Other crime categories contributed less than 5. The study only divided the study area into zones and the actual location the crime are taking place was not captured in the study.

CHAPTER THREE

STUDY AREA AND METHODOLOGY

3.1 INTRODUCTION

This section describes the study area and the methodology employed for the study, which include the types of data and **s**ources, data processing and analysis

3.2 THE STUDY AREA

3.2.1 Location and Size

Katsina metropolis is the capital of Katsina State; it is located between Latitudes 12^{o} $55^{'}$ $30^{''}$ N – 13^{o} $03^{'}$ $0^{''}$ N of the Equator and Longitudes 7^{o} $33^{'}$ $0^{''}$ E - 7^{o} $40^{'}$ $0^{''}$ E of the Greenwich meridian. Katsina Local Government Area (LGA), in which Katsina metropolis is located shares boarder with the LGAs of Kaita to the north, Rimi and Batagarawa to the east and south, and Jibia to the west. Creation of Katsina State and capital in Katsina has made the town to expand remarkably (Figure 3.1).

3.2.2 Weather and Climate

The climate of Katsina is Tropical Continental type that is hot and dry for most of the year. Maximum day temperatures of about 38^{0}C in the months of March, April and May are common and the minimum temperature is about 22^{0}C in the month of December and January (Rumah and Sheikh, 2010).

Rainfall in Katsina Metropolis, as in the whole country, is a good reflection of the seasonal variations of the Inter-Tropical Discontinuity (I.T.D) and it falls mainly between May and September. It ranges between 0.0 to around 800mm. Rainfall in Katsina metropolis when the wind blows to Northeast from Southwest while the reverse brings dryness. North-easterly wind blowing from north-east is associated with continental tropical air mass and brings no rain, while

south-westerly wind blowing from south-west is associated with maritime tropical air mass which is wet and brings rain as it originates from the sea, Atlantic Ocean (Gide, 2012).

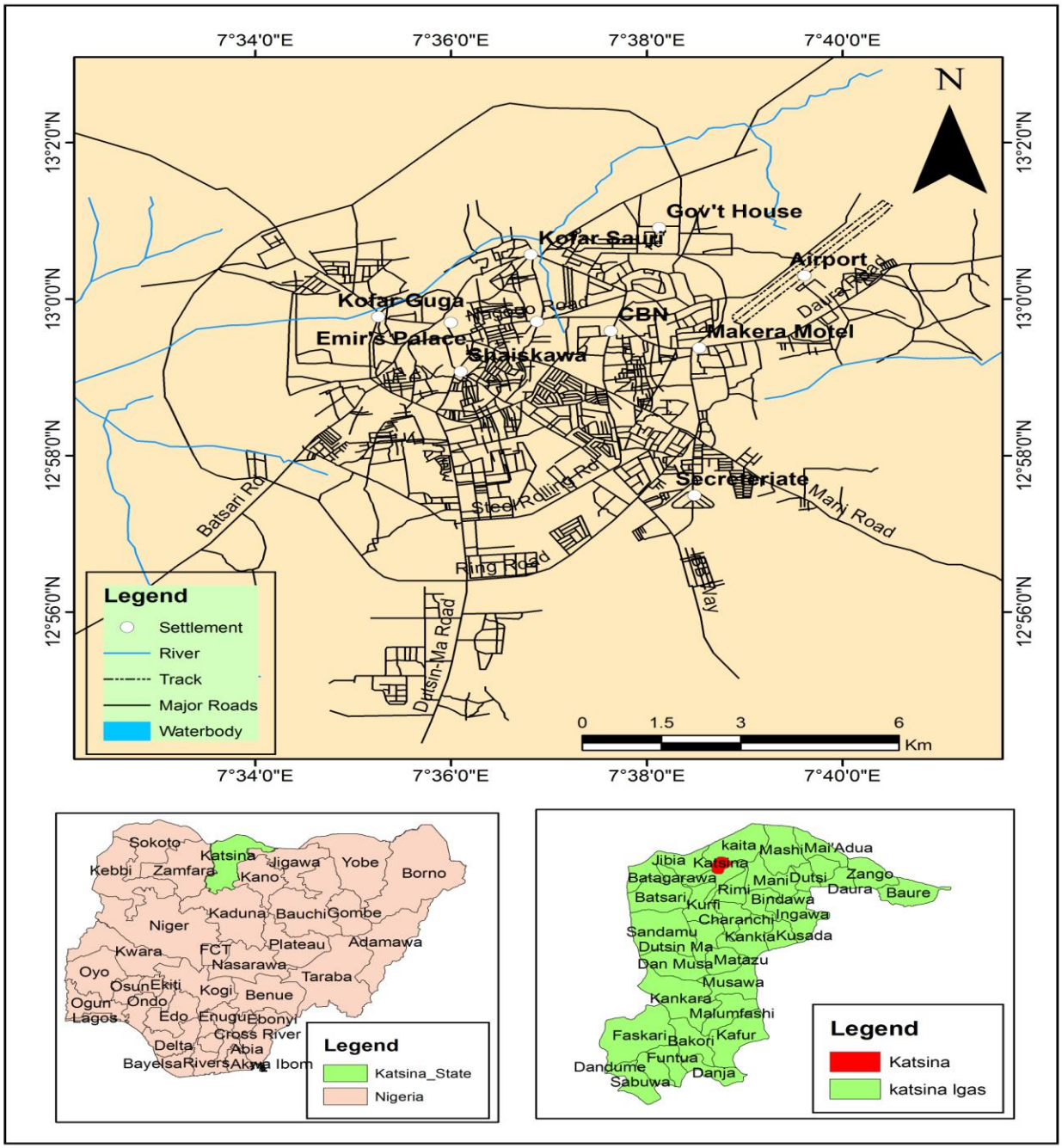


Figure 3.1: Katsina Metropolis
Source: Adapted from administrative map of Katsina State

3.2.3 Population and People

The population of Katsina metropolis during the 1991 census was 223,644 out of which 116,704 were males while 106,940 were females (NPC, 2007). During the 2006 census, the figures increased remarkably where the total population of the study area jumped to 318,132 out of which 168,906 were males and 149,226 were females (NPC, 2007).

Katsina metropolis is predominantly a Hausa and Fulani city, but Hausa is the commonest language. In Katsina metropolis, speaking any other language apart from Hausa is very rear except English Language in places of work and schools. Initially, majority of Katsina people were settled cultivators and traders but the number is now declining due to urban growth and creation of Katsina state with capital in Katsina town. There are migrants from all over the country especially Yorubas and Igbos who are involved in the economic, social and educational activities in the town, apart from government workers. Some of these people work with the state especially in schools while some are federal government workers (Gide, 2012).

3.2.4 Settlement

Settlements in Katsina metropolis are of two types, traditional and modern. The traditional settlement is mainly in the walled city consisting of traditional mud houses with compound at the centre of the houses for resting and fresh air, and single entrance to the house (Zaure). Some extended families have fragmentation of compounds within the main old house containing more than one household. The thickness of the walls of these traditional mud houses reaches about 40cm - 60cm, very few of them are upstairs. In the old town if not now, there were no large roads within the groups of these houses as there were no motor cars then. The roads separating these houses were pedestrian in nature, yet most of the old city is like that. To

strangers, houses and places are very difficult to trace in the old city. Meanwhile, government has now destroyed some of these houses for road access but yet most of these areas are still not easily accessible (Gide, 2012).

The modern settlements are the G.R.A. and other areas reached by the urban expansion. These areas are not too congested compared to the old city and they have abundant roads for cars and even trucks. The settlements are full of modern and cemented houses most of which are built in line with Hausa culture and tradition of having a main entrance and an open compound inside the house where the residents can relax and for air to circulate (Gide, 2012).

3.2.5 Economic activities

The people of Katsina L.G.A. are predominantly Hausa and Fulani living together. According to 2006 census figure, Katsina Metropolis has a population of 318,132 (NPC, 2007). Majority of the people in the area are farmers, sorghum, millet, cowpea, maize, and groundnut are the major crops cultivated in the area. They also keep livestock like cattle, sheep and goats. These are usually moved by herders from one place to the other in search of pastures especially during the dry season. Irrigation farming is also carried out along river banks in the area. Small scale businesses like mechanic services, furniture making and various forms of trading activities are also carried out in the area (Gide, 2012).

3.3 METHODOLOGY

3.3.1 Reconnaissance Survey

Reconnaissance survey was carried out on the 15th of October 2015, by interviewing the police on the current issues on crime to get list of their sub-division and out post. These carried out in order to have a general knowledge of the study area. The survey also enabled the

researcher identify the police divisional areas in the study area. It was at this stage the researcher identify one police headquarter, five divisional offices and fifteen outpost within the study area.

3.3.2 Type and Sources of Data

Table 3.1 shows the types of data used, sources and purpose of the data in the study

Table 3.1: Types and Sources of Data

S/No	Type of Data	Source	Purpose
1	Geographic Coordinates of crime location	Global Positioning System (GPS). Hand Held Garmin Oregon 450	Coordinates of the crime scenes and police station locations for the mapping of crime.
2	Crime record of the study area 2012 and 2016	Katsina State Police Headquarter	Crime analysis
3	Satellite Imagery	Google Earth Image	Road Network Extraction
4	Causes and effects of crime	Questionnaire (Field Survey)	To determine the causes and effects of crime to the people in the Study area.

Source: Author's Compilation, 2017

The crime records collected from the police include: location and address of the persons involved in the crime, type of crime committed, time of the crime, month and year of the crime.

Literature material was obtained from journals, books, publications, magazines, past projects, reports.

3.3.3 Data Processing

3.3.3.1 Image Geo-referencing

The datasets along with Administrative map was geo-referenced or geo-rectified (registration) to a geographic coordinate system. The images was imported into ArcGIS 10.1 environment where they was rectified to a common projection (Universal Traverse Mercator). According to Wilford (1977), the UTM projection unlike the Geographic Coordinate System (latitude/longitude) is more reliable since its measurements are cited in linear, decimal units, rather than in angular, non-decimal units (Wilford, 1977). This will be done to translate the images real world coordinate to digital format so that it can be matched with other relevant and related maps that will be used in this study. Geo-referencing which involves registering data to the real world will be carried out by assigning geographic information like location and position, to the data sets (images). This will help define the existence of those data sets in physical space as well as establish their location in the real world.

3.3.3.2 Vector Data Creation (Road Map)

The Google Earth image covering the entire study area was imported in the ArcGIS 10.1 environment and features such the road features and settlements was extracted by digitizing the imagery.

3.3.5 Sampling Size and Sampling Technique

A combination of Random and Systematic sampling technique was used in selecting individual respondent in the study area. The questionnaire was administered to the residents aged 18+years of the area and also the police and staff of related agencies were interviewed. The total population of Katsina metropolis is 440, 260 based on the projected population.

To determine sample size for the purpose of this study, the Yamene (1967) formula for sample size determination was used. Thus;

$$Sample\ size = \frac{N}{1 + N\ (e)^2} \quad \text{---------- 3.1}$$

Where N= Total number of population, e = error margin = 0.05

Therefore using the projected population of Katsina Metropolis (440,260) by 2016, the sample size was 399.9984; as such 400 samples were selected. The sample size for the various is presented in Table 3.2.

Table 3.2: Sample Size

Wards	Population	No. of Questionnaires
Wakilin Gabas I	47384	43
Wakilin Gabas II	40717	37
Kangiwa	38796	35
Wakilin Yamma I	33673	31
Wakilin Yamma II	36880	34
Wakilin Kudu I	40915	37
Wakilin Kudu II	39861	36
Wakilin Arewa A	32511	30
Wakilin Arewa B	30429	28
Shinkafi A	25327	23
Shinkafi B	28241	26
Wakilin Kudu III	45526	41

Total	**440260**	**400**

Source: Author's Compilation, 2016

3.3.6 Method of Data Analysis

3.3.6.1 Types of Crimes Committed In the Study Area

This objective was achieved by identifying the various crimes in the study area as seen in the crime data gotten from the Police Headquarters. The coordinates where various crimes occurred was obtained using a GPS receiver. The coordinates of the various crime locations were imported into the ArcGIS 10.1 environment, where point overlay analysis (i.e. overlaying the crime location on the map of the study area) was carried out.

3.3.6.2 Crime hotspots in the study area.

The Kernel Density Estimation in ArcGIS 10.1 was utilized in mapping the crime hotspots in the study area. Kernel Density Estimation provides an estimate of the proportion of total crime that can be expected to occur in any given location. It works by first overlaying an area of interest with a fine rectangular grid. It then calculates an estimate of the density of crime in each grid cell which is based on a weight function - the kernel. The kernel is a function of specified shape and bandwidth (or search radius). The Kernel Density Estimation is given by the equation below (Deepthi and Ganeshkumar, 2010):

$$f(x,y) = \frac{1}{nh^2}\sum_{i=1} K\left(\frac{d_i}{h}\right) \quad \text{---------- 3.2}$$

Where f(x,y)is the density estimate at location (x, y), h is the search radius (bandwidth or kernel size), n is numbers of observations (total number of crime), K is the kernel function and d_i, is the distance between the location (event point) (x, y) and location of the ith observation. The mean and standard deviation of the Kernel Density Estimation was used to determine the hotspot and also a raster map was generated, where the intensity of crime is represented by continuous surfaces. Lighter shades were used to represent locations with a lower crime density, while darker shades represent locations characterized by the highest crime density. The summary of the procedure for the hotspot map is presented in Figure 3.2.

3.3.6.3 Causes and Effect of Crime in the Study Area

This objective was achieved by distributing questionnaire to people residing in Katsina metropolis. Respondents' perceptions on the causes and effects of crime was coded and analyzed in SPSS version 20.0 and the result was presented using descriptive statistics such as tables, pie charts and histograms.

3.3.6.4 Accessibility of police stations to Crime Hotspots in the study area

Coordinates of some neighbourhoods and police station and out post within the study area was collected and the average distance taken (distance from each neighbourhood to each police station along the road network) was calculated using the network analyst functionality in ArcGIS 10.1.This involved the use of Origin Destination Matrix (OD) analyst tool. This tool is useful for representing a matrix of distances going from a set of origin locations (settlements) to a set of destination locations (police stations). The distance between every settlement and all the police stations was further structured into a geo-database and further the distance (km) from all

the settlement to the various police stations in the study area was determined. The accessibility of police station to the various neighbourhood within Katsina Metropolis was shown.



Fig 3.3: Flow Chart for Data Processing.

Source: Adapted from Liang, Ma'seom and Hua (2005).

CHAPTER FOUR

RESULTS AND DISCUSSION

4.1 INTRODUCTION

This chapter is concerned with presentation of results and discussion. These were done under the following sub-title: identifying the various types of crime committed, mapping the crime hotspots using the Kernel Density Estimation (KDE), examining the causes and effects of crime in the study area. Also, the accessibility of the police stations to some selected neighbourhood was also determined using the Origin-Destination (O-D) matrix ArcGIS network analysis.

4.2 TEMPORAL VARIATION OF TYPES OF CRIME COMMITTED IN THE STUDY AREA

In an attempt to identify the types of crime committed in the study area, police records for five (5) years from 2012 to 2016 were analysed of which 320 crime cases were recorded and the results is presented in Table 4.1 and Figure 4.1.

Table 4.1: Types of Crime Committed

	2012		2013		2014		2015		2016			
Type of Crime	**Freq.**	**%**	**Freq.**	**%**	**Freq.**	**%**	**Freq.**	**%**	**Freq.**	**%**	**Total**	**%**
Automobile Theft	11	10.7	7	11.5	6	11.8	5	9.6	5	9.4	**34**	**10.6**
Grievous Hurt	30	29.1	13	21.3	13	25.5	15	28.8	18	34.0	**89**	**27.8**
Murder	18	17.5	16	26.2	9	17.6	12	23.1	11	20.8	**66**	**20.6**
Rape	23	22.3	10	16.4	14	27.5	9	17.3	10	18.9	**66**	**20.6**
Robbery	21	20.4	15	24.6	9	17.6	11	21.2	9	17.0	**65**	**20.3**
Total	**103**	**100**	**61**	**100**	**51**	**100**	**52**	**100**	**53**	**100**	**320**	**100**

Source Author's Analysis, 2016

From the analysis of the data as shown in Table 4.1, five (5) different types of crime were identified in the study area. The crimes include automobile theft, grievous hurt, robbery rape and murder. The results shows that in 2012, 103 criminal cases were recorded of which grievous hurt was highest bearing about 29.1% of the total crime committed in the study area followed by rape with 22.3%. Automobile theft was the least with 10.7%. In 2013, a total of 61 cases were recoded and the case of murder was the highest with 26.2% followed by armed robbery with 24.6%, auto-mobile theft was found to the least with 11.5% of the crime committed. In 2014, 51 cases were recorded and the cases of automobile theft was found to be the least crime committed among others with 11.8% followed by armed robbery with 17.6%. Rape was found to be the highest with 27.5% of the total crime committed in the study area followed grievous hurt with 25.5%. In 2015, automobile theft maintained its position as the least crime committed in Katsina metropolis with 9.6% of all crime, followed by rape 17.3% and grievous hurt was found to be the highest with 28.8% followed by murder case with 23.1%. In 2016, 53 crime cases were recorded of which grievous hurt was the highest with 34.0% followed by murder with 20.8%. Automobile remains the least with 9.4% and robbery 17.0%.

Generally speaking, for the five (5) period of study, a total of 320 cases recorded of which grievous hurt was the highest crime committed in the study area, followed by murder and rape which recoded 66 cases each, 65 cases was recorded for armed robbery while the least is automobile theft with 34 cases.

The types of crime identified in this study were similar to the ones identified by Bala, Bawa, Lugga, and Ajayi, (2015), in Katsina, and that identified in Benin City by Balogun, Okeke, and Chukwukere (2014). Also, the study identified grievous hurt as the major crime committed in Katsina but contradict the work of Batsari, and Charanchi, (2014) that identified theft as the major crime in the same study area. Figure 4.1 further shows the distribution of crime types within the study area.

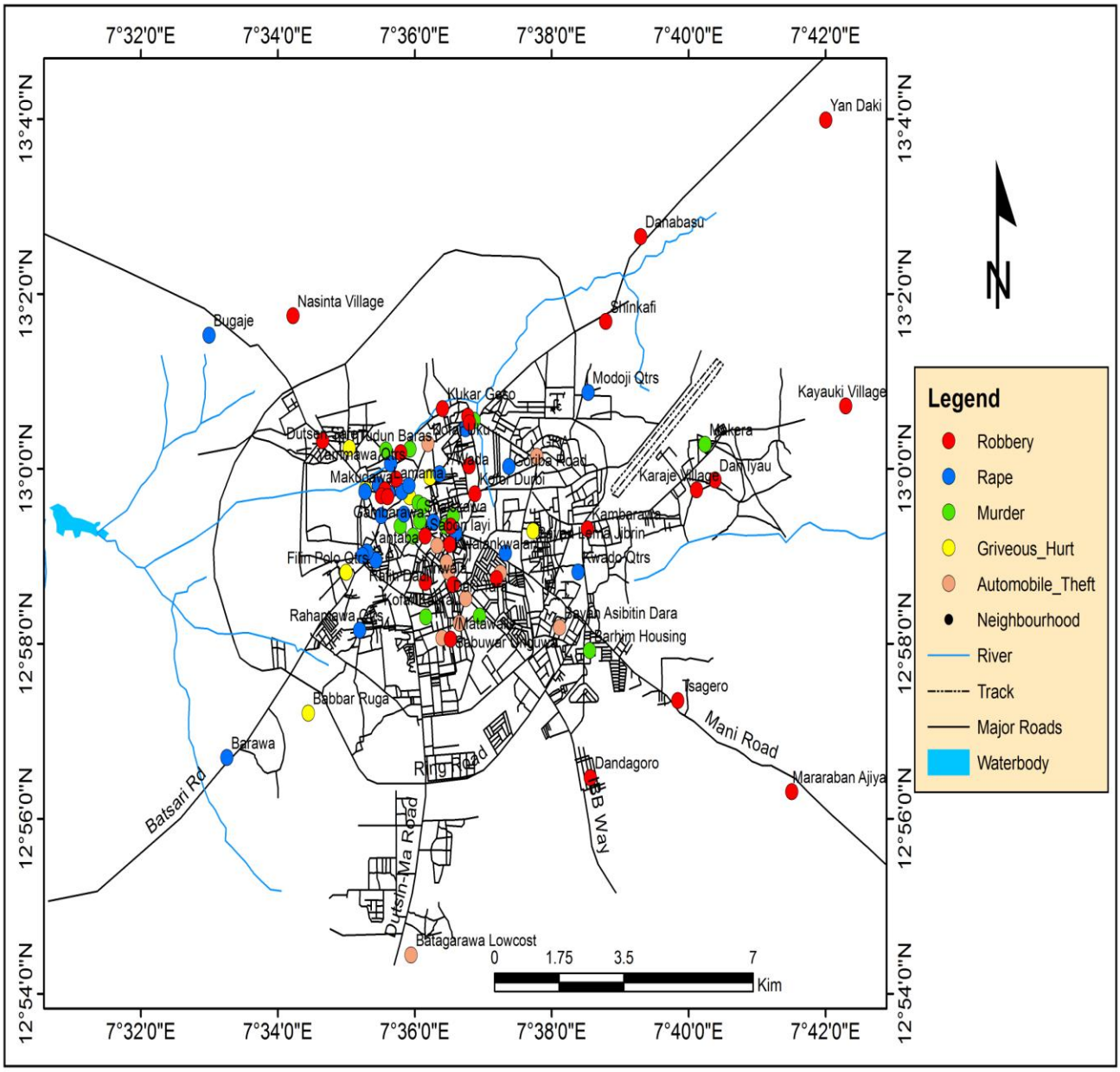


Figure 4.1: Distribution of crime types between 2012 and 2016 in Katsina Metropolis

Source Author's Analysis, 2016

3.4 SPATIAL VARIATION OF CRIME IN THE STUDY AREA

The spatial variation of the crime committed in the study area was also determine and the result is presented in Table 4.2

Table 4.2: Spatial Variation of Crime types in the Study Area

Ward	Automobile Theft	%	Grievous Hurt	%	Murder	%	Rape	%	Robbery	%
Kangiwa	1	3.1	5	14.7	5	13.9	4	12.5	2	5.7
Shinkafi A	0	0.0	1	2.9	0	0.0	1	3.1	7	20.0
Shinkafi B	2	6.3	2	5.9	5	13.9	2	6.3	5	14.3
Wakilin Arewa A	1	3.1	0	0.0	3	8.3	1	3.1	2	5.7
Wakilin Arewa B	5	15.6	2	5.9	0	0.0	2	6.3	3	8.6
Wakilin Gabas I	5	15.6	7	20.6	5	13.9	6	18.8	8	22.9
Wakilin Gabas II	3	9.4	5	14.7	7	19.4	4	12.5	2	5.7
Wakilin Kudu I	2	6.3	2	5.9	5	13.9	5	15.6	0	0.0
Wakilin Kudu II	5	15.6	2	5.9	1	2.8	1	3.1	3	8.6
Wakilin Kudu III	5	15.6	2	5.9	2	5.6	1	3.1	2	5.7
Wakilin Yamma I	2	6.3	6	17.6	2	5.6	4	12.5	1	2.9
Wakilin Yamma II	1	3.1	0	0.0	1	2.8	1	3.1	0	0.0
Total	**32**	**100**	**34**	**100**	**36**	**100**	**32**	**100**	**35**	**100**

Source: Author's Analysis, 2016

From the result in Table 4.2, it can be seen that the crime is not evenly distributed in the study area. The distribution of the various types of crime tends to be concentrated at some flash points. For automobile theft Wakilin Arewa B, Wakilin Gabas I, Wakilin Kudu II and Wakilin Kudu III had the highest with 15.6% each while Shikafi A had no recorded case of automobile theft. Wakilin Gabas I had the highest for grievous hurt accounting for 20.6%, followed by Wakilim Yamma I with 17.6%, the least was Wakilin Yamma II with no any recorded case. The case of murder was highest at Wakilin Gabas II accounting for 19.4% of the entire crime followed by Kangiwa, Shinkafi B, Wakilin Gabas I and Wakilin Kudu I with 13.9% each. Also, rape was found to high at Wakilin Gabas I with 18.8% of the total crime followed by Wakilin Kudu I with 15.6%. Wakilin Gabas I recorded the highest number of robbery with 22.9% while Shikafi A with 20.0%, Wakilin Kudu I and Wakilin Yamma II had no any recorded case for armed robbery.

The result on the spatial variation of crime in the areas with high crime rate in this wards could be attributed to the fact that the areas were characterized by commercial activities, playground for youths and also residents for low income earners.

4.4 Crime Hotspots in the Study Area

The dangerous locations (hotspots) analysis was carried to show the locations (neighbourhoods) where there was concentration of crime. Figure 4.2 shows the crime hotspots at different location in Katsina Metropolis.

From Figure 4.2, the very high crime hotspot is represented in red colour, high is shown in blue, moderate crime spots represented with the brown colour, low is presented in yellow colour.

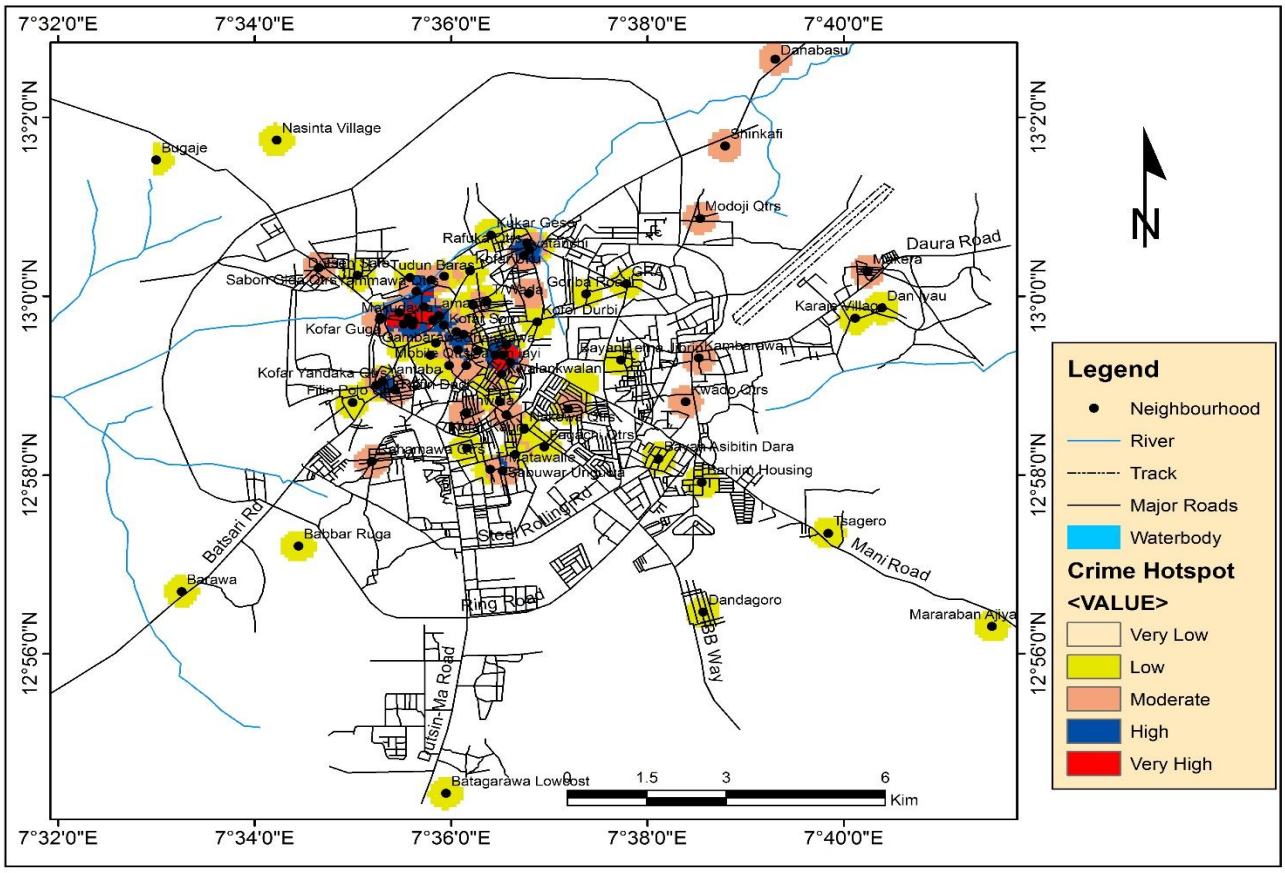


Figure 4.2: Crime Hotspots in Katsina Metropolis

Source Author's Analysis, 2016

From Figure 4.2, it is obvious that the crime hotspots appears not to be evenly distributed, it tends to be very high in the core of the city where the population and commercial activities is high. This shows that very high crime hotspot is located within Bakin Kasuwa, Gobarau, Giladancchi, Kerau Quarters, Tashan Gagare, Kwalankwalan, kofar Marusa, Kofar, Guga, Tsohowar Kasuwa, Fillin Bugu and Gambarawa. The high crime spots were found within Kofar Sauri, Iyatanchi, Dutsen Amare, Kofar Soro, Tashan Yanlihida and Yantaba. Area with moderate occurrence of crime were located around Kofar Kaura, Sabuwar Unguwa, Inwala, Rafin Dadi, Tudun Wada, Filin Samji, Shinkafi, Makera and Danabasu. Areas with low crime rate from the

hotspot analysis were found within Dutsen Safe, GRA, Goriba road, Dandagoro and Batagarawa lowcost while area with no colour areas considered as crime free zone (coldspots). The crime hotspots for various types of crime committed in the study are further shown in Figure 4.3 to Figure 4.7.

4.4.1 Crime Hotspot for Automobile Theft

Figure 4.3 shows Automobile crime hotspot within the study area

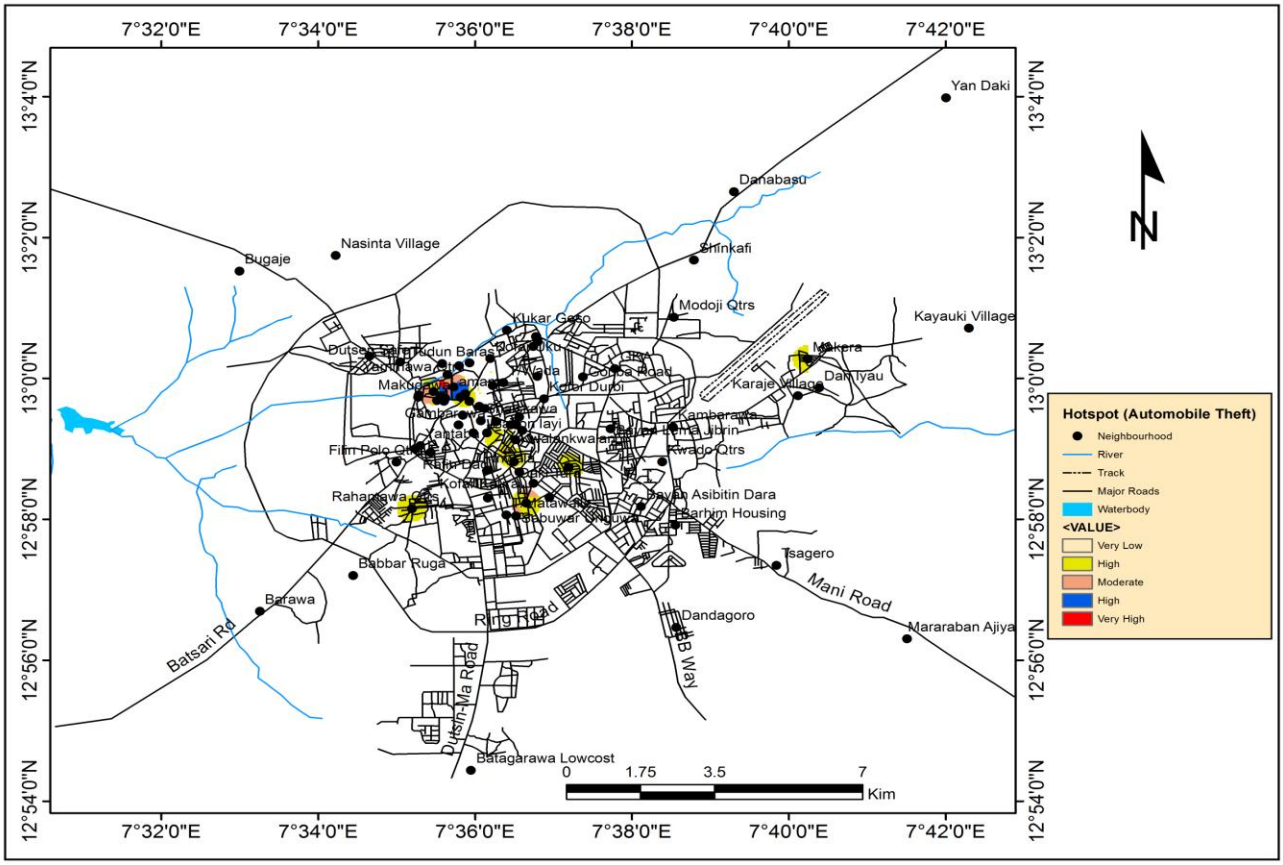


Figure 4.3: Crime Hotspots for Automobile Theft in Katsina Metropolis

Source Author's Analysis, 2016

Figure 4.3 shows the crime hotspots for theft in the study area. It can be observed that crime hot spots and areas of high theft are low income neighbourhoods with high population density and poor environmental condition. Theft was found to be concentrated in areas such as

Gambarawa, Dandagoro, Tudun Yanlihidda, Inwala and Kofar Kaura among others. This pattern largely agrees with the findings of several studies by (Akerman, 2000 and UN – Habitat, 2007) that correlate higher rate of theft with low income, slummy neighbourhoods which also the situation in Katsina metropolis.

4.4.2 Crime Hotspot for Grievous Hurt

The crime hotspot for grievous hurt within the study area is presented in Figure 4.4.

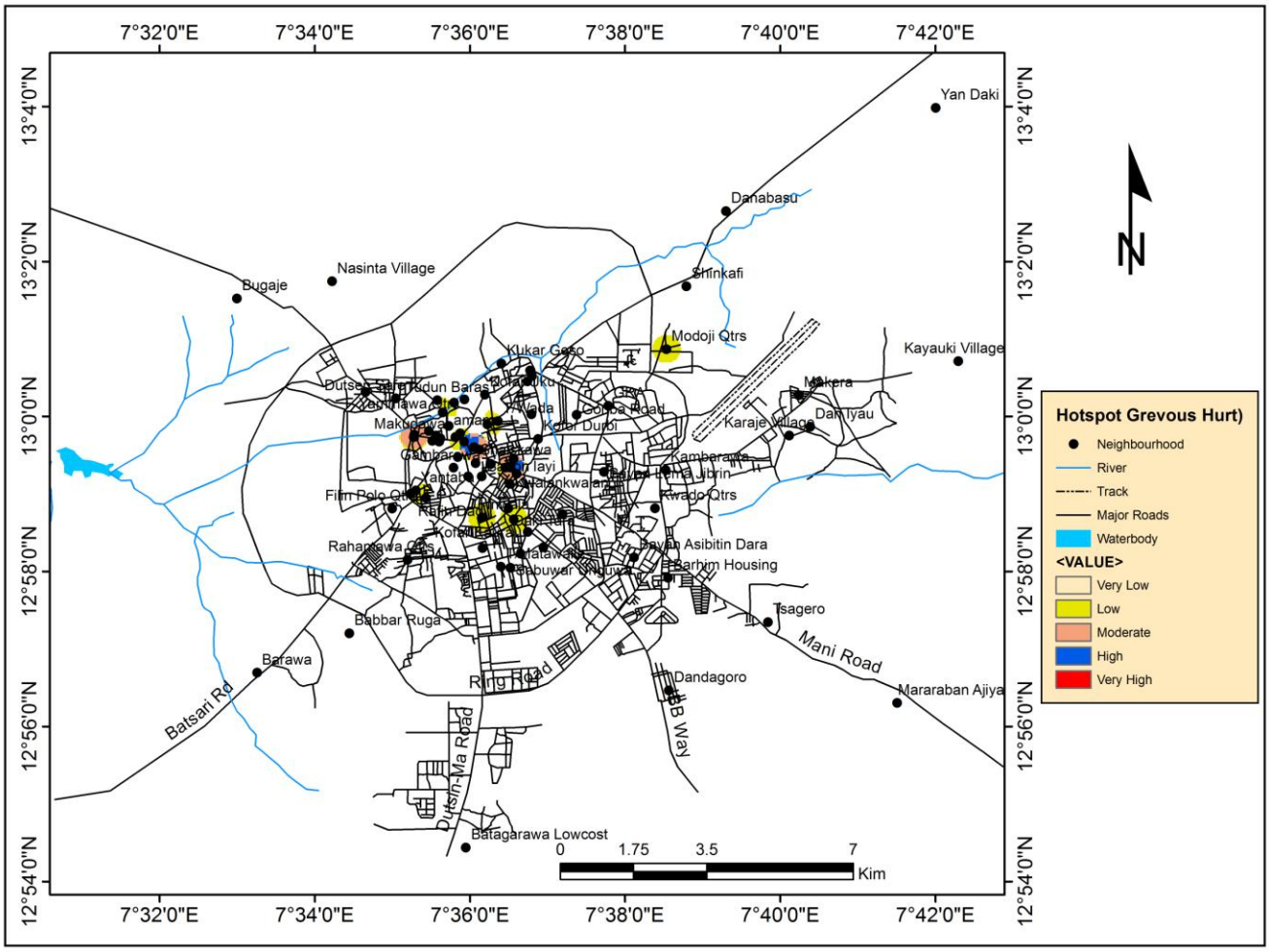


Figure 4.4: Crime Hotspots for Grievous Hurt in Katsina Metropolis
Source Author's Analysis, 2016

Grievous Hurt from Figure 4.4 was found to be concentrated in Kofar Yandaka, Rafikka, Gambarawa, Dandagoro, Tudun Yanlihidda and Inwala. 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 and hurting. These are areas that one can come across people with different temperament and inability to tolerate each other could lead to a grievous hurt.

4.4.3 Crime Hotspot for Murder

The crime hotspot for murder within the study area is presented in Figure 4.4.

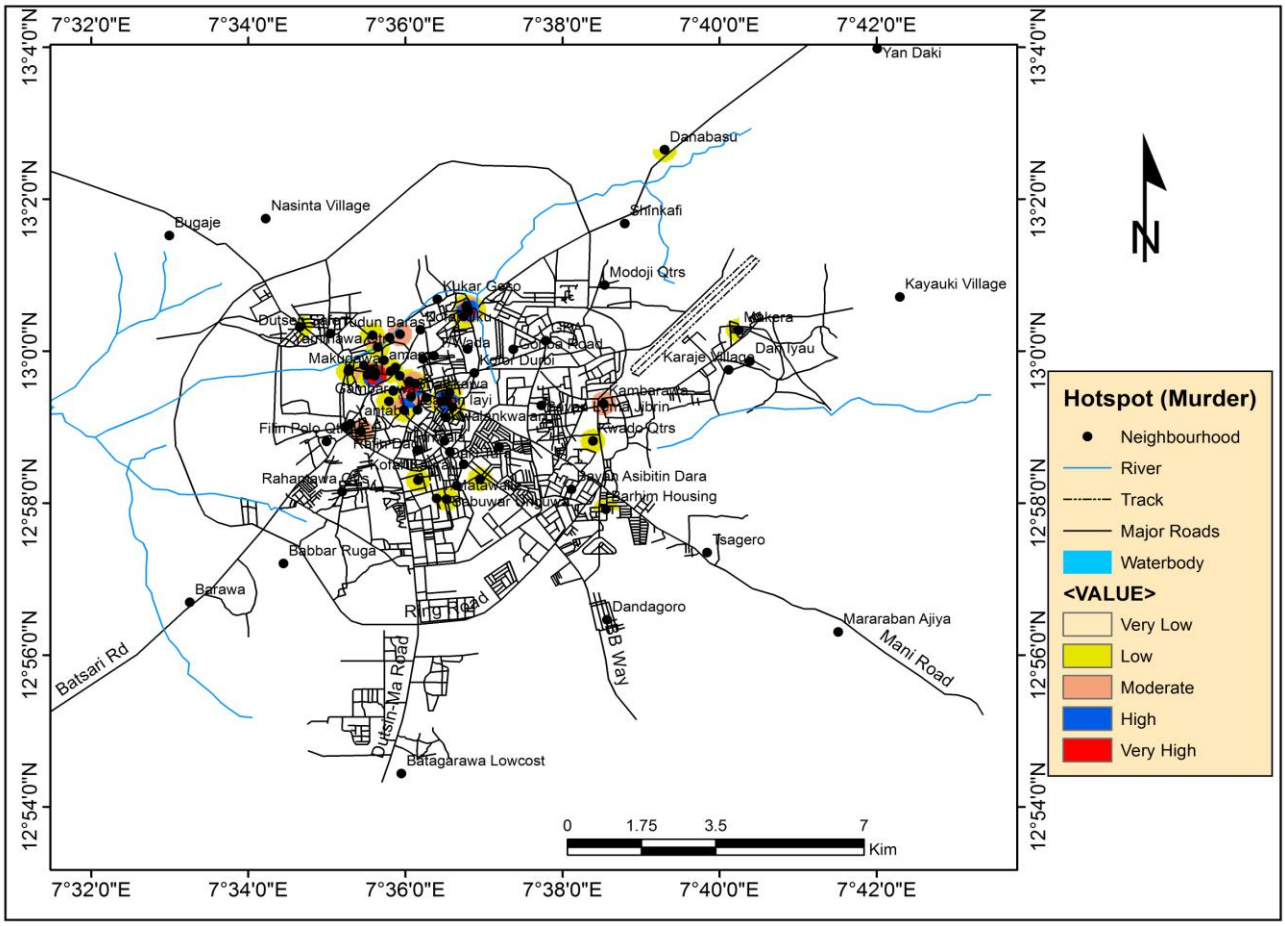


Figure 4.5: Crime Hotspots for Murder in Katsina Metropolis

Source Author's Analysis, 2016

From Figure 4.5 it can be seen that the case is higher in Danabasu, Gambarawa, Kofar Sauri, Kwado Qtrs. Some of 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). This could explained the high rate of murder in the study area.

4.4.4 Crime Hotspot for Rape

The crime hotspot for rape within the study area is presented in Figure 4.5.

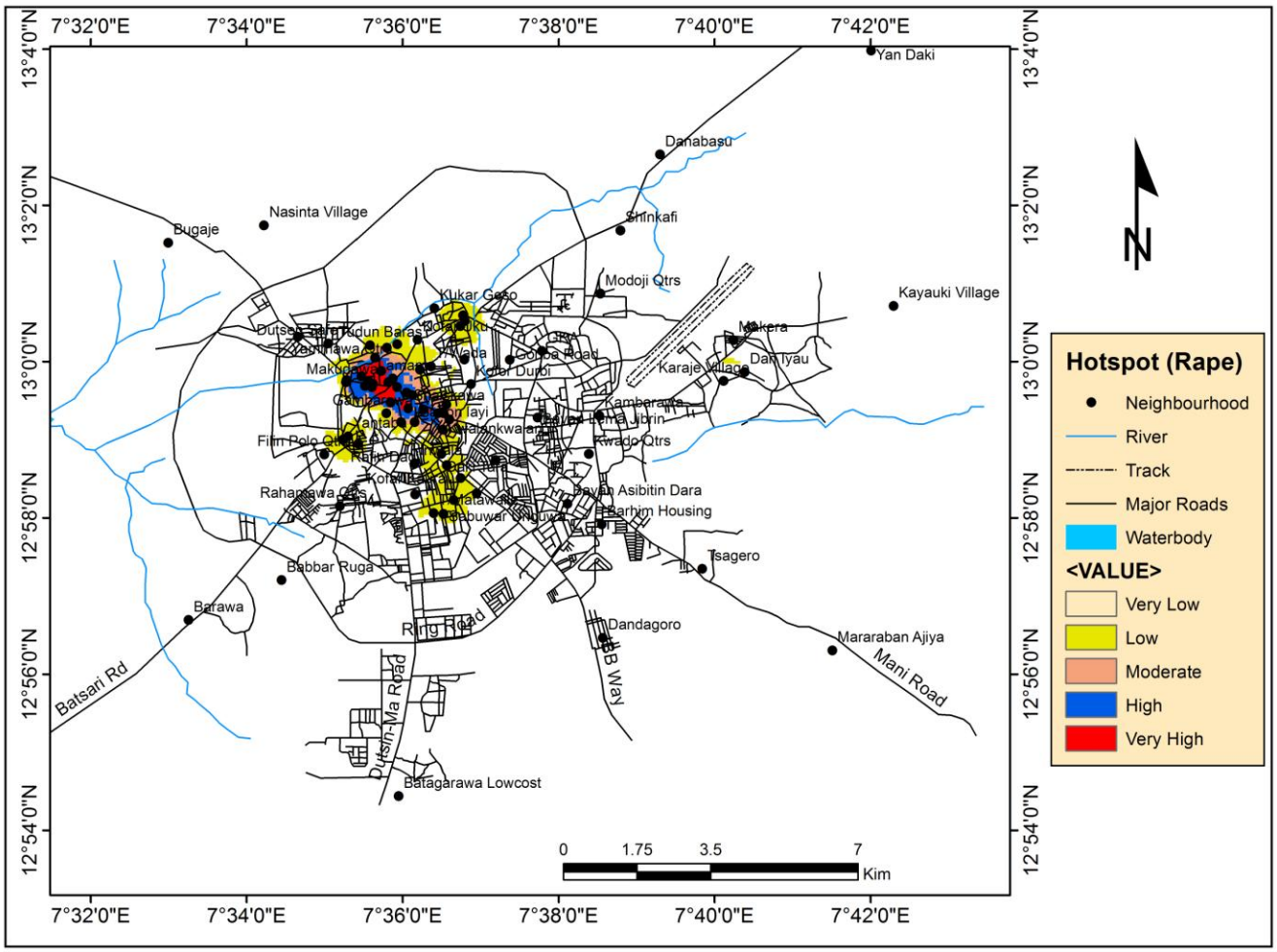


Figure 4.6: Crime Hotspots for Rape in Katsina Metropolis

Source Author's Analysis, 2016

From Figure 4.6, rape was found to concentrate in areas such as Modoji quarters, Filling Fayis, Galadanchi, Unguwar Madawaki and Yaranchi Quarters. The reasons for rape incidence in these areas could be because these areas are normally quiet and deserted at night and looking at this type of crime, criminals operate in such environment where they can attack their victims with few chances of being caught.

4.4.5 Crime Hotspot for Robbery

The crime hotspot for robbery within the study area is presented in Figure 4.6.

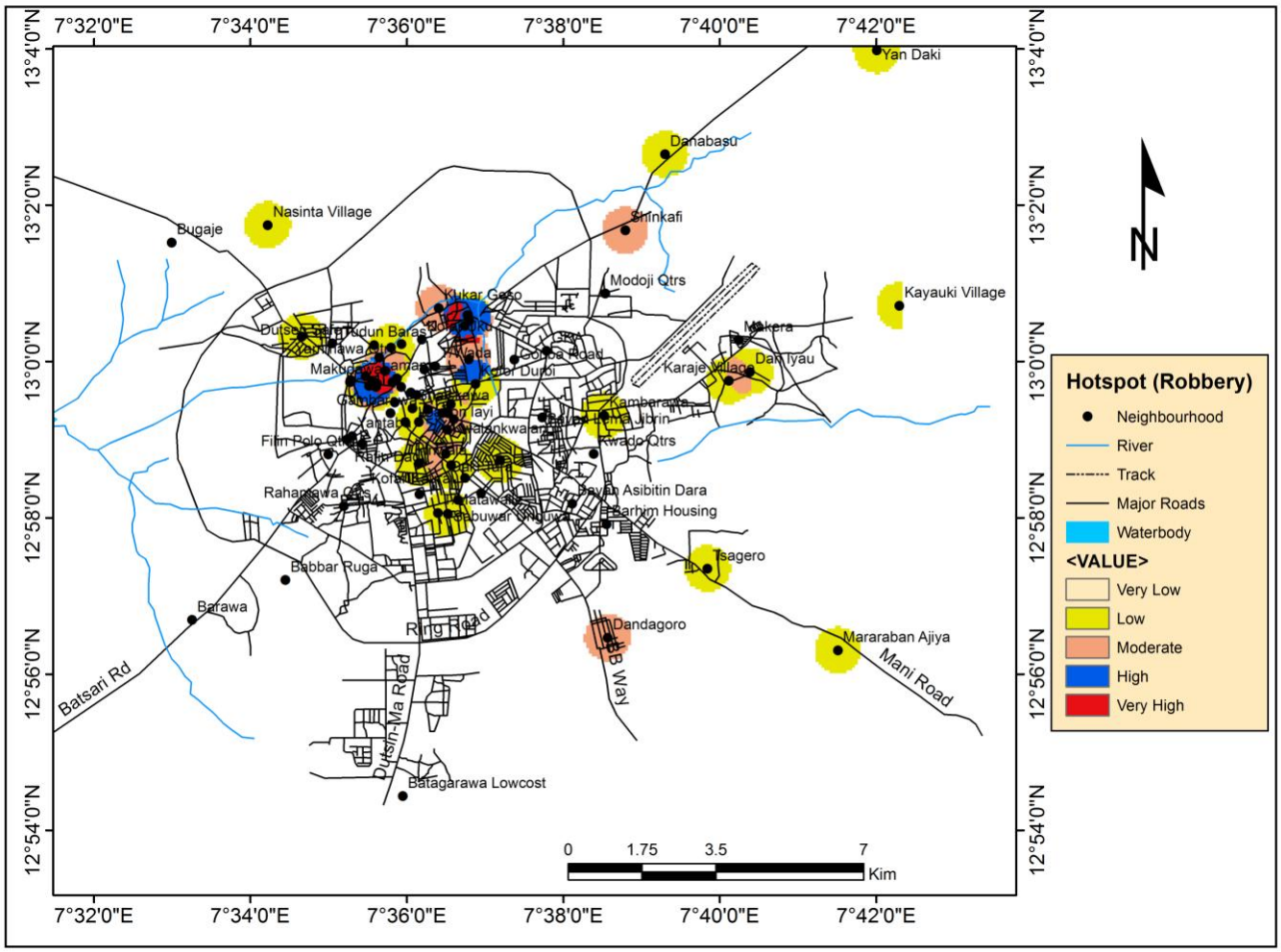


Figure 4.7: Crime Hotspots for robbery in Katsina Metropolis

Source Author's Analysis, 2016

From Figure 4.7, robbery was found to concentrate in areas such as Dandagoro, Fillin Samji, Kofar Kaura Layout, Kwalankwalan Shinkafi, and Mararaban Ajiya These are basically areas with high population 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 which also the situation in the study area.

Generally, the results in Figure 4.3 to Figure 4.7 further revealed that the various types of crime committed are not evenly distributed within the study but most of the crime in Katsina metropolis were committed within residential, commercial, recreational areas and isolated places such schools, football fields and stadiums. The result is not different from the observation of Roncek (2004) which observed that neighbourhood with high population tend to have higher occurrence rates of crime than single family residential areas largely because people who live in apartments are more likely to be low income families.

4.5 SOCIO-ECONOMIC CHARACTERISTICS OF RESPONDENTS

The socio-economic characteristics considered include; sex, age, marital status, educational qualification and occupation of respondents.

4.5.1 Sex, Age and Marital Status of Respondent

Table 4.3: Sex, Age and Marital Status

Age	Frequency	Percentage (%)
18-27	59	14.8
28-37	80	20

38-47	151	37.8
48-57	77	19.2
58 and above	33	8.2
Total	**400**	**100**

Sex	Frequency	Percentage (%)
Male	290	72.5
Female	110	27.5
Total	**400**	**100**

Marital status	Frequency	Percentage (%)
Single	76	19.0
Married	287	71.8
Divorced	18	4.5
Widowed	19	4.8
Total	**400**	**100**

Source: Field Survey, 2016

The age of (38-47 years) constituted the highest proportion of respondents with 37.8% as indicated in Table 4.3 This result could be a function of questionnaire administration because most of the respondents encountered were younger aged household heads, who were engaged in outdoor work during the survey period. This implies that majority of the reached population in the study area were within the productive ages of (18-60) years as postulated by NPC (2006).

Table 4.2 also indicates that about 71.8% of the respondents married, while the rest were never being married, widowed, separated and divorced. This result is not surprising as culture still influences marital activities of the area and going by that, there is the prevalence of early marriage in the northern part of Nigeria as a whole as found by NDHS (2005) in which the area of study is found the region. Table 4.3 also shows the distribution of respondents based on sex. It reveals that most (72.5%) of the respondents were males. This result could be a function of questionnaire administration because most of the respondents encountered were household

heads, who were engaged in outdoor work during the survey period while the females in this society do not go out, unlike in some parts of the country, and they normally remain indoors or within the compounds of their homes.

4.5.2 Highest Educational Attainment and Occupation of Respondents

Table 4.4: Respondent's highest education attainment and occupation

Highest level of education	**Frequency**	**Percentage (%)**
No formal education	59	14.8
Primary	53	13.2
Secondary	110	27.5
Vocational	59	14.8
Tertiary	94	23.5
Quranic	25	6.2
Total	**400**	**100**
Occupation		
Farming	90	22.5
Trading	99	24.8
Civil Service	115	28.8
Artisan	65	16.2
Vocational	31	7.8
Total	**400**	**100**

Source: Field Survey, 2016

Educational attainment sometimes reflects the nature of occupation and in turn may influence an individual's ideology causes and effect or consequences of crime in the study area. It is shown in Table 4.4 that a high percentage of the respondents had attended one form of formal education or the other. Table 4.4 further revealed that most (28.8%) of the respondents were civil servants. However, majority of the people were in the informal sector, and with probably low incomes as reflected in the employment types where about 24.8% were traders while farmers constituted about 22.5% and a smaller proportion of 16.2% consisted of skilled and unskilled artisans composed of carpenters, mechanics shop owners, and vegetable vendors.

4.6 CAUSES OF CRIME IN THE STUDY AREA

In this section, an attempt was made to identify the causes or factors that are responsible for the involvement of individuals in crime.

Table 4.5: Respondents opinion on the Causes Crime

Opinion	Agreed	Undecided	Disagreed	Total
Poverty	346 (86.5%)	20 (5.0%)	34 (8.5%)	400 (100%)
Unemployment	375 (93.7%)	15 (3.7%)	10 (2.5%)	400 (100%)
Corruption	364 (91.0%)	23 (5.7%)	13(3.2%)	400 (100%)
Peer group influence	345 (86.2%)	41 (10.2%)	14 (3.5%)	400 (100%)
Defective socialization	265 (66.2%)	89 (22.2%)	46 (11.5%)	400 (100%)
Weak laws	297 (74.2%)	38 (9.5%)	65 (16.2%)	400 (100%)

Source: Field Survey, 2016

Table 4.5 shows that virtually all respondents (93.7%) agreed that unemployment is a causal factor of crime in the area. Also, 86.5% were of the view that poverty is a major cause

while 86.2% of the respondents opined that peer group is the cause of crime in Katsina Metropolis. This view is in agreement with responses from the in-depth interview conducted in the study area and also agrees with the study of Folashade and Abimbola (2013) which observed different factors such as money /financial gain, display of wealth by corrupt, un-satisfaction were the major causes of crime.

4.7 EFFECTS OF CRIME IN THE STUDY AREA

This section deals with the effect of crime in the study area. This includes loss of life, tarnishing personal reputation, lack of trust and confidence, hinder to development of the country and loss of employment.

Table 4.6: Respondents Perception on the Effect Crime

Opinion	Agree	Disagree	Total
Tarnishing the Personal Reputation	368(92.0%)	32 (8.0%)	400(100%)
Lack of trust and confidence	360(90.0%)	40 (10.0%)	400(100%)
Hinders development in the country	275(68.7%)	125 (31.3%)	400(100%)
Loss of employment	231(57.7%)	169 (42.3%)	400(100%)
Loss of life	230(57.5%)	170 (42.5%)	400(100%)

Source: Field Survey, 2016

Table 4.6 shows the perception of people on effect of crime in the area. It was found that 92% of the respondents were of the view that crime will tarnish the person's reputation. Lack of trust and confidence in the person involved in criminal activities was found to be 90.0 % according to the opinion of the respondents. Also, 68.7% of the respondents agreed that crime may hinder the development of the country. The study further reveals 57.7% of the respondents

agreed that crime leads to loss of employment and 57.5% believed that crime can result to loss of life. But according to Onoge (1988), crime is a threat to the economic, political and social security of a country and a major factor associated with underdevelopment; because it discourages both local and foreign investments, reduces the quality of life, destroys human and social capital, damages relationship between citizens and the states, thus undermining democracy, rule of law and the ability of the country to promote development

4.8 ACCESSIBILTY OF SOME NEIGHBOURHOODS TO POLICE STATIONS

Spatial accessibility is a procedure to categorize the different levels of access to a facility or resources based on distance or physical barriers that prevents or hinder access. This is a function of Geography, political and economic inhibitions imposed by nature or state actors (Fabiyi and Ogunyemi, 2015). Origin-Destination (OD) cost matrix was created for different neighbourhood, in order to identify areas where police/outpost are located. Table 4.6 represents the minimum, maximum and average distance in kilometres for police station/outpost to some neighbourhoods in Katsina metroplis.

The Figure 4.7 shows all the cost mediums in form of lines which connects the origins as police station and the destinations as neighbourhood. Therefore the accessibility matrixes represent the spatial connectivity of each node in the road network.

Table 4.6: Accessibility of Police Stations/Outposts to some Hotspots

	Distance from Police station to Crime Hotspots (KM)		
Police Station	**Min Distance**	**Max Distance**	**Average Distance**
CPS (Division)	0.11	13.70	6.96
Shagari Lowcost (Outpost)	1.30	17.40	10.00
Dutsen Safe (Outpost)	0.44	13.74	7.31
Kofar Sauri (Outpost)	0.08	11.39	5.77
Sabon Gari (Division)	1.17	12.84	7.59
Sabuwar Unguwa (Outpost)	0.18	14.01	7.18
Central Market (Outpost)	0.10	14.90	7.55
Barhim (Outpost)	0.91	12.90	7.36
Kwado (Outpost)	0.03	11.56	5.81
GRA (Division)	1.17	24.47	13.40
Shinkafi (Outpost)	0.16	14.46	7.39
Hajj Camp (Outpost)	0.03	22.98	11.52
Modoji (Outpost)	0.26	25.64	13.08
Kofar Durbi (Outpost)	0.06	22.59	11.36
Batagarawa (Division)	0.72	20.11	10.77
Dandagoro (Outpost)	0.39	18.36	9.57
Ajiwa (Division)	0.62	21.22	11.23
Tsanni (Outpost)	0.33	33.53	17.09
Barawa (Outpost)	0.02	20.73	10.39
Bakiyawa (Outpost)	10.01	28.09	24.06
Police Headquarter	0.36	22.65	11.69

Source: Field Survey, 2016

In Table 4.6 and Figure 4.8 the travel distance by road network was between 0.02km to 17.09km. The result shows that on the average, Kwado Outpost is more centrally located within Katsina Metopolis and will have the highest access with an average distance as low as 5.77km from the various neighbourhoods. On the otherhand, Tsanni outpost has the lowest access due to the average distance of 17.09km. The result of this study is not different from the observation Ahmed, Muhammad, Mohammed and Idris (2013) that discovered the pattern of distribution of

police stations in Kano metropolis is generally random and uneven, with a little clustering at the center, and as one moves away from the center, the sparser the police stations become.

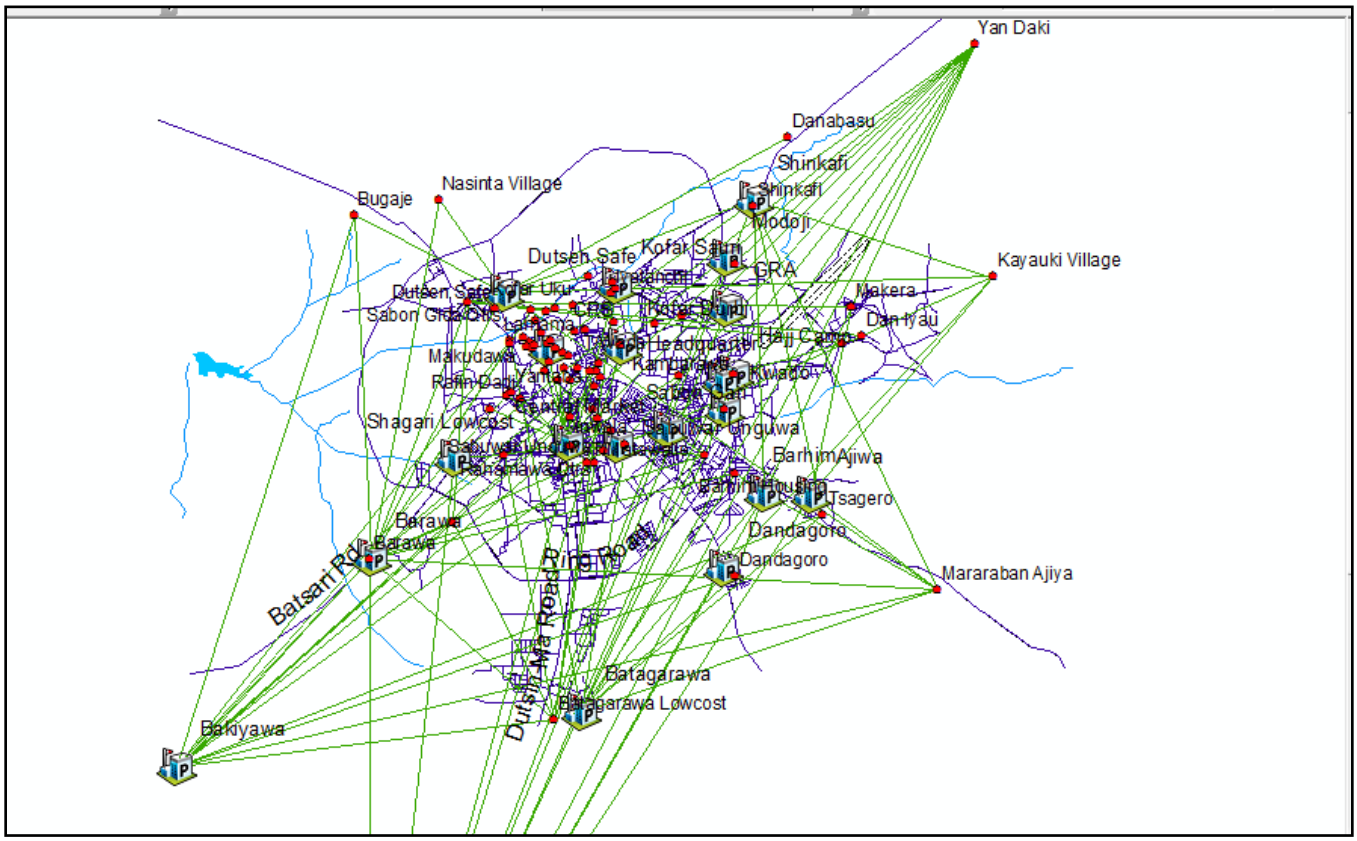


Figure 4.8: Accessibility of Police Stations/Outposts to some Neighbourhoods

Source: Author's Analysis, 2016.

CHAPTER FIVE

SUMMARY, CONCLUSION AND RECOMMENDATIONS

5.1 INTRODUCTION

This chapter presents the discussion of the major findings in relation with the background and literature review. The researcher views are also included arising from observation and interpretation of situations encountered during the study. The conclusions are given based on the findings and consequently recommendations were made based on the conclusions.

2.2 SUMMARY OF FINDINGS

The general objective of the study is to map out the types of crime committed at various locations in Katsina Metropolis, to identify and map the dangerous areas (hotspots), to examine the causes and effect of crime and finally to determine the accessibility of the police station to different neighbourhood. The study made a number of findings from the data analysis which includes;

Five (5) different types of crime were identified in the study area. The crime include automobile theft, grievous hurt, robbery and rape, murder were different crime committed in the Katsina metropolis. A total of 320 cases recorded of which grievous hurt was the highest crime committed in the study area with 89 cases.

The result on the distribution of the various types of crime shows that for automobile theft Wakilin Arewa B, Wakilin Gabas I, Wakilin Kudu II and Wakilin Kudu III had the highest with 15.6%. Wakilin Gabas I had the highest for grievous hurt accounting for 20.6%. The case of murder was highest at Wakilin Gabas II accounting for 19.4% of the entire crime. Also, rape was found to be high at Wakilin Gabas I with 18.8% of the total crime. Wakilin Gabas I recorded the highest number of robbery with 22.9%.

Very high crime hotspot were located within Bakin Kasuwa, Gobarau, Giladancchi, Kerau Quarters, Tashan Gagare, Kwalankwalan, kofar Marusa, Kofar, Guga, Tsohowar Kasuwa, Fillin Bugu and Gambarawa. Virtually all respondents (93.7%) agreed that unemployment is a causal factor of crime in Katsina Metropolis. Also, 86.5% were of the view that poverty is a major cause while 86.2% of the respondents opined that peer group is the cause of crime in Katsina Metropolis. It was found that 92.0% of the respondents are of the view that crime will tarnish the person's reputation. Lack of trust and confidence in the person involved in criminal activities was found to be 90.0 % according to the opinion of the respondents. Also, 68.7% of the respondents agreed the crime may hindered the development of the country. The study further reveals 57.7% of the respondents agreed that crime lead to loss of employment and 57.5% believed that crime can result to loss of life.

2.3 CONCLUSION

Crime mapping is a good means of communication providing stakeholders with visual information of crimes so that they can easily explore relationships between crimes, time and place to identify hotspots for targeting. In this study, police records and integration of geospatial technique have proven to be an effective tool in mapping crime hotspots in Katsina Metropolis Katsina State. It can be concluded that grievous hurt was the highest type of crime committed in the study area, also, Bakin Kasuwa, Gobarau, Giladancchi, Kerau Quarters, Tashan Gagare, Kwalankwalan, kofar Marusa, Kofar, Guga, Tsohowar Kasuwa, Fillin Bugu and Gambarawa were the location of the dangerous spots. Unemployment was found to be the major causal factor of crime in Katsina Metropolis and that crime is capable of tarnishing person's reputation, lack of trust and confidence in the person involved in criminal activities also, crime hinders the development of the country, leads to loss of employment and finally may result to loss of life.

5.4 RECOMMENDATIONS

Based on the outcome of this research on the analysis of crime in Katsina metropolis, the following are recommended.

i. Crime cases and population distribution should be considered as major factor in the distribution of police stations and police personnel and also police outpost should be located in isolated areas.

ii. Police stations and police outpost should be provided in areas with high concentration of crime.

iii. Skill acquisition centres should be established and youth be encouraged to acquire various skills. Also, soft loans should be provided to residents to start some micro enterprises in order to reduce the problem of unemployment in the study area.

iv. Street lights should be provided and the importance of using security light in residential areas should be emphasized especially in locations that are quiet and very deserted at night.

v. Security watch and vigilante should be deployed to areas with high concentration of crime in the study area.

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DEPARTMENT OF GEOGRAPHY

FACULTY OF SCIENCE

AHMADU BELLO UNIVERSITY ZARIA

Dear Sir/Ma,

I am a Postgraduate student of Geography Department in Ahmadu Bello University, Zaria, carrying out a research on "Geospatial Analysis of Crime in Katsina Metropolis, Katsina State, Nigeria.

Please kindly answer the questions below as well as information supplied would be used mainly for academic purposes and shall be treated as highly confidential.

Thank you.

SECTION A: Demographic Characteristic

1. **Sex:** (a) Male ☐ (b) Female ☐
2. **Age:** (a) 18-27 ☐ (b) 28 – 37 ☐ (c) 38 – 47 ☐ (d) 48 – 57 ☐

   (e) Above 58 ☐
3. **Marital Status:** (a) Single ☐ (b) Married ☐ (c) Divorce ☐ (d) Widowed ☐
4. **Education Qualification:** (a) Quranic ☐ (b) Primary ☐ (c) Secondary ☐

   (d) Tertiary ☐
5. **Occupation:** (a) Farming ☐ (b) Business/trading ☐ (c) Civil Service ☐

   (d) Artisan ☐ others (specify): _____

SECTION B: Causes and effects of Crime

7. Have you ever experience crime in your area?

   a) Yes (b) No

8. If yes, how often?

   (a) Everyday (b) every week (c) monthly (d) yearly (e) others

9. What type of crime do you experience in your area?

…….

10. What do you think is the cause of the crime?

Views	**Agreed**	**Undecided**	**Disagreed**
Unemployment			
Poverty			
Peer group influence			
Defective socialization			
Weak laws			
Corruption			

11. What are the effects of crime on socio-economic activities in your area?

Opinion	**Agree**	**Disagree**
Tarnishing the Personal Reputation		
Lack of trust and confidence		
Hinders development in the country		
Loss of employment		
Loss of life		