EXAMINE SPATIAL PATTERNS OF CRIMES IN MINNA AND ENVIRONS, NIGER STATE, NIGERIA

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Abstract

The rapid urbanization of Minna and environs has created numerous social problems, among which is crime that became a common phenomenon in urban areas in both developed and developing nations. Ultimately, rapid growth in urbanization in the study areas had a direct relationship with the increase in crime as the rate of unemployment had been on the increase, high cost of living coupled with housing problem (homelessness) and these in turn led to all sorts of urban problems crime inclusive. Therefore, it is against this background that the study intends to examine spatial patterns of crimes in Minna and environs, Niger State, Nigeria. The data on crime were obtained from the Niger State Police Headquarters within the metropolis. An administrative map of the study area was obtained from the Ministry of Land and Survey Niger State which was used as the base map for the study. Microsoft excel and ArcGIS version 10.1 was used to analyzed the data. The result revealed that the railway around Kpakungu and Soje-A has the most notorious crime spots. Other crime spots include some three locations around River Gadun, KK football field around Kudu mobile house as well as behind Kpakungu NEPA office. Soje-A have 7 reported crime spots, Soje-B have 8 reported crime spots and Kpakungu have 14 reported crime spots all between 2013 and 2018. As also revealed in the study, Hayin Gwari have 11 reported crime spots which mostly affect student's residents and Bosso have 17 reported crime spots. Most of these crime spots were student residents and the items stolen were laptop computers, phones as well as valuable properties.

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Introduction

Crime is regarded as an act or omission forbidden by law on pain of punishment or else is a violation of law (Usman *et al.,* 2012). Similarly, Tenibiaje (2010) expresses crime as an act that violates the law of the society or serious offence against the law of the society for which there is a severe punishment by law. In other words, crime is any culpable action or omission prohibited by law and punishable by the state. In these views, crime is a violation of any law of a given society and offenders are punishable in accordance to the set of that law. These laws can either be criminal laws or societal unwritten laws, norms and values, any offender or violator of such laws is culpable to punishment (Usman *et al.,* 2012).

Crime has a geographical dimension and it is disproportionally distributed across different geographical scales (Regional, National and Local). Within cities and metropolitan areas, crimes are exceptionally concentrated in a relatively few crime hotspots. Geography has a long history of aiding in the monitoring and tracking criminals activities (Anselin *et al.,* 2010). Geographical techniques have been used to map, analyze and provide real solution to crime globally in the last couple of decades. Therefore, geography plays an important role in law enforcement and criminal justice. A popular slogan says „criminals are not spirits. They move from one place to the other and live in the society just like every one of us (Adepoju *et al.,* 2014).

Rapid development in satellite technology, especially the bird eye view of satellite, equipped with high resolution sensor and communication satellite with multi transponder has provided critical data sets as well as the necessary communication means to adequately monitor and manage crime in developed countries (Adepoju *et al.,* 2014). Crime mapping is an integral and essential part of crime monitoring control and management. The success of this is based on development of comprehensive baseline information about dwelling units and other criminal hideouts. It serves as the baseline information and data upon which, security infrastructure is built. Also, it gives an insight into the nature, types, trend, hotspots and time in which all notorious activities take place. It gives information data on the underlining causes, the group that are fully, or partially responsible for different types of crimes in the communities. It also allows for the analysis of vulnerable communities and effectiveness of security's resources allocation. In addition, crime propelled by cross border illegal immigration can also be properly checked by having base – line information and trends (Adepoju *et al.,* 2014).

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Geographic Information System (GIS) and Remote Sensing (RS) and other allied technologies have manifested in various forms in the last four (4) decades, particularly since the launch of earth observation satellites. These have provided baseline information for intelligence gathering. The very high resolution images provided by the new generation of satellites have made the integration of GIS/RS for crime mapping, not only possible but also effective for day to day running and management of many aspects of our lives (Adepoju *et al.,* 2014). Geographical Information System and Remote Sensing have become a powerful crime prevention and investigation for mapping and analyzing crime pattern (Shillingford and Grousman, 2013).

The rapid urbanization of Minna and environs has created numerous social problems, among which is crime that became a common phenomenon in urban areas in both developed and developing nations. Ultimately, rapid growth in urbanization in the study areas had a direct relationship with the increase in crime as the rate of unemployment had been on the increase, high cost of living coupled with housing problem (homelessness) and these in turn led to all sorts of urban problems crime inclusive (Okafor, 2011; Ajaegbu, 2012; Soh, 2012; Usman *et al.,* 2012; Amin *et al.,* 2014). Therefore, it is against this background that the study intends to examine spatial patterns of crimes in Minna and environs, Niger State, Nigeria.

Materials and Methods

The primary data were obtained in the field using GPS (global positioning system) receiver in the form of coordinate (i.e. easting's and northing's or latitude and longitude) of police stations, crime spots areas within the study area. The secondary data consist mainly of remote sensing satellite image as based map from global land cover facility, police records of violent crimes such as culpable homicide/murder, armed robbery, robbery, house breaking and theft, burglary, kidnapping, causing grievous hurt, rape, cattle rustling to mentioned but a few and that of petty crimes such as pickpocket, motor vehicle theft, theft/stealing, assault, cheating, store breaking, etc. from Niger State Police Command in Minna. Other secondary data sources include internet, journals, text books and related research works. 2014 IKONOS-2 satellite image was used for this study to examine types of landuse and land cover of the study area. The satellite image has panchromatic resolution of 0.82 – 1meter and multispectral resolution of 3.28 –

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4meter. This satellite image was selected because it can be used to distinguish between slum and planned neighbourhood.

To identify and map out crime spots in the study area, crime records was collected from police divisional offices which was used to identify the various crime type and location. Geographic coordinates of the crimes were not available since crime is not reported with geographic coordinates. Alternatively, the geo-referenced map of the area was used to pinpoint the locations and record their grid coordinates. The coordinates and addresses of crime cases was copied to Microsoft excel and saved as CSV (comma delimited) format, and then imported into ArcGIS 10.3 using the add XY, Command at the tools menu. The satellite image data derived land use types for Minna and environs was superimposed on the crime spots map to show land use types that attract or detract crimes and areas with predominantly high, moderate or low crimes in the study area.

Results and Discussion

In identifying and mapping crime spot in the study area, the mapping was done based on the areas selected in the study. The areas covered in Minna include Kpakungu, Soje-A and B, Anguwan Daji, Bosso, Anyan Gwari, Gidan Mongoro, Albishiri, Maitumbi, Chanchaga and Tudun Nastira.
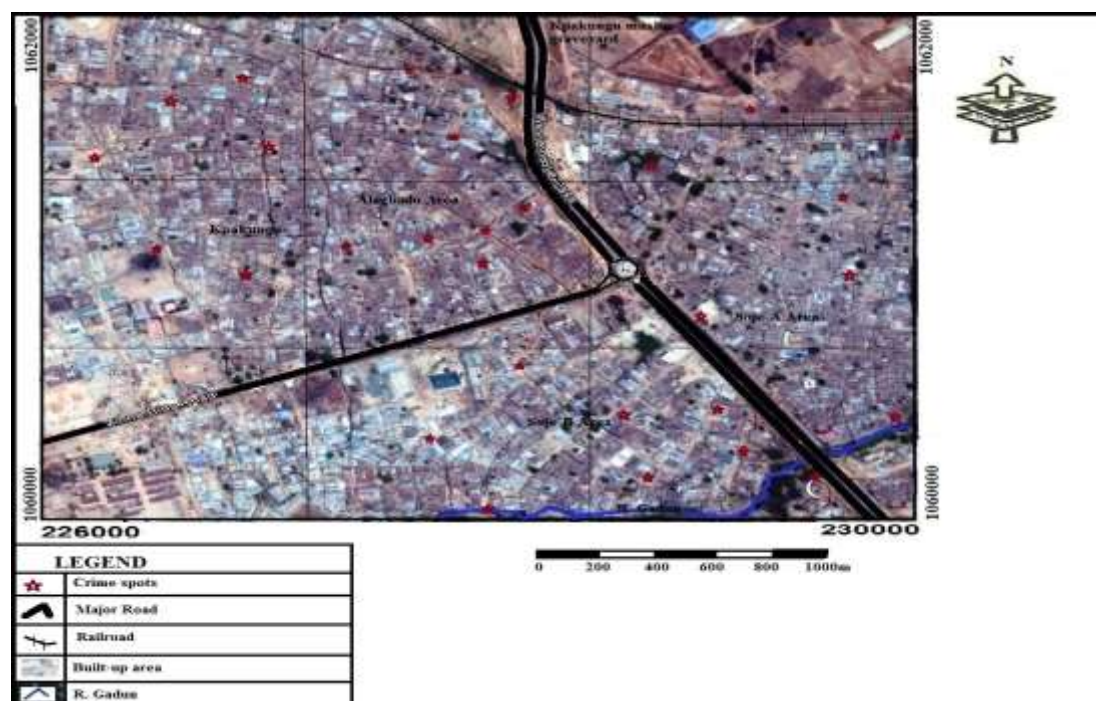

Figure 1: Crime spots in Kpakungu, Soje-A and Soje-B of Minna

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As revealed in Figure 1, the railway around Kpakungu and Soje-A has the most notorious crime spots. Other crime spots include some three locations around River Gadun, KK football field around Kudu mobile house as well as behind Kpakungu NEPA office. Soje-A have 7 reported crime spots, Soje-B have 8 reported crime spots and Kpakungu have 14 reported crime spots all between 2013 and 2018. As revealed in Figure 2, Gidan Mongoro have 10 reported crime spots and Albishiri have 10 reported crime spots. As revealed in Figure 3, Hayin Gwari have 11 reported crime spots which mostly affect student's residents and Bosso have 17 reported crime spots. Most of these crime spots were student residents and the items stolen were laptop computers, phones as well as valuable properties. As revealed in Figure 4, Chanchaga have 20 reported crime spots which mostly affect student's residents as well as other residents living in Chanchaga. Most of the items stolen from these crime spots were money, raw foods, clothing's, laptop computers, phones and other valuable properties.
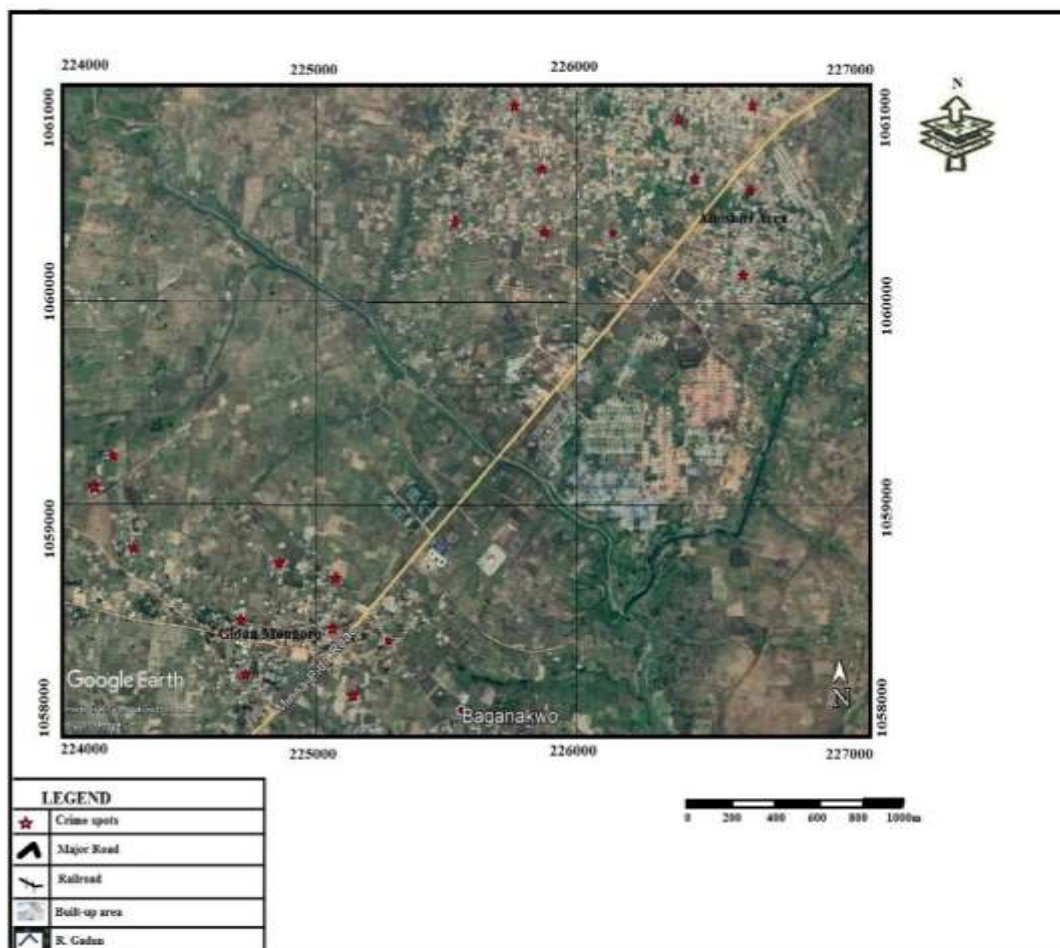

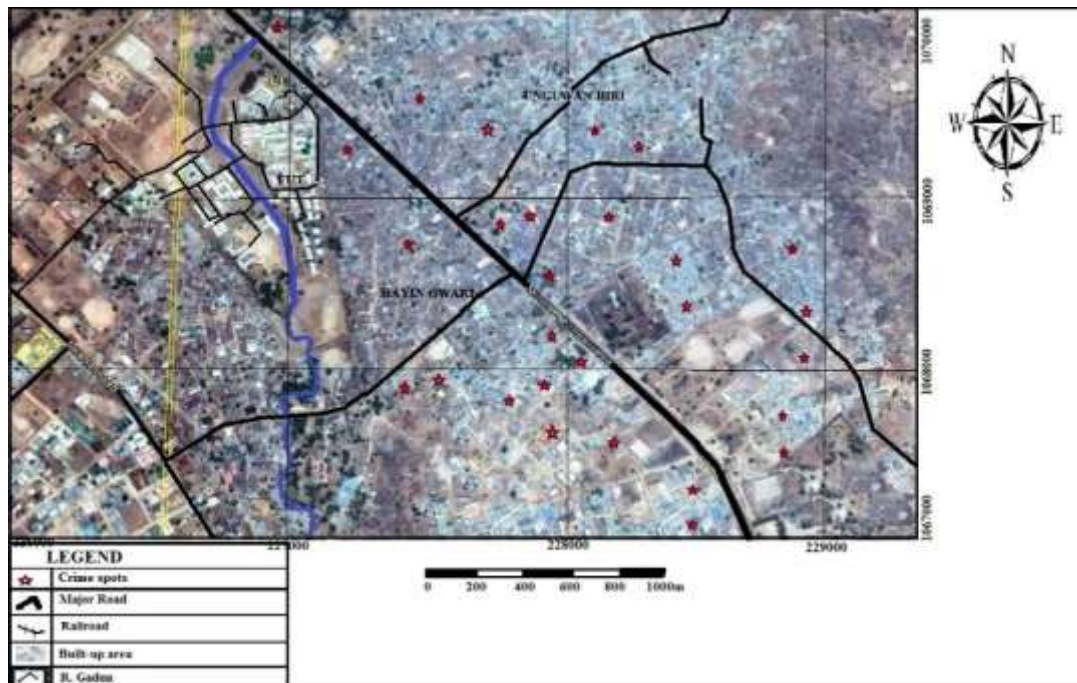**Figure 2: Crime spots in Gidan Mongoro and Albishiri, Minna**

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Figure 3: Crime spots in Bosso and Hayin Gwari, Minna
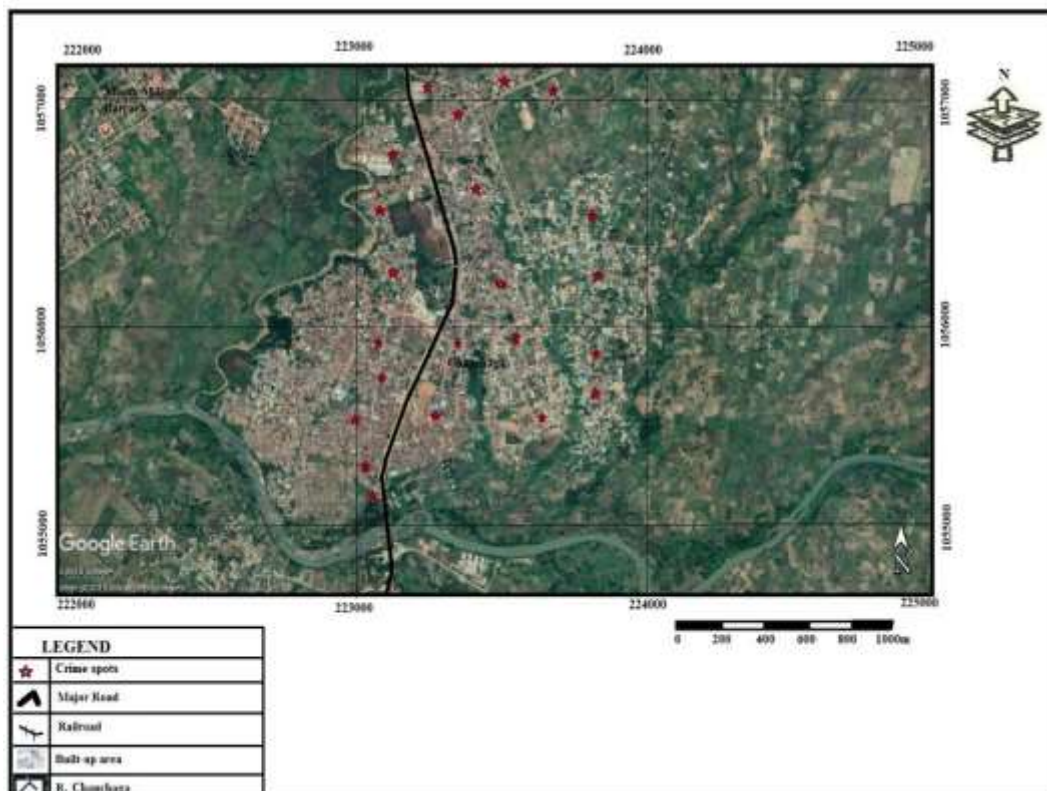
Figure 4: Crime spots in Chanchaga, Minna

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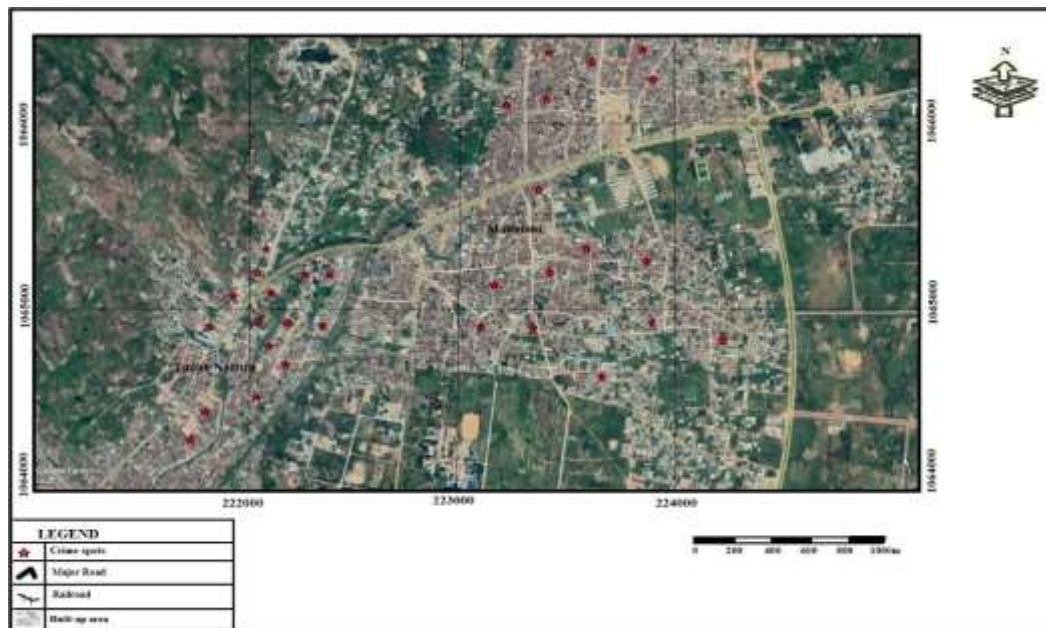
Figure 5: Crime spots in Maitumbi and Tudun Natsira, Minna

As revealed in Figure 5, Maitumbi neighborhood have 16 reported crime spots between 2013 and 2018. Tudun Natsira neighborhood have 15 crime spots and most of these crime spots were residential building as well as traders shops.
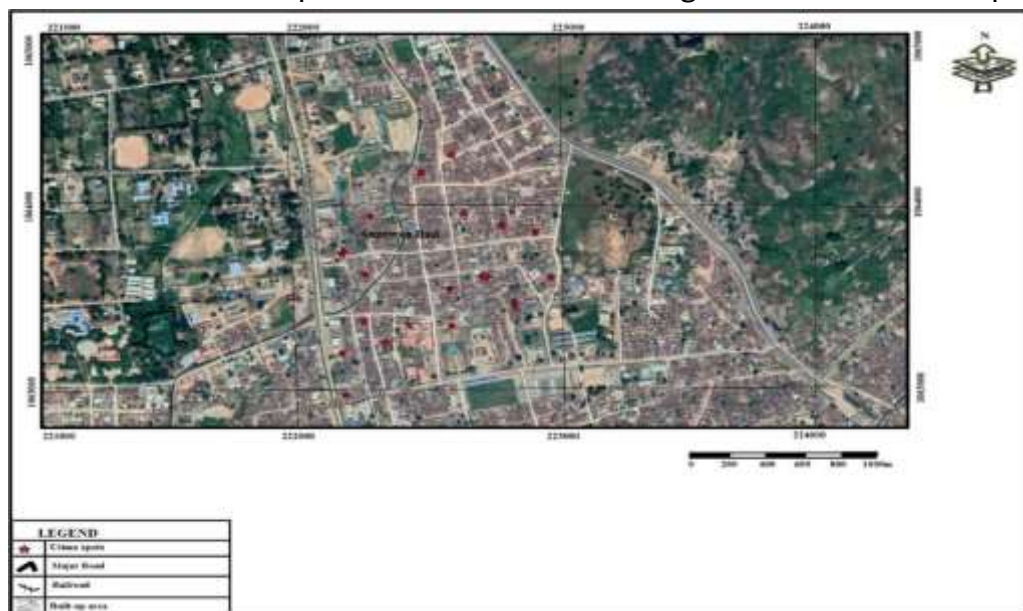

Figure 6: Crime spots in Anguwan Daji, Minna

As revealed in Figure 6, Anguwan Daji neighborhood have 17 reported crime spots between 2013 and 2018. Most of these crime spots were residential building as well

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as trader's shops. This result agreed with the work of Abba (2015) and Bala, Bawa, Lugga and Ajayi (2015).

Figure 7 revealed the spatial pattern of crime spot in Minna and its environs. Crime spot analysis results show crime incidents are not randomly distributed in the state but have significant spatial clusters.
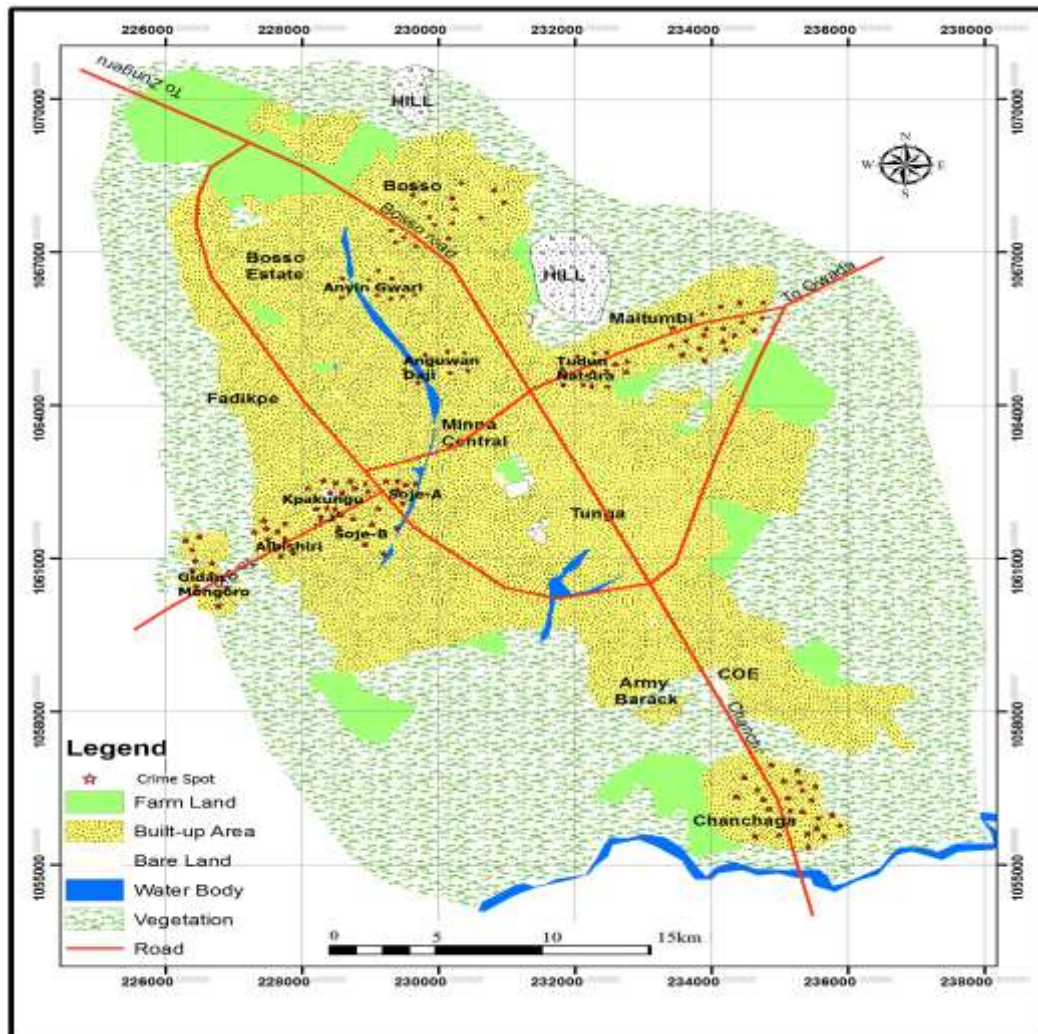

Figure 7: Spatial pattern of crime spots in Minna and environ

As revealed in Figure 7, urbanization and increase rate of poverty coupled with the challenges of insecurity in Minna and its environs have led to increase of crime incidence. This phenomenon is not new to residents of Minna because it has created unrest and great burden. Consequently, this calls for the development of new approaches by the residents to tackle crime incidence in the study area.

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Police security management in the study area is grossly below average as perceived by the people the researcher interviewed. From the analysis, the respondent strongly believed that police security management is rather poor as the Force does not have sufficient manpower and combating factor to keep the study area healthy from the unrest of crime.
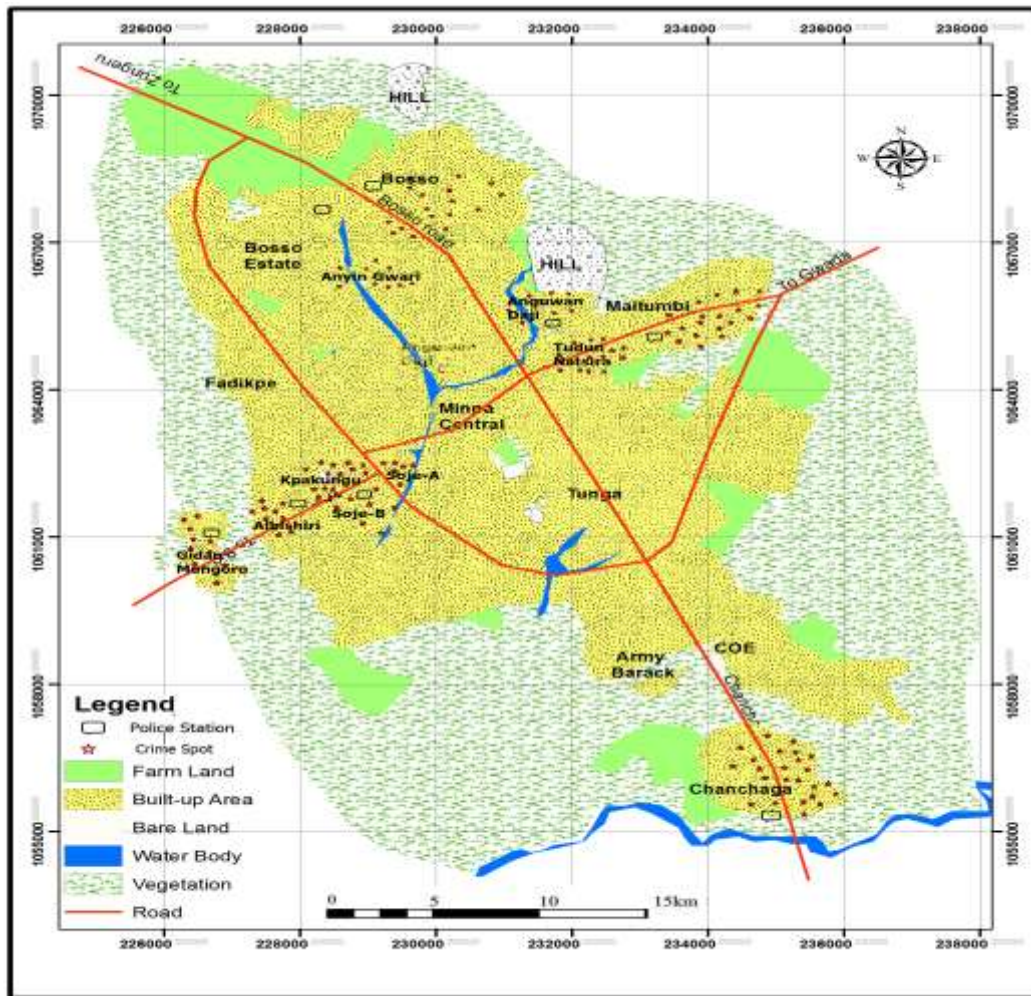

Figure 8: Police stations and spatial pattern of crime spots in Minna and environ
Both physical and social conditions of the environment influence crime incidents and make certain neighbourhoods crime prone (Chanchaga, Maitumbi, Tudun Natsira and Kpakungu) and others less crime prone (Albishiri and Gidan Mongoro) thus generating different patterns of crime and crime analysis trend across the study area. The police stations available and its manpower were grossly inadequate when compared with population of the sample points selected in the study area.

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Conclusion

Crime is not spread evenly across the landscape. It clumps in some areas and is almost absent in others. People use this knowledge in their daily activities. They avoid some places and seek out others. Their choices of neighbourhoods, schools, stores, streets, and recreation are governed partially by the understanding that their chances of being victims are greater in some of these places than in others. The study has shown how GIS and Remote Sensing as a tool can be used effectively to analyse crime and display crime maps for adequate planning in terms of resources and personnel deployment towards combating crime in the study area. Not only can GIS and Remote Sensing applications benefit law enforcement agencies in their efforts to analyse crime patterns, but it also has the potential to help the public target high crime areas with preventative measures. Through Remote Sensing and GIS, Minna and environs could be provided with better information on crime in their immediate areas and work with law enforcement officials to determine the best means to reduce the crime rates in their neighborhoods.

The study also shows that armed robbery is the major crime in the city closely followed by burglary, rape, pick pocket, murder and other crimes. Combating crime, therefore, requires a well prepared police force with efficient manpower and a robust logistics which for now are inadequate. Record keeping is in analogue format which is inefficient in crime analysis. This situation is not good enough in the light of the modern day crime fighting and policing techniques. The benefits derived from using Remote Sensing and GIS technique in combating crime are considered enormous, hence it is recommended to the Nigerian Police Force for adoption without further delay. Also, to stem crimes in Minna and environ, the Nigeria police and other security agencies should intensify more efforts and opt for the application of Remote Sensing and GIS in the quest for effective policing and crime management.

Based on the summary of findings and conclusion of this study, the following recommendations were made to enhance crime reduction in Minna and environs. Crime documentation should also be done alongside the timing on hourly basis and day of the week to allow for better and effective temporal analysis which can be done on either hourly or daily basis. More security formations should be establish within Minna and environs as this will help reduce crime. This was revealed by findings that areas with more security formations have lesser crime compared to areas with fewer security formations.

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References

Abba, S. (2015). Geospatial mapping of crime hotspots in Gundumi forest reserve, Sokoto State, Nigeria. A Dissertation Submitted To The School Of Postgraduate Studies, Ahmadu Bello University Zaria, Nigeria.

Adepoju, M.O., Halilu, S.A., Mohammed, S.O., Ozigis, S.M., Idris, I., Blessing, A. and Adeluyi, O. (2014). Geo-spatial Technologies for Nigeria Urban Security and crime management. a study of Abuja crime hotspot mapping and analysis; Nigeria. ASPRS 2014 Annual Conference *Louisville, Kentucky* March 23-28, 2014.

Ajaegbu, O. O. (2012). Rising youth unemployment and violent crime in Nigeria. *American Journal of Social Issues Humanities,* 2(5), 315–321.

Amin, M. B., Rahim, M. K. and Ayu, G. M. S. (2014). A trend analysis of violent crimes in Malaysia. *Health and the Environment Journal,* 5(2), 41–56.

Anselin, L., Cohen, J., Cook, D., Gorr, W. and Tita, G. (2010). Spatial Analysis of Crime, In: Measurement and Analysis of Crime and Justice, Criminal Justice, U.S Department of Justice, Office of Justice Programs. Washington, U.S.

Bala, A., Bawa, S., Lugga, M. S. and Ajayi, O. G. (2015). Geospatial Information System for Crime Analysis and Crime Zone Identification-Case Study of Katsina, Nigeria: *Journal of Multidisciplinary Engineering Science and Technology* (JMEST) ISSN: 3159-0040 Vol. 2 Issue 1, January – 2015. Available on www.jmest.org, Retrieved 22/02/2019.

Okafor, E. E. (2011). Youth unemployment and implications for stability of democracy in Nigeria. *Journal of Sustainable Development in Africa,* 13(1), 1520–5509.

Shillingford, D. and Grousman, J.D. (2013). Using to Geographic Information System Fight Crime. ISO Review. Available online at http://www.iso.com/reseach/using/gis-to-fight-crime.html.Accessed on 27th January, 2018

Soh, M. B. C. (2012). Crime and urbanization: Revisited Malaysian case. *Procedia – Social and Behavioral Sciences,* 42, 291–299.

Tenibiaje, D. J. (2010). Personality and development of crime in Nigeria. *Current Research Journal of Social Sciences,* 2(4), 214–219.

Usman, U., Yakubu, M. and Bello, A. Z. (2012). An investigation on the rate of crime in Sokoto State using principal component analysis. *Nigerian Journal of Basic and Applied Science,* 20(2), 152–160.

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