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SPATIAL PATTERN AND DETERMINANTS OF CRIME INCIDENCE IN URBAN NEIGHBORHOODS OF KATSINA CITY, NIGERIA

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ABSTRACT

This research explores the spatial pattern and determinants of crime incidence in the urban neighborhoods of Katsina City, Nigeria. The objectives are to unravel the rate, frequency, and factors responsible for the crime occurrence in the selected neighborhoods of Katsina City. A purposive sampling technique was adopted to choose seven neighborhoods prone to crime in Katsina City. A total of 366 questionnaires were successfully administered using stratified sampling methods. Descriptive statistics and mean scores were used to analyse and interpret the data. The findings indicate a rising trend in crime in Katsina City, with theft (39.9%), drug peddling (20.6%), and criminal breach of trust and cheating (10.3%) being the most prevalent offenses. A high crime rate (57.6%) was observed. In addition, the frequency of the crime occurrences in the study area is predominantly daily or weekly (71.1%), suggesting that criminal activities are frequent in Katsina. There is a notable spatial variation in the occurrence and intensity of crime across the selected neighborhoods, and the Sabuwar Unguwa community accounts for more than one-third (34%) of the reported crime occurrences, making it a high-crime area (hotspot) and the most affected neighborhood. Drug addiction (mean = 4.1940), poverty (mean = 3.9891), and negative peer influence (mean = 3.8087) were identified as key drivers of crime. It is therefore recommended that spatially responsive crime prevention strategies that focus on socioeconomic empowerment for youths, urban surveillance, community policing, and neighborhood-specific interventions to mitigate crime effectively should be given urgent attention.

Keywords: Crime incidence, Spatial pattern, Urban Neighborhood, Determinants of crime, Katsina City

INTRODUCTION

Most cities worldwide have experienced remarkable rapid urban growth from industrialisation and technological advancement. In Nigeria, industrialisation and unplanned urbanisation typified the economic and social development cycles. The spatial expression of this uncontrolled urban growth is particularly evident in the uncoordinated expansion of settlements, where development often occurs without formal planning or infrastructural provision. Cities such as Lagos, Abuja, Kano, and Ibadan have experienced widespread encroachment into peri-urban areas, often resulting in land use conflicts and inefficient service delivery (Egunjobi, 2016; Oyeleye, 2013). According to Usman et al. (2012), the world is experiencing a high crime rate. The high level of urban crime activities has become more alarming and contributed to the decline in city dwellers' socio-economic status and quality of life (Marzbali et al., 2011). In many urban centres of Nigeria today, criminal activities and violence have assumed dangerous tendencies as they threaten lives and property and the national sense of well-being and reduce the citizens' quality of life, which has impoverished living conditions and crime in the society (Haque & Muniruzzaman, 2020).

Urban crime has emerged as a significant socio-spatial challenge across many developing countries, particularly in sub-Saharan Africa. Spatial crime analysis has revealed that urban crime is often concentrated in specific hotspots. Studies in developed and developing countries have shown that crime rates are significantly higher in densely populated urban centers, informal settlements, and economically disadvantaged neighborhoods (Ceccato, 2016). Numerous studies such as Adewuyi et al. (2017), Ocholi et al. (2023), Olajuyigbe et al. (2015), and Umar et al. (2021) have highlighted the spatial disparities in crime incidence and reporting across Nigeria's urban centers. Indeed, crime can crop up anywhere, but certain areas will experience higher crime proportion (hotspots) than others (safe zones) based on their density and location (Tabangin et al., 2008; Kumar & Chandrasekar, 2011; Ahmed & Salihu, 2013; Badiora & Afon, 2013; Song et al., 2013; and Sewuese, 2014). For instance, Nigerian urban centers like Lagos, Ibadan, and Abuja exhibit apparent spatial clustering of crime, typically around markets, transport nodes, and low-income neighborhoods (Agboola, 2014; Fayomi et al., 2020).

Nigeria, as the most populous country in Africa, experiences varied patterns of crime in its urban centers due to factors such as rapid urbanisation, economic inequality, and inadequate law enforcement infrastructure (Oluwunmi et al., 2019), whereas Aliyu (2012) attributed social crime and violence in urban areas of Nigeria has been caused mainly by poverty. In the work of others, high crime rates in urban neighborhoods in Nigeria have been attributed to poor law enforcement, weak urban governance, and growing informal settlements (Alemika & Chukwuma, 2018).

Katsina City, the capital of Katsina State and the study region in Northwestern Nigeria, is not exempt from crime challenges. With increasing urban sprawl and demographic pressure, there has been a noticeable transformation in the spatial distribution and nature of crime within its neighborhoods. The work of Abdullahi (2018) has shown that there has been an increase in rape, car theft, armed robbery, and murder cases, among other crimes in Katsina city. He stressed that more people live in Katsina's poorest areas due to urbanisation and rural-to-urban migration, with larger population densities, worse living conditions, and more unemployment. Moreover, urban neighborhoods in Katsina

have seen rising incidences of theft, burglary, assault, and other social vices, often influenced by socio-economic factors and urban design elements such as poor lighting, lack of surveillance, and congested housing (Alemika & Chukwuma, 2018). Despite increasing reports of crime in urban neighborhoods of Katsina City, there is limited empirical research that examines the spatial distribution and socio-environmental determinants of these crimes. Most available data are generalised at state or national levels, lacking localised insights crucial for effective urban crime control strategies and policy-making. This knowledge gap impedes the development of targeted crime prevention strategies and weakens urban governance frameworks. Therefore, there is a pressing need for a spatially informed and context-specific analysis of crime incidence in Katsina's urban neighborhoods. This will enable researchers and policymakers to identify crime hotspots, neighborhoods, and underlying causes, enhancing targeted interventions and informed policing strategies.

MATERIALS AND METHODS

Katsina City, the study area, is a sub-Saharan city, affected by trans-Saharan trade in its early existence. It is one of the oldest Hausa communities in terms of culture, learning, trade, and manufacturing. It is between Latitudes 12^0 40'N and 12^0 59'N and Longitudes 7^0 35'E and 7^0 40'E. It is located in Northern Nigeria. The state capital of Katsina State is called Katsina City. It covers over 2,448 square kilometres. Katsina City is bordered to the north by the Kaita Local Government, to the south and east by the Batagarawa Local Government, to the west by the Jibia Local Government, and to the northeast by the Rimi Local Government Areas (see Figure 1).

Figure 1: Map of Katsina State Showing the study Area
Source: Adapted from Yahaya and Malik (2021)

Katsina State experiences tropical, wet, and hot semi-arid climates with rainfall from May through September, with August being the peak month for the rainy season. There is roughly 700 mm of rain on average every year. There is much variation in the area's rainfall pattern. This can lead to a severe and widespread drought, which causes serious socio-economic constraints (Abaje, Ati, and Iguisi 2012). The annual mean temperature falls between 29^0 C -31^0 C. The air temperature is usually highest between April and May and the lowest in December through February (Dogonyaro, Abaje and Bello, 2023). Evapotranspiration is generally high throughout the year. It has a generally high evapotranspiration throughout the year. (Abaje, Ati, & Iguise, 2012).

The economic activities of the people of Katsina City are mainly artisanship, trading, white-collar jobs, and civil service. The people engage in commercial activities such as hawking, involving adults and young people. Agricultural activities in the study area are mainly confined to open spaces in the city. Urban agriculture involving irrigation farming is also practised, including cultivating vegetables at the commercial level in Katsina city. Gardening and poultry farming are also practised in the study area. The most common farming activity in the study area is market gardening, where vegetables such as okra, cabbage, spinach, lettuce, and onion are grown. Domestic animals are also reared in the study area. Katsina City is dominated by Hausa and Fulani and many other ethnic groups like Yoruba and Igbo, as well as businessmen and women. As a result of the high population in the study area, the incidence of unemployment and poverty pushes people to commit crimes (Aminu, 2016).

A reconnaissance survey helped get information about crime hotspot neighborhoods, the rate and types of crimes, and the factors responsible for crime incidence among the residents of Katsina City. A purposive sampling technique was used in selecting the identified areas in Katsina City, among which are Kofar Sauri, Unguwar Alkali, Kambarawa, Kofar Marosa, Sabon Unguwa, Rafin Dadi and Sabawar Kasuwa. The target population was people between the ages of 15 and above who were residents of the study area. The total number of questionnaires administered was 398, while the total number of questionnaires retrieved was 366, representing a 96% success rate of the total questionnaires administered. The distribution of the respondents in each selected neighborhood is presented in Table 1.

Table 1: Distribution of Respondents in the Selected Neighborhood

S/N	Ward	Neighborhood	Population (1991)	Projected Population (2022)	Estimated Respondents
1	Gabas 1	Kofar Sauri	3197	8335	68
2	Kudu 1	Unguwar Alkali	655	1707	14
3	Kambarawa	Kambarawa	1971	5139	42
4	Katsina	Kofar Marusa	1475	3846	31
5	Kudu 3	Sabuwar Unguwar	3946	10296	84
6	Katsina	Rafin Dadi	4141	10797	88
7	Katsina	Sabuwar Kasuwa	3369	8784	71
	Total		14,616	48,904	398

Source: Authors' Compilation, 2023.

A systematic sampling method was used to select the respondents in each neighborhood at an interval of 10th. The first street and first house were chosen in each neighbourhood, and thereafter, every 10th household was selected. The process was repeated until the necessary sample was attained. The data collected were analysed using descriptive statistics and presented in tables, pie charts, and bar charts.

RESULTS AND DISCUSSION

Socio-Demographic Characteristics of Respondents

The socio-demographic characteristics of respondents considered are age, occupation, and income, which describe the combined profile of the population in selected neighborhoods.

Ages of Respondents

Figure 2 shows the distribution of the respondents by age. It shows that most respondents were between the ages of 15 and 34, with a proportion of 65.6%. This indicates that young people commit the majority of criminal activities within the age group of 25-29 and 30-34. People with the least criminal activities are between the age group of 45-49, which shows they are old enough to understand the implications of committing a crime in Katsina City. This finding is in line with other studies that have established that in Nigerian urban centres, youths aged 14 to 35 years are predominantly involved in criminal activities. This demographic is particularly susceptible due to factors such as unemployment, peer influence, and exposure to gangs (Momoh, 1996; Obarisiagbon, 2023). This implies that Nigerian youths are most susceptible to crime due to economic hardship and limited job prospects.

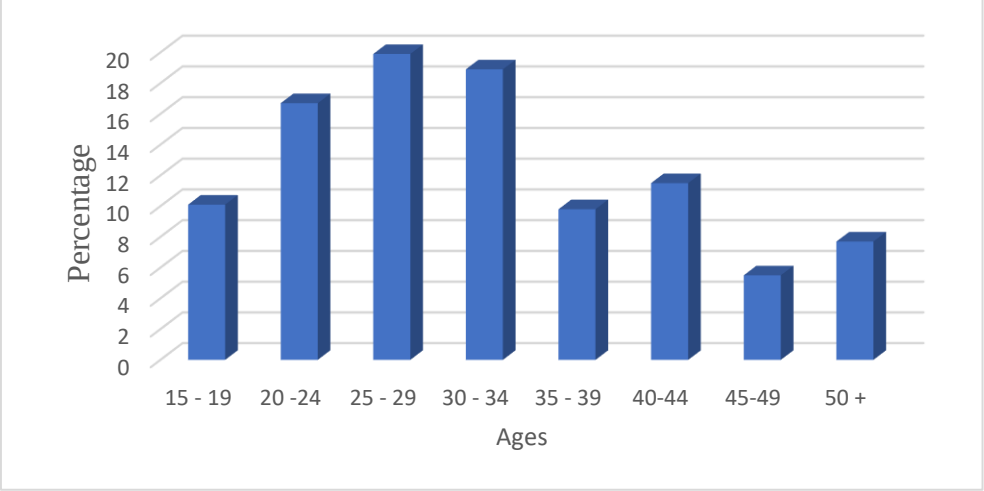

Figure 2: Age Distribution of the Respondents

Occupation of the Respondents

The respondents' occupations vary among businesspeople, civil servants, public servants, farmers, and others, as presented in Figure 3. Farming, Civil servant, public servant, others (commercial cyclists, try-cycle riders, drivers, mechanics, builders, applicants, tailoring, shops keepers), and business are represented with 1, 2, 3, 4, and 5 respectively in Figure 3. Business and farming constitute 34.2% and 29.5%, respectively, representing the highest percentage of respondents' occupations in the study area. Civil servants account for 10.4% of the respondents, the lowest in the study area. Others include students, commercial cyclists and commercial try-cycle riders, drivers, motor vehicle and motorcycle repair, builders, applicants, private legal

practitioners, homemakers, tailoring, shopkeepers, and house helpers. This indicates a serious problem of unemployment in the area. This work agrees with the work of Anthony et al. (2013) in Akwa Ibom state, Nigeria, who studied population and unemployment in Less Developed Countries (LDC) as a significant social problem. This shows the extent to which the problem of unemployment has eaten into the economics of the LDCs like a cankerworm.

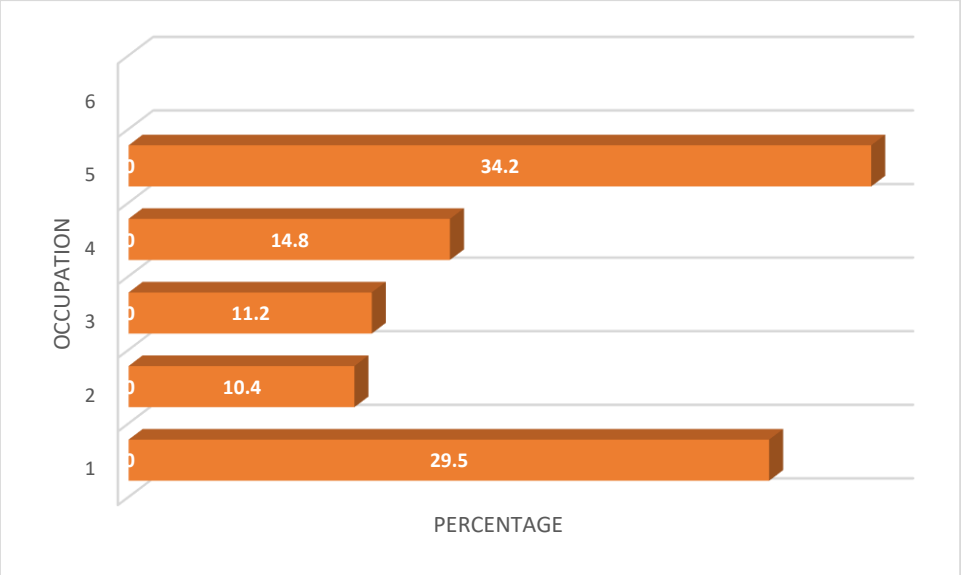

Figure 3: Occupation of the Respondents

Income Level of Respondents

The income level, as shown in Figure 4, reveals that the highest percent of the respondents (29%) earn less than #30,000 per month, far below the minimum wage in Nigeria. Those who earned above 70,000 are between 15% and 18%, which is too low. This indicates that most respondents can be categorised as low-income earners. By implication, most respondents with low income are expected to be more prone to crime because of their financial instability than those with higher incomes. In essence, poverty and lack of economic opportunities are strongly linked to criminal behaviors among youths. This result collaborates with the work of Haque and Muniruzzaman (2020) in Jamalpur District Jail, Bangladesh, which asserted that crime rates are positively associated with unemployment, low income and impoverished living conditions and crime in society.

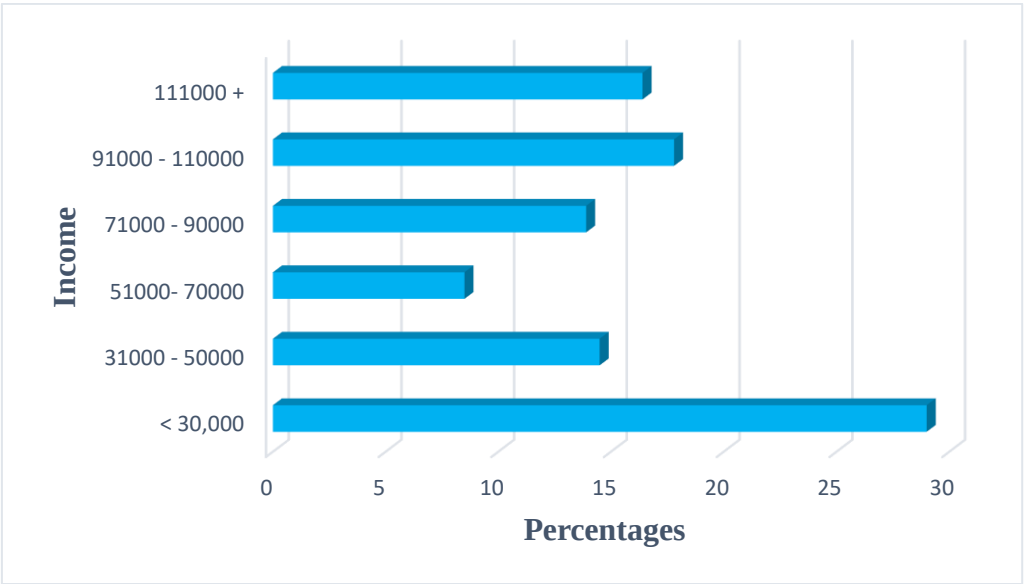

Figure 4: Income of the Respondents

Rate and Types of Urban Crime in Katsina City

The rate, frequency, and types of crime and criminal behaviour of the respondents were investigated. The analysis in Table 2 revealed that 88% of the respondents confirmed the occurrence of crime in the study area. Respondents attributed the crime occurrences in the areas to poverty, unemployment, inadequate security, and poor neighborhoods. This work is in line with the work of Abdullahi (2018) who found out that the incidences of murder, armed robbery, rape, and automobile theft, among other crimes, have been on the increase in the Katsina metropolis. The finding also corroborates the work of Gulumbe *et al*. (2012) that the Katsina metropolis is facing the problem of cattle rustling, which has led to the loss of animals and, in some cases, human lives and property. Also,

kidnapping, rape and robbery, obtaining money or properties under pretense and other forms of crime are experienced in the study area. The area is grappling with challenges posed by miscreants, popularly known as Kauraye in Katsina City. The results imply that crime is more common in Katsina City.

The results in Table 2 also show the types of crime in Katsina city. Theft constituted 39.9%, drug peddling accounted for 20.6%, and criminal breach of trust and cheating constituted 10.3%. Rape, and others such as pickpocketing, arson, murder and youth violence are also found in the area. This indicates that theft and drug peddling account for the highest percentage of everyday crime in the study area. However, this finding differs from the work of Balogun et al. (2014), who found that grievous hurt is more prevalent in Benin City, Nigeria, than any other form of crime committed. It is pertinent to note that crime occurrences vary according to Geographical locations. However, the findings of this study are in line with the work of Bello et al. (2014), which identified theft as the most common crime in Katsina City, and it also collaborates with the work of Akerman (2000) in French Cinema and UN-Habitat (2007). They found that a higher theft rate is associated with low-income, slummy neighborhoods in London. Furthermore, the work of Bala et al. (2015) in Katsina State, Nigeria, also asserted that theft and stealing cases account for the highest percentage of crime occurrences in the area.

Table 2: Nature of Urban Crime in Katsina

Incidence of Crime	Frequency	Percentage
Yes	322	88.0
No	44	12.0
Total	366	100
Rate of Occurrence		
Very high	111	30.3
High	100	27.3
Moderate	63	17.2
Low	60	16.4
Very low	32	8.7
Total	366	100
Types of Crimes Common in the Area		
Theft	146	39.9
Rape	33	9.0
Armed Robbery	18	4.9
Kidnapping	15	4.2
Criminal breach of trust and Cheating	38	10.3
Drug peddling	75	20.6
Others (pickpocket, Arson, Murder, Youth violence)	41	11.1
Total	366	100
Frequency of Crime Occurrence		
Daily	158	43.2
Weekly	102	27.9
Monthly	56	15.3
Rarely	50	13.7
Total	366	100

Sources: Author's Fieldwork, 2023

The rate of occurrence of crime, as contained in Table 2, reveals that a majority (57.6%) of the respondents believe that crime occurs at a very high or high rate. Only 25.1% of respondents perceive crime rates as low or very low. The moderate category is 17.2%, indicating a small portion with a neutral view. These results of the crime rate imply a widespread perception of insecurity that suggests a significant public concern about safety and security in Katsina City. High crime perception may also indicate insufficient policing, ineffective surveillance, or a lack of community security measures. Furthermore, it is likely for the urban neighborhood with a high crime rate to experience reduced business activities, lower property values, and limited investment due to the fear of loss or harm.

The frequency of the crime occurrences in the study area, as presented in Table 2, reveals that a significant majority (71.1%) believe crime occurs daily or weekly, suggesting that criminal activities are frequent in Katsina. Only 13.7% believe crime occurs rarely, indicating that very few people consider their environment safe. The monthly occurrence category (15.3%) shows a minor proportion with a moderate view of crime frequency. This result implies a strong perception of insecurity, which may lead to increased fear and restricted movement and create a negative image of the city. This may eventually affect tourism, investment, and migration trends, with people avoiding the neighborhood due to safety concerns. This is in line with the work of Ayuba (2015), who mapped and analysed crime incidences between 2010 and 2011 in Kaduna Metropolis, Kaduna state, Nigeria and found a high daily crime frequency.

Spatial pattern of crime Occurrence

The distribution of crime in space within Katsina City is necessary to know the spatial pattern of crime in the urban neighborhoods of the study area. The results of Figure 5 depict the spatial distribution of crime incidence in the selected neighborhood within Katsina City.

According to the result, Sabuwar Unguwa neighborhood accounts for more than one-third (34%) of the reported crime occurrences, making it a high-crime area or a hotspot. The remaining communities show significantly lower crime occurrences, with the Tudun Katsina and Unguwar Alkali neighborhoods showing minimal reports (2% and 1%). The steep drop after the Sabuwar Unguwa neighborhood suggests a high concentration of criminal activities in one area while others remain relatively peaceful. The results indicate that Sabuwar Unguwa neighborhood is a crime hotspot and may be facing severe social, economic or policing challenges, such as high population density, poor lighting or infrastructure, gang activity or drug influence and weak law enforcement presence. The implication of the result may be a pointer to an urban inequality indicator, which suggests spatial inequality, where specific neighborhoods may be neglected in planning, infrastructure, or social services, making them more prone to crime. The identified crime hotspots are areas with the highest population concentration in the study area, and this could be because there is a relationship between population and crime occurrence in the study area, as evidenced by the literature. The work of Roncek (2004) in Boston is notable among such, as it observed that neighborhoods with high populations tend to have higher occurrence rates of crime than single-family residential areas.

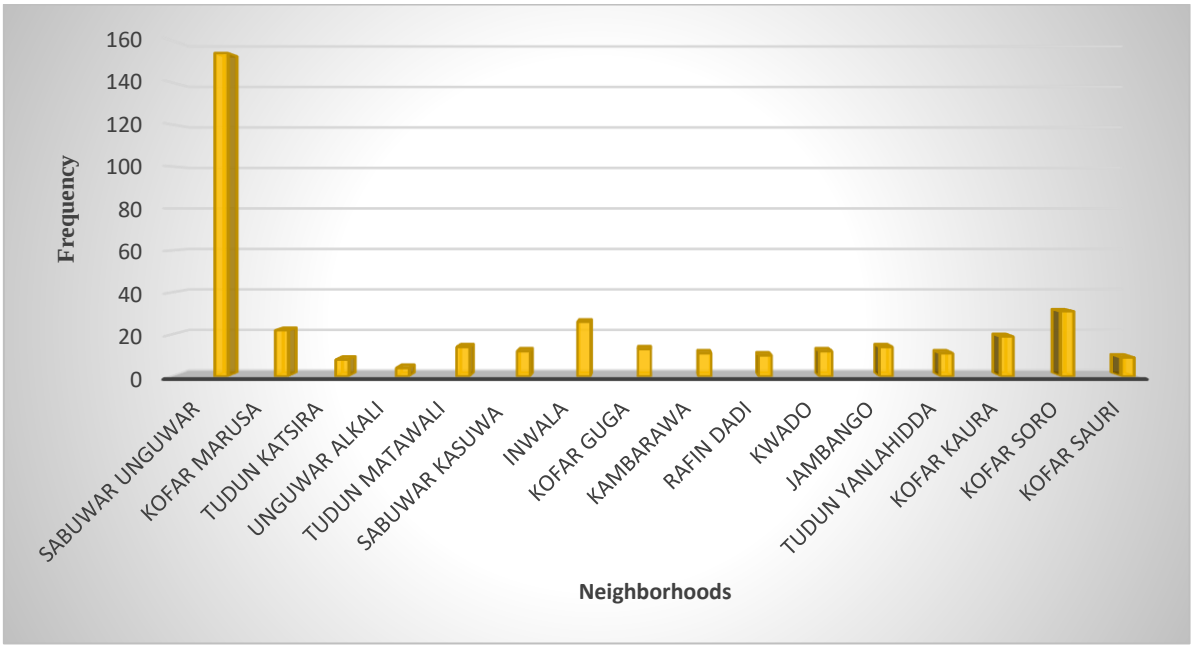

Figure 5: Spatial Pattern of Crime Incidence in the Selected Urban Neighborhood in Katsina City
Sources: Authors' Computation, 2023

Factors that Contribute to Crime Occurrence in the Study Area

The result presented in Table 3 shows the mean scores of factors contributing to crime occurrence in Katsina. The higher the mean score, the greater the perceived influence of that factor on crime occurrence in the study area. The analysis shows that drug addiction (4.1940) is perceived as the most significant contributor to crime in Katsina City. Poverty (3.9891) and bad influence (3.8087) are major contributors. Drug addiction, poverty and bad influence were therefore ranked as the first, second, and third most influential factors of crime occurrence in the studied neighborhood of Katsina City. Poor neighborhood influence (3.0546) has the lowest mean score, indicating it is the least significant cause of crime among the listed factors. Although poor neighborhood influence has the lowest score, it still has a mean score above 3, indicating it is not negligible. The results indicate that all the factors should be treated as important factors in crime occurrence in the study area. The implication is that interventions should focus most urgently on the first three factors (drug addiction, poverty and bad influence) as it is perceived as the strongest drivers of criminal activities. This work is in line with the work of Folashade and Abimbola (2013), who observed different factors, such as money /financial gain, display of wealth by the corrupt, dissatisfaction, poverty, and peer influence as the major causes of crime in Zaria-Kaduna State, Nigeria.

Table 3: Factors Contributing to Crime Occurrence in the Study Area

Statement	Mean Score	Rank
Drug addiction	4.1940	1
Bad influence	3.8087	3
6Poverty	3.9891	2
Peer Group Influence	3.5519	4
Bad moral choice	3.4016	6
The desire for a better living	3.4973	5
Poor neighborhood influence	3.0546	7

Sources: Author's Fieldwork, 2023

According to the Katsina State Criminal Investigation Department's diary (KSCID, 2022), "factors such as poverty, corruption, unemployment, and high rate of population among others are the causes of involvement in crime. As survival options become limited and living below the poverty line becomes evident, people try to look for other alternative means of sustenance through social vices like theft, drug peddling, kidnapping, pocket picking, and cheating, among others. Economic constraints also led to people living in poor neighbourhoods".

CONCLUSION

The study established that crime in Katsina City is frequent and spatially concentrated, with specific factors disproportionately contributing to its occurrence. There is a notable spatial variation in the occurrence and intensity of crime across urban neighborhoods in the study area. A significant proportion perceived the rate of crime incidence as either very high or high, indicating a widespread perception of insecurity within the city. Additionally, the frequency of crime was predominantly daily and weekly, reflecting the regularity with which residents experience or witness criminal activities. The analysis identified the Sabuwar Unguwa neighborhood as a major hotspot, while other areas recorded lower levels, suggesting an uneven distribution of crime across the city. This spatial disparity underscores the need for targeted interventions in high-risk areas. Furthermore, the analysis of factors contributing to crime, based on mean scores, highlighted drug addiction, poverty and bad influence as the most significant drivers of crime.

RECOMMENDATIONS

Spatially responsive crime prevention strategies that focus on socioeconomic empowerment, urban surveillance, community policing, and neighborhood-specific interventions to effectively mitigate crime and enhance public safety in the Katsina urban landscape should be pursued. It is also necessary that urban planners, law enforcement, and policymakers use the data of this study to address the root causes of crime and improve environmental design to deter crime, such as changes in lighting, housing density and community space to reduce crime opportunities. Furthermore, it is imperative to activate immediate actions such as crime prevention education, youth empowerment and technology-supported surveillance like street cameras.

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