

Trend Analysis of Crime Occurrence and the Perception of Insecurity among Neighbourhoods in Makurdi Town, Nigeria

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ABSTRACT

This study examines the trend of crime occurrence and spatial design, as well as the perceptions of fear and insecurity in Wurukum, Makurdi town, Nigeria. The study collected primary data by stratifying the study area into three categories based on residential density: low, medium, and high. Thereafter, the systematic sampling technique was used to select samples from each residential density. The perception of insecurity by residents during nighttime and daytime periods indicated the high-density residential neighbourhood in the study area had the highest rate of the insecurity index (RII), at 4.71 and 3.52, respectively. Moreover, the medium-density neighbourhood had RII values of 2.43 and 2.19, while the low-density residential neighbourhood had values of 2.10 and 2.01 during the night and daytime, respectively. Applying the stepwise regression analysis, the results showed that 86.5% of the variance in the perceptions of fear and insecurity among residents could be explained. The observed independent variables elucidate this result. The study concludes that there exists a significant variation in the perception of insecurity across the three residential densities of Gboko Town. Thus, indicating a significant variation in the occurrence rate of criminal activities in all the densities.

Keywords: Crime Occurrence, Insecurity, Makurdi Town, Perception, Trend Analysis

Introduction

Crime is an unavoidable component in the process of urbanisation, as [1] asserts that no society is exempt from crime and criminality because the structure and establishment of multifaceted societies limit total conformism to all communal rules by every member. This non-compliance has led to the emergence of fear, which [2] describes as encompassing a perplexing array of approaches, perceptions, and risk approximations. [3] cited two differing definitions, indicating that the first definition of feeling is the logic of particular security within the localities. An ensuing perception proposes that it is an emotional response to probable physical harm and violent crimes. For [4], the perception of crime is viewed as an emotive retort to trepidation or apprehension, which symbolises that a person has links with crime.

Consequently, such feeling can be perceived as a expected retort to crime because a critical feature of crime investigations tilt towards neighbourhood layout related questions that help to create spaces where get concerns about their safety. [5] and [6] assert that social cohesion, informal surveillance and social organisation engenders the permanency of residents and enhances the probability of preventing crime within the neighbourhood. [3] asserts that the fear of crime is a formidable force in diminishing communal cohesion, which represents an illustration of the adverse social influence on the anxiety of crime.

Similarly, [7] asserts that older individuals are more susceptible to street impoliteness occasioned by vagabonds who intentionally assert their presence in urban environments, and pluralistic young professionals perceive such actions as a multi-coloured slice of the urban environment.

The research of [4] indicates that neighbourhood discourteousness is the most significant prognosticator of apparent risk. The research further indicates that individuals residing in areas prone to discourtesy tend to adjust their daily routines within one year, indicating withdrawn behaviour. This assertion reflects the theory of crime [8], which suggests that the negative underpinnings of crime lead to adjustment behaviour and instil fear in the victim(s).

The conception of specific neighbourhoods being unattractive with unfriendly characteristics is consistent with [9] Broken Windows theory, as it advises that adverse structures of the physico-social environment are often linked to differing conduct [10]. Additionally, [11] asserts that neighbourhoods with poor natural surveillance provide a strong base for criminality.

This scenario explains why people are unenthusiastic about walking through a subway unaccompanied or have doubts about purchasing a dwelling located close to an alleyway. Increased natural observation of such neighbourhoods reduces the prospect for crime and the incidents of fear [11]. The occurrence of crime victimologists and the sensitivity of insecurity poses a significant issue for policy-makers, criminologists, the political class, victimologists, policing organisations, the public and media [12] [13]. The rise of insecurity in environmental design patterns is driven by the proliferation of literature and research in this field [14].

This propagation highlights the assertion made by [15] that, since the 1970s, a sense of insecurity and crime has become a new paradigm for daily living in some troubled neighbourhoods. Additionally, in the past two decades, there has been a

significant consideration given to the perception of insecurity in the design environment with a view to identifying perceptions of insecurity across neighbourhoods globally. Thus, the focus of this research is to ascertain the spatial dimension of crime occurrence and the perception of insecurity in diverse residential neighbourhoods within Makurdi Town.

Methods and Materials

Data Collection and Analysis

Primary and secondary data were collected for this study. The Primary data were obtained from the three strata of residential densities in Makurdi Town. These are the high, medium, and low-density residential neighbourhoods. One hundred and twenty (120) streets were identified across the three (3) residential neighbourhoods, encompassing 28 streets from high-density residential areas, 57 streets from medium-density residential neighbourhoods, and 32 streets from low-density residential neighbourhoods. Figure 1 is the street map of Makurdi town. The sampling technique employed was multistage, starting with listing out the total number of streets in the Greater Makurdi Township. Residential neighbourhoods were stratified such that in every two streets, 20% in each stratum, one street is selected purposively. From the strata, 382,522 buildings were identified, comprising 160,188 in the high-density neighbourhoods, 295,210 in the medium-density neighbourhoods, and 17,124 in the low-density neighbourhoods, as determined using the GIS tool in the three neighbourhoods, respectively. Every 10th building was systematically selected, and a household was chosen per floor to administer the questionnaire. Out of the 187 questionnaires administered, only 170 were retrieved for analysis. The data were collected, collated and analysed. The results were presented using both inferential and descriptive statistics.

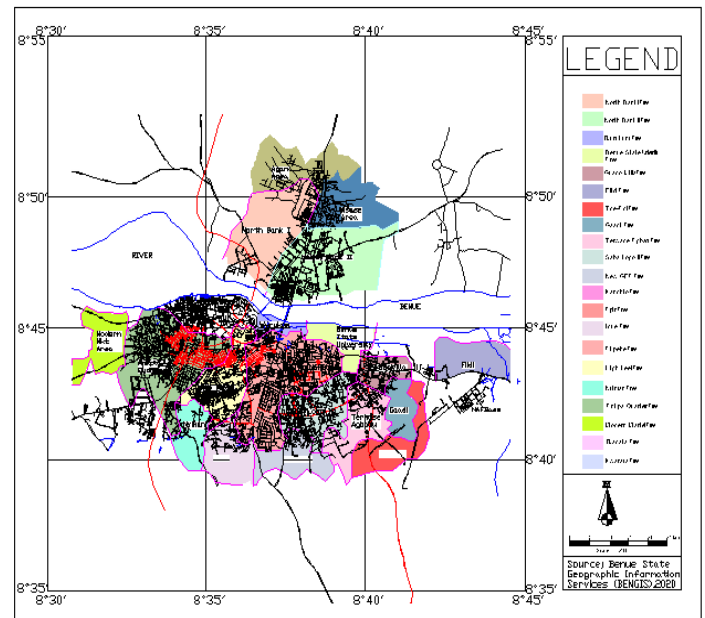


Figure 1: Street map of Greater Makurdi Township

Source: SCS & ErdyJonix Design Group Limited (2023)

Results and Discussion

The outcome of this study is discussed under the appropriate headings, Tables and Figures.

Perception of Fear and Insecurity in Makurdi Town

Residents' perception regarding the time of occurrence and the recognised predominant crimes in the study area is presented in Table 1. The perception of fear and the sense of insecurity have a direct relationship with the time residents alleged that crime habitually occurs [16]; [17]. This information is contained in Table 1

Table 1. Spatial Distribution of Crime Occurrence in the last 10 years

Description	Frequency Distribution of the Crime Occurrences in the last Ten (10) Year Period			
	WEEKDAYS TOTAL		WEEKDAYS TOTAL	
	Day Frequency	Night Frequency	Day Frequency	Night Frequency
High Residential District				
Wadata Area	1	39	56	96
Akpehe Area	1	68	79	149
Medium Residential District				
High Level Area	2	23	19	44
Nyiman Area	2	38	18	58
Low Residential Districts				
Judges Quarters Area	1	1	3	5
Old GRA Area	1	1	5	7

Source: Authors' Fieldwork (2024)

Table 1 illustrates the uneven distribution of the prevalent crime rate across diverse residential neighbourhoods. For more clarity, Figure 1 graphically presents the crime prevalence rate in the diverse residential neighbourhoods of Makurdi Town.

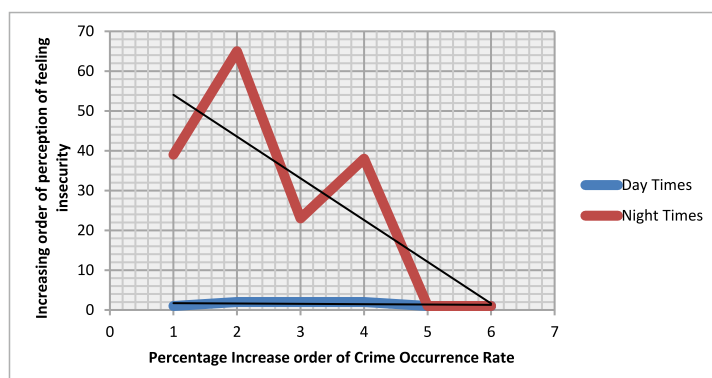


Figure 2: Perception of Crime Occurrence during Weekdays in Day and Night times

Source: Authors' Fieldwork, (2024)

The graph illustrates the intensity of crime occurrence during weekdays, both during the day and night, as perceived by residents, indicating that most crimes identified as challenges in the South Bank region of Makurdi town occur during the daytime. This study found that 33.3% and 44.4% of residents in the high density residential district and medium density residential neighbourhoods, respectively, perceived their risk of being the highest victimised on weekdays during the daytime. Correspondingly, 22.3% of the respondents assert that most recognised misconduct occurs in the South Bank region of Makurdi town, typically during weekdays in the daytime, in low-density residential districts. Again, the result established that 62.3% and 36.5% of the residents were in the high-density residential district and medium-density residential areas,

respectively. They alleged that their highest risk is being a victim of crime at night during the weekends. Similarly, 1.2% of the residents in low-density residential districts perceived being at risk of most of the identified conduct disorder occurring in the south bank region of Makurdi town at weekends during nighttime.

Furthermore, the results on residents' perceptions of crime prevention and feelings of insecurity in the South Bank Region of Makurdi during daytime and nighttime are graphically illustrated in Figure 3.

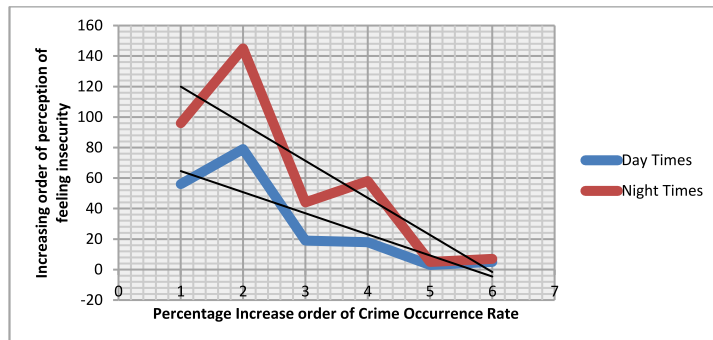


Figure 3: Perception of Crime Occurrence at Weekends during Day and Night times
Source: Authors' Fieldwork (2024)

The graph in Fig. 3 illustrates the intensity of crime occurrence on weekends, both during the day and night, as perceived by residents, indicating that most crimes identified as challenges in the South Bank region of Makurdi town occur during the daytime. The study found that 83.9% of residents in the high-density residential district and 23% in the medium-density residential areas perceived their risk of being the highest victimised at weekends during the day. Similarly, 6.9% of the residents perceived that most of the identified conduct disorder in the South Bank region of Makurdi town occurred during weekdays in the daytime, particularly in low-density residential districts. Further analysis revealed that 67.9% and 28.7% of residents in the high-density residential district and medium-density residential areas, respectively, perceived their highest risk of being a crime victim on weekends during nighttime.

Similarly, 3.4% of the respondents in low-density residential neighbourhoods perceived themselves as being at risk of most of the identified misconduct occurring in the South Bank region of Makurdi town on weekends during nighttime. The results also indicate significant disparities in the time of crime occurrence in different residential neighbourhoods in Makurdi town. The chi-square values of $\chi^2 = 101.841$ and $\chi^2 = 123.511$ were significant at $p = 0.013$ and $p = 0.006$, respectively. These computations were performed for both weekdays and weekends, as well as during daytime and nighttime hours.

The research findings indicate that various crimes occur in Makurdi town at varying times in the three residential neighbourhoods. There is a documented palpable sense of insecurity, particularly in the form of misconduct and public disorder, in the South Bank region of Makurdi town.

In summary, it was evident that the perception of crime prevention and the sense of insecurity at night were documented in all three residential neighbourhoods of Makurdi town. However, the study recognised that residents in high-density residential neighbourhood districts felt the highest risk of insecurity, and residents in medium-density residential neighbourhood districts felt a moderate level of insecurity.

On the extreme, the residents in the low-density residential neighbourhood district felt the lowest risk of insecurity, as illustrated in Figure 4.

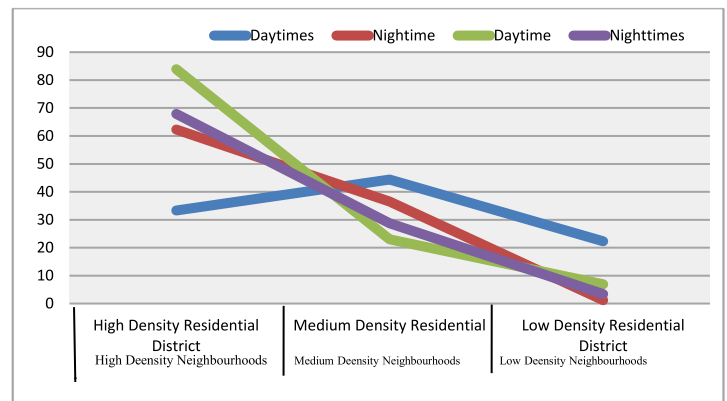


Figure 4: Percentage Distribution of Feeling of Insecurity in the Study Area.
Source: Authors' Fieldwork (2024)

Figure 4 conforms to the submissions of [18], who contended that the sense of insecurity directly relates to the use of built environment design, architectural, and land-use elements of the space. There are substantial variations in the feelings of insecurity among residents in diverse residential neighbourhoods of Makurdi town. Regarding safety at night, there are significant differences in the perception of insecurity, as observed at $\chi^2 = 109.715$, with a p-value of 0.000. As the crime occurrence index declines from low-density residential areas to medium- and high-density neighbourhoods, the nighttime perception of insecurity further declines as the distance from the traditional town centre increases through the medium to low-density neighbourhoods. This study has highlighted a direct relationship between residents' perceptions of insecurity and the occurrence of crime in Makurdi town. This finding further validates the outcomes of several studies conducted by researchers such as [19] in *London City Estate*, [16] on the *Spatial Pattern of Crime in Israel*, [20] on the *Crime Victimisation Survey in Lagos*, and [17] on the *Spatial Pattern of Crime in Indian cities*.

Furthermore, the field data indicates significant variation between the perception of insecurity at night, and the day time occurrence in all the residential neighbourhoods in Makurdi town with a $\chi^2 = 88.715$ at $p = 0.003$. Thus, crime occurrence and feelings of insecurity were evident in the three residential neighbourhoods at both daytime and nighttime, revealing significant variations in residents' levels of insecurity across different neighbourhoods.

Relationship between Environmental Design Principles Application and Crime Occurrence in the Study Areas

The investigation into the neighbourhood's insecurity index rate and the application of environmental design principles aims to determine whether this relationship directly affects crime occurrence and increases feelings of insecurity. By applying environmental design, the riskiness of the area and the attractiveness of the targets are reduced. Table 2, therefore, presents the multiple correlation analysis indicating the influence of neighbourhoods' environmental design principles applied and the rate of crime reports in the study areas.

Table 2 Correlation Analysis of the Relationship between Environmental Design Elements and Crime Occurrence in the Study Areas

Correlation Analysis of the Relationship between Design Elements and Crime Occurrence				
Design Elements D	Crime Occurrence		Correlation Analysis	
x	y	xy	(x) ²	(y) ²
147	96	14747	21609	10201
221	149	34476	49729	24336
223	44	17617	49729	5625
244	58	24400	54656	10000
256	5	5376	65536	441
191	7	4446	29241	676
1282	359	101082	270500	51279

The discernible relationship was tested using Pearson's multiple correlation analysis, as expressed below in equation 1.

$$r = \frac{n\sum xy - \sum x \sum y}{\sqrt{\{n\sum x^2 - (\sum x)^2\}\{n\sum y^2 - (\sum y)^2\}}} \dots\dots\dots \text{eqn1}$$

Where r is the multiple correlation analysis, n 6, $\sum x=1282$ sum of neighbourhoods environmental design principles applied, $\sum y=359$ sum of crime prevalent rate, $\sum x^2=270500$ sum of squares of neighbourhoods environmental design principles applied, $\sum y^2=51279$ sum of squares of the crime prevalent rate and $\sum xy=101082$ multiplication of the neighbourhoods environmental design elements and crime prevalent rate. Hence, the correlation analysis tested shows that the value of r is -0.12.

Therefore, since the value of r is -0.12, which is close to zero, the multiple correlation analysis of -0.12 indicates an inverse relationship between the application of environmental design principles and the feeling of insecurity in the study area. This result implies that the higher the application of environmental design principles, the lower the rate of crime occurrence and the rate of insecurity index.

Conclusion

From the findings, it is notable that a palpable sense of insecurity is prevalent in Makurdi Town and its environs, significantly affecting the quality of life of the residents. As long as fear persists among the people, residents will clamour for appropriate actions to safeguard their neighbourhoods. Given this scenario, it is pertinent to assert that there is a need for holistic strategies to be implemented, such as properly laid-out interconnected streets that will help reduce crime and protect residents from the pervasiveness of housebreaking, burglary, and store breaking. There should be environmentally friendly designs that are visually unobstructed and devoid of places of concealment, offering the most protection against crime.

Recommendations

1. Landscape redesign should incorporate features like flower beds, trees, and shrubs that do not encourage areas of concealment or obstruct the view of the immediate environment to minimise criminal activities.

2. Artificial surveillance combined with natural surveillance could be incorporated into the physical planning and design elements of Makurdi town and its environs. This process will ensure secure access and control of various security personnel and equipment, thereby maintaining visual control over the space through organised security patrols, human guard posts at night and during the day, in addition to the positioning of guard dogs.

3. Real-time electronic monitoring devices, such as motion sensor cameras, are used to record activities within their viewing range in any obscure part of the building and transmit

signals to a designated terminal inside. The most sophisticated of these electronic monitoring devices is Closed Circuit Television (CCTV) because it has the capacity to send fast signals and alert the nearest receiving station. However, most parts of the residential neighbourhoods of Makurdi town are desolate at night and are characterised by buildings with low socio-economic status predominantly occupied by small-scale businesses.

4. These desolate neighbourhoods have empowered burglars to operate with minimal resistance from the people, especially during store break-ins. It is therefore important to promote lively activities both day and night by establishing public places such as cinemas, clubhouses, and hosting active entertaining events.

5. Additionally, the streets in the town should be well-lit with adequate and functional streetlights.

There is also a need for a committee to handle settlement and community check-in and out documentation. Additionally, policing guards, coupled with adequate public education about crime and crime prevention, should be a priority.

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