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COMPARATIVE ANALYSIS OF CRIME PATTERNS ACROSS GEOPOLITICAL ZONES IN NIGERIA: STATISTICAL EVIDENCE FROM 2023 DATA

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Abstract

Crime poses profound challenges to security, governance, and development, yet empirical comparative evidence on how offences vary by region remains limited. This study therefore investigates spatial disparities in crime patterns across Nigeria's six geopolitical zones using 2023 National Bureau of Statistics (NBS) data. It focuses on three major categories (offences against persons, property, and lawful authority) to identify which crime types dominate and whether regional differences exist. A quantitative comparative design was employed, drawing on secondary data obtained from the National Bureau of Statistics. The dataset comprises aggregated counts of reported offences across geopolitical zones. Analytical procedures included visual representation through bar charts, and inferential tests. Assumption tests of two-way ANOVA were first assessed using the Kolmogorov–Smirnov, Shapiro–Wilk, and Levene's tests. Where assumptions were violated, data were log-transformed or analysed with non-parametric alternatives (Kruskal–Wallis and Friedman tests). The findings demonstrate that offence type is a significant determinant of crime variation, with assault, burglary, and breach of peace emerging as dominant categories. Property crimes revealed both offence-type and regional effects, with burglary and unlawful possession disproportionately high in the South West and robbery most prevalent in the South South and North Central. In contrast, offences against persons and lawful authority were mainly shaped by offence type rather than geography. These patterns highlight the interaction between urbanization, socio-economic disparities, and political unrest in shaping Nigeria's crime landscape. On the policy front, urban policing reforms, targeted highway security, and conflict-resolution mechanisms are critical to addressing the dominant offences in their respective regions. Beyond policing, sustainable reductions in crime depend on tackling structural drivers such as poverty, unemployment, and weak judicial institutions.

Keywords: Crime patterns, geopolitical zones, offences, ANOVA, Kruskal–Wallis method, Friedman test.

Introdution

Crime is a global concern that touches nearly every society, influencing not just safety but economic growth, investment decisions, and the wellbeing of citizens. According to the 2023 Global Organized Crime Index, 83% of the world's population now live in conditions marked by high criminality (Global Initiative Against Transnational Organized Crime, 2023). Meanwhile, Nigeria is facing particularly serious challenges: in 2023 the country recorded 11,794 fatalities from various forms of violence, down from 15,493 in 2022 (Nigeria Watch, 2023). The report further showed that fatalities linked specifically to criminal acts (excluding war, insurgency, or political violence) numbered 5,356 in 2023. Also, Nigeria's intentional

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homicide rate, one of the more reliable proxies for measuring severe violent crime, remains among the highest globally (United Nations Office on Drugs and Crime, 2023a).

Nigeria is a highly diverse country in terms of geography, population, and socio-economic conditions, and these differences align broadly with its six geopolitical zones (North West, North East, North Central, South West, South East, South South). For example, poverty is widespread: in 2023, about 38.9% of Nigerians (around 87 million people) were estimated to be living below the poverty line (World Bank, 2025). The North Central and North West zones, in particular, have borne the brunt of violent crime and deaths from criminal acts. The Nigeria Watch report shows that out of the 5,356 lives lost to crime that year, the North Central and North West zones had the highest numbers of fatalities (Nigeria Watch, 2023). Within those, states like Niger (579 deaths) and Kaduna (539) were among the worst affected. Meanwhile, zones in the south (such as the South East, South South and certain states in the South West) registered far fewer fatalities from violent crime (Nigeria Watch, 2023). These contrasts suggest that regional factors, such as economic deprivation, rural vs urban population mix, local security presence, and socio-political conditions, shape where and how much crime is occurring.

One of the key reasons crime rates differ across Nigeria's geopolitical zones is the uneven distribution of socio-economic and environmental risk factors. Youth unemployment, poverty, weak institutional infrastructure, and social exclusion tend to be more intense in some zones than others, creating fertile ground for crime. For example, a recent qualitative study found that in Nigeria, youth unemployment and limited opportunities strongly correlate with increases in cybercrime, violent extremism, and other criminal behaviours, young people in zones with fewer economic opportunities are more likely to turn to these forms of crime (Onyeachu, Okoro, and Ugwuoke, 2025). In Northern Taraba (North East zone), studies show that theft makes up about 20.9% of criminal incidents, while thuggery/cultism account for around 12.9%, with armed robbery at 10.8% and kidnapping at 6.2% (Ojeh *et al*., 2023). These crimes are concentrated in more densely populated or poorly policed areas. Also, spatial studies in North Western Nigeria identify that high population density, inadequate infrastructure (roads, lighting, policing), and economic deprivation are positively associated with higher crime incidence (Gulma, 2024).

A key objective of this study is to map out spatial disparities in crime across Nigeria's geopolitical zones and consider what they mean for national security and policy. Recent GIS-based research shows that crime incidents are unevenly distributed: states in the North and Middle Belt, particularly in zones like North West and North Central, are persistently high in violent fatalities and other serious crimes, compared with many southern states. For example, Ukoji and Ukoji (2023) found that most violent deaths in Nigeria in 2023 were concentrated in the North of the country. Similarly, a spatial analysis covering 2021-2023 shows that crime occurrences across the 36 states and the FCT are far from uniform, revealing clusters or "hotspots" in certain zones (Idhoko, Daisi, and Ogenerume, 2005). These spatial disparities carry serious implications: zones that are more crime-affected often suffer reduced investment, diminished public trust, weaker governance, and strained security resources. Furthermore, organized crime (kidnapping, trafficking, and banditry) tends to exploit zones with porous borders or less law enforcement presence, posing threats not only at the local level but across state lines and even nationally (United Nations Office on Drugs and Crime, 2023b). Therefore, understanding where crime is most severe, and why, is essential for designing effective security

policies, allocating policing or military resources, and tailoring preventive measures to the needs of specific zones.

This study matters in the extant literature for three key reasons. First, crime is not just a criminal justice issue, it is deeply tied to human rights, governance, and trust in state institutions. For example, the United Nations Office on Drugs and Crime (UNODC) shows that organized crime in Nigeria involves kidnapping, human trafficking, cultism, and smuggling, among other issues, posing serious threats to public safety and sovereignty (UNODC, 2023b). Second, socio-economic inequalities and unemployment are strongly linked with crime, which means crime has broader effects than just immediate loss of life or property. A study on the nexus between unemployment and crime in Nigeria found that a 1% rise in unemployment leads to about a 0.0830 increase in the crime rate (Ojo, Omojuwa, and Oludare, 2021). Lastly, ineffective judicial processes and corruption weaken the state's ability to respond. The 2023 Country Reports on Human Rights Practices notes backlogs in trials, shortage of judges, bureaucratic delays, and undue political influence as factors undermining the legal system's responsiveness (U.S. Department of State, 2023).

The remainder of this paper is organized into four sections. Section 2 provides a review of relevant literature. Section 3 outlines the methodology, including the study design, data sources, and statistical techniques employed. Section 4 presents and discusses the empirical results, drawing attention to both descriptive patterns and inferential test outcomes. Finally, Section 5 offers the conclusion, emphasizing the main findings and their implications for crime prevention policies and national development strategies.

Literature Review

Theoretical review

This study reviews five relevant theories (social disorganization, strain/anomie, routine activity, rational choice and situational crime prevention, and broken windows), as they explain Nigeria's crime disparities over time.

Social Disorganization Theory: It argues that crime is a product of community-level structural characteristics such as poverty, residential instability, and ethnic heterogeneity, which weakens informal social control mechanisms (Shaw and McKay, 1942; Sampson and Groves, 1989). In disorganized communities, institutions like schools, families, and local associations lose their ability to regulate behaviour effectively, creating fertile ground for crime. Later developments, such as collective efficacy theory, refined this perspective by emphasizing the role of mutual trust and willingness of residents to intervene in maintaining social order (Sampson, Raudenbush, and Earls, 1997). This perspective is particularly useful in Nigeria, where certain zones are marked by systemic poverty, communal tensions, and weak local governance structures. For instance, the persistence of violent crime in northern zones can be explained in terms of disorganized social networks caused by displacement, poverty, and weak institutional frameworks. Conversely, in highly urbanized zones like the South West, high residential turnover and anonymity in large cities erode communal bonds, thereby creating opportunities for crimes such as burglary and assault. Social disorganization theory thus provides a lens for linking community structure to spatial variation in crime.

Strain and Anomie Theories: The theory, first articulated by Merton (1938), posits that crime arises when there is a disjunction between culturally prescribed goals (e.g., wealth, success) and the availability of legitimate means to achieve them. When individuals or groups cannot

access legitimate pathways, they may resort to illegitimate strategies, including crime, to attain their goals. Agnew's (1992) general strain theory expanded on this by incorporating a wider range of stressors, such as the loss of positive stimuli or exposure to negative stimuli, which create negative emotions like frustration and anger that can lead to crime. In Nigeria, strain theory explain why property crimes such as armed robbery, burglary, and forgery are more common in certain zones. High unemployment, economic inequalities, and political marginalization foster strain that pushes individuals towards crime as an adaptive response. The prevalence of kidnapping for ransom in the North Central and South East is an example of a manifestation of economic strain, where individuals pursue financial gains through illegal avenues due to blocked legitimate opportunities. Thus, strain and anomie perspectives link Nigeria's structural inequalities to patterns of property and violent crime.

Routine Activity Theory: Routine activity theory, developed by Cohen and Felson (1979), argues that crime occurs when three conditions converge in space and time: a motivated offender, a suitable target, and the absence of a capable guardian. Unlike theories that focus on offender motivation, routine activity theory emphasizes the role of everyday activities, social mobility, and environmental contexts in shaping opportunities for crime. The theory has been applied extensively in urban contexts, where lifestyle patterns and target availability strongly influence crime rates. Applied to Nigeria, routine activity theory is useful for explaining high levels of burglary, assault, and theft in southern urban centres such as Lagos and Onitsha. In these areas, dense populations, busy commercial districts, and high mobility increase the availability of suitable targets while stretching law enforcement capacity. Similarly, weak guardianship in conflict-affected northern communities provides opportunities for crimes such as cattle rustling and highway robbery.

Rational Choice and Situational Crime Prevention: The rational choice perspective posits that offenders make calculated decisions to commit crimes after weighing the perceived risks, efforts, and rewards (Cornish and Clarke, 1986). Though bound by incomplete information and situational constraints, offenders act purposefully to maximize benefits while minimizing risks. Situational crime prevention, building on this framework, emphasizes reducing opportunities for crime by manipulating the environment to increase the effort and risks while reducing the rewards associated with offending (Clarke, 1997). In Nigeria, rational choice and situational crime prevention perspectives help explain organized property crimes and high-profile offences. Oil bunkering in the South South or cybercrime in the South West are examples which can be interpreted as rational calculations where offenders exploit high-reward opportunities in the absence of strong guardianship. Likewise, armed robbery and unlawful possession reflect situations where risks are perceived as low due to weak law enforcement or corruption.

Broken Windows Theory: The theory, introduced by Kelling and Wilson (1982), proposes that visible signs of disorder (e.g., vandalism, public drinking, loitering) signal weak social control, thereby inviting further crime and escalating into more serious offences. The theory emphasizes the symbolic role of disorder in undermining community norms and citizen confidence, which in turn reduces informal social control and encourages deviance. Although influential in shaping policing strategies worldwide, it has been subject to debate, with critics arguing that the causal link between disorder and crime is not always consistent (Sampson and Raudenbush, 1999). In Nigeria, broken windows theory is relevant for understanding offences against lawful authority, such as breach of peace, arson, and political unrest. In the South East, for instance, recurrent protests, attacks on public buildings, and enforcement of "sit-at-home"

orders create visible disorder that may embolden further deviant acts. Similarly, weak enforcement of public order in some urban areas of the South West contributes to high rates of breach of peace. While the theory does not fully account for structural drivers of crime, it highlights the importance of visible order-maintenance and responsive policing in preventing escalation.

Brief empirical review

Opasina (2016) examined the relationship between fragility and crime in Nigeria and Côte d'Ivoire. The research involved fieldwork in the two West Africa nations, gathering perspectives from representative population samples using surveys, in-depth interviews, and focus group discussions. Results indicated that organised crime, including kidnapping for ransom, terrorism (particularly associated with Boko Haram), sexual assault of minors, and the 'baby factory' industry, constitutes significant criminal threats stemming from state fragility in Nigeria, while cybercrime is widespread in Côte d'Ivoire.

Adeyemi *et al*. (2021) examines the spatial distribution of crime incidents in Nigeria and assesses the link between regional variations and the socio-demographic factors influencing crime, utilising the 2017 NBS reported crime statistics. It examined the spatial patterns of four crime categories (armed robbery, theft, rape, and kidnapping) concerning their geographical distributions across Nigerian states. The comprehensive Bayesian technique utilising Markov Chain Monte Carlo simulation indicates that the unemployment rate is positively correlated with rape, kidnapping, and armed robbery, while exhibiting a negative correlation with stealing. The findings further indicated a positive association between gross national income and the percentage of the male population with all types of crime. The variation in total crime events related to clustering effects was 29.27% for armed robbery, 31.30% for theft, 27.07% for kidnapping, and 41.40% for rape instances.

Otu and Apeh (2022) evaluated the influence of crime on the socio-economic growth of Oyo State citizens and the initiatives of Amotekun in crime prevention. A sample of 139 respondents was drawn from a population of 1,602,979 to obtain information pertinent to the study questions posed. The study revealed that criminal activities have profoundly impacted the socio-economic development of Oyo State, manifesting as a drop in investments, restricted mobility, disturbance of social order, disorder, and a hindrance to community collaboration and trust. The challenges identified in regional policing encompass community mistrust, strained ties between governmental security agencies and community members, meddling by influential figures, insufficient infrastructure, inadequate financing, and a lack of contemporary weaponry. John *et al*. (2023) investigated the increasing prevalence of armed banditry and its impact on human security in Nigeria's Northwest geopolitical zone. A structured questionnaire was employed to collect data from a sample of six hundred respondents selected from five local governments across four states: Kaduna, Kano, Katsina, and Kebbi. Findings from the chi-square test indicates that armed banditry has impacted human security in Nigeria's Northwest Geopolitical Zone. Armed banditry is propelled by youth unemployment, political motivations, permeable international borders, and poverty. The findings indicate that the Federal Government's deployment of the military has not contributed to combating armed banditry; instead, it has resulted in the dispersal of these criminals into previously unaffected regions. It was ultimately determined that the increase in banditry nationwide had extensive adverse effects on human security in Nigeria.

Agbongiasede (2024) analyses the diverse categories of offences perpetrated at public universities within the South-South geopolitical zone of Nigeria. A questionnaire was employed to assess the correlation between policing and crime control within the universities of the region. Results indicated that the diverse offences perpetrated by students in universities within the South-South geopolitical zone of Nigeria included unlawful conduct, abuse or unauthorised use of university papers, theft, rape, and sexual assault, among others. The least prevalent crime at universities was plagiarism.

Badmus and Alagbe (2024) examined the correlation between insecurity and unemployment across several geopolitical zones in Nigeria utilising statistics data from NBS (2020). The study specifically assessed the unemployment rate and the level of insecurity across each of the six geopolitical zones. The results indicated that the South-Southern region of Nigeria experienced the highest unemployment rate at 34.66%, but the North-Eastern region faced the most severe insecurity rate at 80%. The Z-test results confirmed an insignificant relationship between unemployment and insecurity throughout Nigeria's various geographic zones.

Idhoko, Daisi, and Ogenerume (2025) examine the spatial distribution and trends of crime in Nigeria from 2021 to 2023. Utilising crime data obtained from the official website of Nigeria's Ministry of Police Affairs; spatial analysis was applied to assess the distribution and concentration of crime throughout the 36 states and the Federal Capital Territory. The findings indicated that crime during the specified periods is spatially concentrated, with the South West exhibiting the largest incidence of property crimes, the North Central region most affected by kidnapping, and the North East characterised by insurgency-related offences. Urban locales like Lagos, Abuja, and Port Harcourt exhibited elevated rates of burglary and robbery, but rural locations documented increased occurrences of communal conflicts and banditry. GIS hotspot study validated that crime distribution is non-random, highlighting the necessity for targeted policy responses.

Okunlola *et al*. (2025) employed spatial analysis and Poisson time trend analysis of violence-related mortality cases in Nigeria to elucidate dynamics, evaluate public health burden, estimate relative risk, identify hotspots, and guide policy interventions to mitigate violence in severely impacted regions. The findings indicated that 195,170 instances were documented from 2006 to 2023, with Borno (46,425), Lagos (12,086), and Kaduna (10,548) representing 24%, 6%, and 5% of the total cases, respectively. Conversely, Ekiti State (752) recorded the fewest cases. Significantly, mortality rates in 2014 and 2015 represented 12% and 9% of the total fatalities due to violence during the examined period. The violent death rate exhibited distinct regional disparities, with more than fifty percent of all fatalities occurring in the North Central and North East regions. The North West and South South areas supplied 12% and 14%, respectively, while the South East and South West regions contributed 8% and 10% of the remaining share, respectively. These data indicate statistically substantial socioeconomic and public health disparities between the northern and southern parts of the country. Analysis of relative risk indicated that Plateau, Cross River, and Anambra maintained stable incidence rates, whereas 27 states exhibited increased relative risk, and seven states experienced a little decrease in violence-related fatalities.

METHODOLOGY

Study design and data sources

This study uses a quantitative, comparative design to examine differences in crime across Nigeria's six geopolitical zones in 2023. Three offence families are analysed: offences against

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persons, offences against property, and offences against lawful authority. Data were obtained from secondary sources compiled by the National Bureau of Statistics (2024) in collaboration with the Nigeria Police Force. The dataset consists of pre-existing, aggregated counts of reported crimes by offence type and geopolitical zone for the year 2023. Analyses combined descriptive statistics and inferential tests. The variable is structured as Y_{ij}, denoting the count of reported cases for offence type *i* (*i* =1, …, *k*) in zone *j* (*j* = 1, …, b). For each offence family we have *k* = 5 offence types and *b* = 6 zones, yielding *k* × *b* = 30 cells.

Data preprocessing and transformation

Crime counts are right-skewed and often heteroscedastic. To stabilize variance and approximate normality for ANOVA, this study applied a log transformation to the cell counts prior to modelling:

$$Y_{ij}^{*} = \log(Y_{ij}) \quad (1)$$

If zero counts exist in other settings, a small offset (for example, $\log(Y_{ij}+1)$) is recommended.

For transparency, all assumption tests were performed on the transformed data when the goal was ANOVA, and on the raw data when the goal was to decide between parametric and non-parametric approaches (Box and Cox, 1964).

Assumption checks

Prior to conducting a two-way Analysis of Variance (ANOVA), it is critical to evaluate whether the data satisfy the underlying assumptions of the method. Two central assumptions include (i) normality of the data (or residuals) and (ii) homogeneity of variances across groups. Testing these assumptions ensures that the F-test statistics generated in ANOVA remain valid and interpretable.

Normality test

The normality assumption implies that the distribution of the data (or residuals) within each group follows a Gaussian distribution. To formally test this, both the Kolmogorov–Smirnov (K–S) and the Shapiro–Wilk tests are commonly applied. The K–S test compares the empirical distribution function $F_n(x)$ of the sample with the theoretical cumulative distribution function $F_0(x)$ of a normal distribution, using the test statistic:

$$D = \sup_x \left| F_n(x) - F_0(x) \right| \quad (2)$$

where $\sup_x$ denotes the supremum of the absolute difference across all values of *x* (Kolmogorov, 1933; Smirnov, 1948).

The Shapiro–Wilk test is considered more powerful for small to moderate samples. Its test statistics are expressed as:

$$W = \frac{\left(\sum_{i=1}^{n} b_i x_{(i)} \right)^2}{\left(\sum_{i=1}^{n} (x_i - \bar{x}) \right)^2} \quad (3)$$

where $x_{(i)}$ are the ordered sample values, $\bar{x}$ is the sample mean, and b_i are constants derived from the expected values of order statistics of a normal distribution (Shapiro and Wilk, 1965).

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A significant departure from normality indicates that transformations or non-parametric alternatives may be necessary.

Homogeneity of variances test

The homogeneity of variances assumption requires that the variance of the dependent variable be equal across all groups defined by the independent factors. Levene's test is widely used for this purpose. It evaluates whether group variances are equal by transforming the data into absolute deviations from the group average:

$$Z_{ij} = \left| Y_{ij} - \bar{Y}_i \right| \tag{4}$$

where Y_{ij} is the observation from the *j*th case in the *i*th group, and $\bar{Y}_i$ is the average of the *i*th group. The Levene statistics are then given by:

$$W = \frac{N-k}{(k-1)} \cdot \frac{\sum_{i=1}^{k} n_i (\bar{Z}_{i.} - \bar{Z}_{..})^2}{\sum_{i=1}^{k} \sum_{j=1}^{n_i} (Z_{ij} - \bar{Z}_{i.})^2} \tag{5}$$

where *k* is the number of groups, n_i the sample size of the *i*th group, and *N* the total sample size (Levene, 1960). A significant Levene's test suggests that variances differ across groups, which violates the ANOVA assumption.

Two-way ANOVA test

ANOVA was employed to analyse the variation in crime data across multiple offence types and geopolitical zones. The estimator is suitable when there are two independent categorical factors and a continuous dependent variable (crime counts after transformation). In this study, the two factors are offence type and geopolitical zone, while the dependent variable is the reported number of crimes. This approach allows for testing both main effects (the effect of each factor independently) and interaction effects (the combined influence of both factors) on crime levels (Montgomery, 2017). Mathematically, the two-way ANOVA model is expressed as:

$$Y_{ijk} = \mu + \alpha_i + \beta_j + (\alpha\beta)_{ij} + e_{ijk} \tag{6}$$

where: Y_{ijk} is the observed crime count for the *k*th replication under offence type *i* and zone *j*; μ is the overall mean; α_i is the effect of the *i*th offence type (i = 1, 2, …, a); β_j is the effect of the *j*th geopolitical zone (j = 1, 2, …, b); $(\alpha\beta)_{ij}$ represents the interaction effect between offence type and zone; and e_{ijk} is the random error term, assumed to follow a normal distribution with mean zero and constant variance σ^2.

Non-parametric tests

When the assumptions of normality and homogeneity of variance are not satisfied, non-parametric alternatives provide robust methods for hypothesis testing. These approaches rely on the ranking of data rather than raw values, making them less sensitive to outliers and skewed distributions. In this study, two widely applied non-parametric tests were adopted: the Kruskal–Wallis and the Friedman tests.

Kruskal–Wallis test

The Kruskal–Wallis test is a rank-based analogue of one-way ANOVA. It is appropriate when comparing the distribution of a continuous variable across two or more independent groups,

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without requiring normality. The test is based on the sum of ranks for each group and is expressed as:

$$H = \frac{12}{N(N+1)} \sum_{i=1}^{k} \frac{R_i^2}{n_i} - 3(N+1) \quad (7)$$

where: k is number of groups; n_i is sample size of the ith group; $N = \sum_{i=1}^{k} n_i$ is total sample size; and R_i is sum of ranks for the ith group. Under the null hypothesis that all groups come from the same distribution, the statistic H approximately follows a chi-square distribution with $k-1$ degree of freedom (Kruskal and Wallis, 1952).

Friedman test

The Friedman test extends the logic of non-parametric testing to blocked or repeated-measures designs, making it a suitable counterpart to the two-way ANOVA in settings with repeated measures or matched blocks. In this study, geopolitical zones were treated as blocks, and crime types as treatments. The statistics are stated as:

$$Q = \frac{12}{bk(k+1)} \sum_{i=1}^{k} R_i^2 - 3b(k+1) \quad (8)$$

where: b is number of blocks (e.g. zones); k is number of treatments (e.g. offence types); and R_i is sum of ranks assigned to treatment i across blocks. Statistic Q follows a chi-square distribution with $k-1$ degrees of freedom under the null hypothesis that the treatments do not differ (Friedman, 1937, 1940).

Hence, both tests provide reliable alternatives when ANOVA assumptions are violated. The Kruskal–Wallis test enables the comparison of crime patterns across offence types and zones without assuming normal distributions, while the Friedman test controls for zone-level effects by treating them as blocks. Thus, these non-parametric methods enhance the robustness of findings by ensuring that results are not biased by distributional irregularities or heterogeneity of variances.

Results

Offences against crimes

Table 1 presents reported cases of major offences against persons regarding murder, suicide, assault, rape, and kidnapping across Nigeria's six geopolitical zones in 2023. Findings revealed that the southern zones record much higher cases of assault and rape, while northern zones dominate in murder and insurgency-related crimes. This reflects urban–rural differences in reporting, policing, and crime typology. As regards murder cases, they are widespread, with the North East (593) recording the highest, slightly ahead of the South South (569) and North West (520). These three zones alone account for nearly half of all reported murders. The high figures in the North East likely reflect ongoing insurgency spillovers, inter-communal violence, and weak policing in rural areas. In the South South, persistent militancy, cultism, and oil-related conflicts may explain elevated murder counts. Meanwhile, the South East records the lowest figure (434), which, while still significant, may suggest stronger community policing structures or under-reporting compared to zones with more open conflict.

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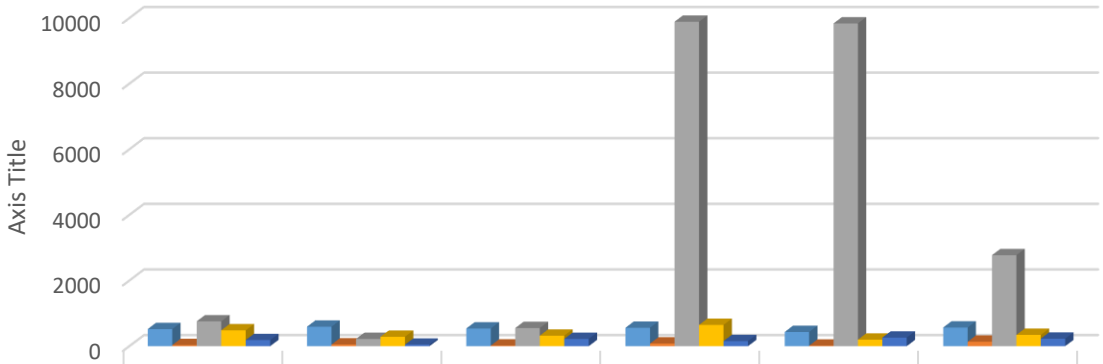

	North west	North east	North central	South west	South east	South south
Murder	520	593	539	562	434	569
Suicide	33	51	19	81	16	136
Assault	756	219	552	9887	9837	2773
Rape	483	287	320	647	197	344
Kidnapping	186	47	222	155	260	229

Figure 1: Offences against person
Sources: National Bureau of Statistics (2023)

Reported suicide cases vary considerably, with the South South showing an unusually high 136 cases, the largest of any zone. The South West follows with 81, while the North East (51) and North West (33) are much lower. The South East reports only 16 cases, the lowest nationwide. The higher figures in the South South and South West may be linked to urban pressures, unemployment, and mental health challenges in rapidly growing cities like Port Harcourt and Lagos. By contrast, lower numbers in northern zones may reflect under-reporting due to stigma or cultural silence around suicide.

The data on assault stands out dramatically. The South West (9,887) and South East (9,837) record staggering numbers compared to all other zones. In contrast, the North East has only 219 cases, the North Central 552, and the North West 756. This sharp north–south disparity suggests strong urban influences: densely populated southern cities (Lagos, Onitsha, Aba, Ibadan) experience more interpersonal disputes, traffic-related altercations, cult-related fights, and domestic violence cases that enter police records. The northern figures reflect either genuinely lower levels of reported assault or weaker reporting/recording mechanisms in rural areas.

Rape offences are most common in the South West (647) and North West (483), followed by the South South (344). The North East (287), North Central (320), and South East (197) show comparatively lower figures. Higher rape cases in the South West may be linked to large urban centres with better reporting structures but also higher risks of sexual violence. In the North West, ongoing farmer–herder clashes, insurgency spillovers, and weak law enforcement create environments where sexual violence can thrive. The South East's relatively low figure is surprising, especially given its high assault count, suggesting either cultural taboos around reporting rape or police under-classification of cases.

Kidnapping remains one of Nigeria's most worrying crimes. The North Central (222) and South East (260) have the highest numbers, followed closely by the South South (229). These

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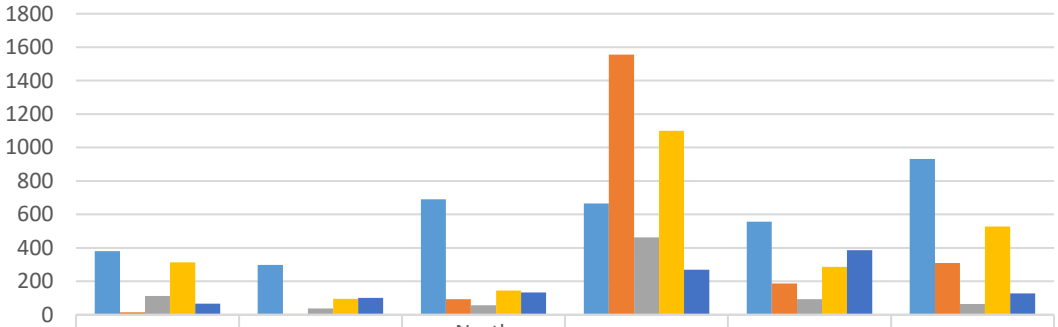
regions are notorious hotspots for ransom kidnappings, especially along highways and in rural communities. The North West (186), despite its reputation for banditry, records fewer official cases, likely due to overlapping classification of abductions with insurgency/armed bandit violence. The South West (155) has relatively fewer kidnappings, possibly because of stronger policing presence in Lagos and Ogun corridors. The North East (47) shows the lowest, though this could be due to under-reporting, as abductions in insurgency contexts are often classified under terrorism rather than kidnapping.

Offences against property

Table 2 presents reported cases of armed robbery, burglary, forgery, unlawful possession, and arson against property across the six geopolitical zones in Nigeria. The South South (932 cases) and North Central (691 cases) report the highest levels of armed robbery, followed closely by the South West (666). These zones have major economic hubs, highways, and oil installations, making them attractive targets for robbery. For instance, Port Harcourt, Lagos, and Abuja are high-traffic centres where robbery incidents often occur. The North East (299) and North West (381) record lower figures, possibly due to security presence tied to insurgency operations, though under-reporting is also likely. Concerning burglary, the South West (1,556 cases) overwhelmingly dominates burglary incidents, recording more than five times the figure in the South South (310) and ten times that of North Central (93). This suggests that burglary is more prevalent in densely populated urban settings, where wealth inequality and unemployment drive such offences. The North East (5) and North West (14) record very low burglary cases, which reflect rural housing structures and community watch systems that discourage this type of crime, or possibly under-recording.



	North west	North east	North central	South west	South east	South south
Armed robbery	381	299	691	666	556	932
Burglary	14	5	93	1556	188	310
Forgery	113	38	57	462	93	65
Unlawful posses	313	96	145	1101	287	528
Arson	66	100	134	269	386	128

Figure 2: Offences against property
Source: National Bureau of Statistics (2023)

Forgery is most pronounced in the South West (462 cases), followed by the North West (113) and South East (93). This pattern is unsurprising, as forgery typically thrives in more urbanized, commercialized regions with higher financial activity. The South West, with Lagos as the financial capital, is particularly vulnerable to document fraud, counterfeit banking instruments, and identity manipulation. The North East (38) records the lowest cases, reflecting weaker formal economic structures and fewer institutions where forgery could be detected. Regarding unlawful possession, the South West again leads with 1,101 cases, nearly double the South South (528) and triple the North West (313). Unlawful possession, often relating to weapons

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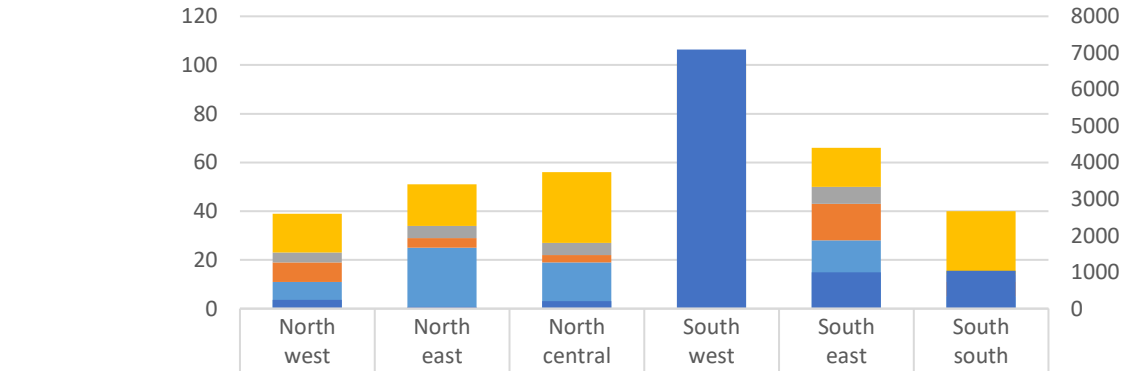
or contraband, reflects both urban crime networks and the availability of firearms in conflict-prone zones. High numbers in the South West and South South suggest challenges of policing large cities, seaports, and border corridors. Meanwhile, the relatively lower figures in the North East (96) may be due to cases being recorded under terrorism or insurgency categories rather than general property crime. For arson, the South East (386 cases) has the highest reported arson cases, followed by the South West (269) and North Central (134). This aligns with socio-political unrest in the South East, where separatist tensions and "sit-at-home" enforcement have led to attacks on public buildings, markets, and vehicles. The North East (100) and South South (128) also show significant figures, reflecting communal clashes and militancy. The North West (66) records the lowest arson, although banditry-related burning may be under-classified.

Offences against lawful authority

The offences against lawful authority presented in Table 3 sit closer to the machinery of the state and the justice system than conventional property or violent crimes. They include currency-related offences, perjury, escapes from custody, and breach of peace. Most categories have small counts, except breach of peace, which is an outlier with very large numbers in some zones. Currency forgery is highest in the South East (28) and North East (25), with the South West (23) and North Central (19) not far behind. The South South (5) and North West (11) are lower. Coining offences are rare everywhere, but the South East (15) and South West (13) top the list, followed by the North West (8). These patterns often track with the presence of commercial hubs, border traffic, and financial activity where counterfeit detection happens. In practical terms, more transactions and more banking oversight can both increase opportunities for forgery and increase detection. Low counts in some zones may reflect fewer opportunities, weaker detection, or both.



	North west	North east	North central	South west	South east	South south
Escape from custody	16	17	29	19	16	26
Perjury	4	5	5	46	7	3
Coining offence	8	4	3	13	15	6
Forgery of currency	11	25	19	23	28	5
Breach of peace	236	43	203	7091	991	1041

Figure 3: Offences against lawful authority
Source: National Bureau of Statistics (2023)

For perjury, the South West (46) is far ahead of other zones on perjury, with the South East (7) a very distant second. The remaining zones post single-digit counts. Perjury is typically revealed within formal judicial processes, so higher figures can signal heavier court caseloads, more complex litigation, or better case building by prosecutors. Given the South West's concentration of courts, law firms, and commercial disputes, it is plausible that the combination of volume and detection capacity pushes its perjury count upward. Conversely, low numbers

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elsewhere do not necessarily mean perjury is rare; they may indicate fewer cases reach a stage where perjury is charged. In the case of escape from custody, North Central (29) records the most escapes, followed by the South South (26) and South West (19). The North East (17) and South East (16) are close, with the North West (16) similar. Unlike perjury, these figures are more operational than institutional. Escapes can be linked to facility conditions, prisoner transport practices, staffing levels, and the profile of detainees being held. The spread across zones suggests the problem is national, but the North Central and South South spikes hint at specific pressure points that merit audit and investment in custody infrastructure and procedures.

As regards breach of peace, the South West (7,091) dwarfs every other zone. The South South (1,041) and South East (991) are substantial but far smaller, while the North West (236) and North Central (203) are modest, and the North East (43) is very low. Breach of peace is a broad, day-to-day policing category that can include disorderly conduct, public fights, unlawful assemblies, or disturbances. High numbers in the South West are consistent with large urban populations, dense commercial areas, nightlife economies, and more proactive disorder policing. Lower northern counts reflect real differences in urban form and social patterns, but they could also reflect divergent charging practices, community resolution, or under-recording. For regional contrasts in a sentence, Institution-heavy offences that rely on formal detection and processing (perjury, currency forgery) lean toward the southern urban zones, especially the South West and South East, while operational incidents like escape from custody are spread more evenly, with a spike in the North Central and South South. Every day public-order policing measured as breach of peace is overwhelmingly a South West story.

Assumption testing and non-parametric analysis of crime data across geopolitical zones

Table 1 presents the results of normality, homogeneity, and non-parametric analyses of crime data across geopolitical zones. As regards the offences against persons, the data strongly violate both normality and homogeneity assumptions (Kolmogorov–Smirnov and Shapiro–Wilk highly significant, Levene's $p = 0.002$). This confirms that Two-Way ANOVA is unsuitable for this dataset. The Kruskal–Wallis ($H = 22.17$, $p < 0.001$) and Friedman ($\chi^2 = 19.60$, $p < 0.001$) tests both detect significant disparities. The main driver is the extreme assault values in the South West and South East, alongside regionally clustered patterns of suicide and kidnapping. This points to non-uniform distribution of violent crimes, with some offences concentrated in specific zones.

For offences against property, the Kolmogorov–Smirnov test suggested approximate normality ($p = 0.19$), but the Shapiro–Wilk rejected it ($p < 0.001$), making the results inconsistent. However, Levene's test indicates equal variances ($p = 0.565$). In practice, this means the dataset is borderline: ANOVA might be attempted cautiously, but the evidence of non-normality means non-parametric alternatives are safer. The Kruskal–Wallis ($p = 0.025$) and Friedman ($p = 0.010$) tests confirm significant disparities, especially burglary and unlawful possession in the South West, robbery in the South South, and arson in the South East. Property crimes are thus zone-specific, linked to urbanization and political unrest.

Table 1: Normality, homogeneity, and non-parametric test results

Category	Test	Statistic	p-value	Decision (α = 0.05)
Offences against persons	Kolmogorov–Smirnov (Normality)	0.446	0.000	Reject H_0 (Not Normal)
	Shapiro–Wilk (Normality)	0.398	0.000	Reject H_0 (Not Normal)
	Levene's Test (Homogeneity)	5.55	0.002	Reject H_0 (Variances Not

				Equal)
	Kruskal–Wallis	22.17	0.000	Significant differences
	Friedman	19.60	0.001	Significant differences
Offences against property	Kolmogorov–Smirnov (Normality)	0.192	0.190	Fail to Reject H₀ (Normal)
	Shapiro–Wilk (Normality)	0.797	0.000	Reject H₀ (Not Normal)
	Levene's Test (Homogeneity)	0.75	0.565	Fail to Reject H₀ (Equal Variances)
	Kruskal–Wallis	11.19	0.025	Significant differences
	Friedman	13.33	0.010	Significant differences
Offences against lawful authority	Kolmogorov–Smirnov (Normality)	0.430	0.000	Reject H₀ (Not Normal)
	Shapiro–Wilk (Normality)	0.267	0.000	Reject H₀ (Not Normal)
	Levene's Test (Homogeneity)	2.03	0.121	Fail to Reject H₀ (Equal Variances)
	Kruskal–Wallis	19.43	0.001	Significant differences
	Friedman	17.47	0.002	Significant differences

Source: Authors' computation.

Concerning offences against lawful authority, this category fails the normality tests (both Kolmogorov–Smirnov and Shapiro–Wilk highly significant) but passes the homogeneity test (Levene's $p = 0.121$). The Kruskal–Wallis ($p = 0.0006$) and Friedman ($p = 0.002$) both confirm significant differences. Breach of peace overwhelmingly dominates in the South West, while perjury and currency forgery appear most in urbanized or court-heavy regions. This suggests that offences against authority are not evenly distributed and are shaped by institutional, judicial, and political dynamics.

ANOVA results for offences across geopolitical zones

Table 2 presents the ANOVA results for offences against persons, property, and lawful authority across geopolitical zones in Nigeria. In the case of offence against person, results reveal a significant effect of offence type ($F = 16.887$, $p = 0.0084$), indicating that not all categories of offences against persons (murder, suicide, assault, rape, kidnapping) occur at similar levels. This confirms the descriptive observation that assault cases dominate, particularly in the South West and South East, while suicide and kidnapping show zone-specific clustering. Conversely, the geopolitical zones effect was not significant ($p = 0.205$), implying that when considered overall, no zone consistently experiences higher or lower offences across all categories. Thus, variation is more strongly driven by crime type than by geography.

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Table 2: ANOVA results of offences against persons, property, and lawful authority

	Source of Variation	D.F.	Sum Sq	Mean Sq	F value	Pr(>F)	Decision (α = 0.05)
Offence Against Persons	Offences	4	8.609	2.1521	16.887	0.0084	Reject H_0 → Significant
	Geopolitical Zones	5	1.021	0.2042	1.602	0.205	Do not Reject H_0
	Residual	20	2.549	0.1274			
Offence Against Property	Offences	4	2.727	0.6819	5.156	0.0051	Reject H_0 → Significant
	Geopolitical Zones	5	3.506	0.7013	5.303	0.0030	Reject H_0 → Significant
	Residual	20	2.645	0.1322			
Offence Against Lawful Authority	Offences	4	14.168	3.542	25.201	0.0013	Reject H_0 → Significant
	Geopolitical Zones	5	1.861	0.372	2.648	0.054	Do not Reject H_0
	Residual	20	2.811	0.141			

Source: Authors' computation.

For property-related offences, both offence type (F = 5.156, p = 0.0051) and geopolitical zone (F = 5.303, p = 0.0030) were statistically significant. This means that not only do crime types such as burglary, forgery, and arson differ in prevalence, but their incidence is also unevenly distributed across Nigeria's zones. For example, burglary is disproportionately high in the South West, while armed robbery dominates in the South South and North Central. This suggests that both structural urban dynamics and regional socio-political factors shape property crime patterns.

As to offence against lawful authority, the analysis shows a strong offence-type effect (F = 25.201, p = 0.0013), confirming that certain offences against authority (notably breach of peace in the South West) occur far more frequently than others such as currency forgery or perjury. However, the zone effect was not significant (p = 0.054), suggesting that after accounting for offence type, geopolitical zones do not exhibit consistent differences in the overall incidence of authority-related crimes. This pattern implies that offences against authority are dominated by specific categories (like breach of peace) rather than general regional trends.

Discussion of findings

The two-way ANOVA analysis revealed that offence type is a more consistent determinant of variation than geopolitical zone in explaining crime patterns, particularly for offences against persons and lawful authority. This aligns with Opasina (2016), who linked organised crimes like kidnapping and terrorism to state fragility, suggesting that structural weaknesses transcend zone boundaries. Similarly, Adeyemi *et al*. (2021) showed that socio-demographic factors, especially unemployment and income levels, strongly correlate with crime incidence across states, underscoring that offence types such as armed robbery, rape, and kidnapping are structurally driven rather than geographically bound. However, for offences against property, both offence type and zone effects were significant, supporting Idhoko, Daisi, and Ogenerume (2025), who demonstrated that property crimes like burglary and robbery are spatially concentrated, particularly in urbanized regions of the South West. Thus, these studies corroborate that while structural conditions shape offence categories nationally, specific zones exhibit distinctive vulnerabilities, especially for property-related crimes.

Furthermore, findings resonate with research on the socio-economic consequences of crime at subnational levels. Otu and Apeh (2022) found that crime undermines investments and trust in Oyo State, while John *et al*. (2023) identified armed banditry as a severe threat to human security in the North West, both of which reflect the ANOVA conclusion that certain crimes, such as banditry and kidnapping, have regional hotspots of significance. Likewise, Okunlola *et al*. (2025) highlighted how violence-related deaths cluster disproportionately in the North East and North Central, reinforcing that specific zones face distinct burdens. Meanwhile, Badmus and Alagbe (2024) showed that unemployment and insecurity are not uniformly correlated nationwide, which may explain why the ANOVA revealed no significant geopolitical zone effect for offences against persons and lawful authority. In summary, our empirical insights strengthen the interpretation that Nigeria's crime landscape is characterized by a combination of structural crime categories that cut across regions and localized hotspots that require zone-specific interventions.

Conclusion

This study investigated the comparative analysis of crime rates across Nigeria's six geopolitical zones using 2023 NBS data, focusing on offences against persons, property, and lawful authority. The findings demonstrated significant differences in the distribution of offences, with assault, burglary, and breach of peace emerging as dominant crime categories. While offences against persons and lawful authority were primarily shaped by crime type rather than regional factors, both crime type and geography significantly influenced property crimes. These findings align with prior studies such as Ukoji and Ukoji (2023), which documented regional variations in violent crime, and UNODC (2023a,b), which emphasized the urban–rural divide in organized crime activities. Collectively, the evidence underscores the complexity of Nigeria's crime landscape, where structural, socio-economic, and political factors interact to shape crime patterns.

From a policy perspective, the findings point to the need for tailored, zone-specific interventions rather than uniform national approaches. For the South West and South East, where assault and burglary are disproportionately high, urban policing reforms, community safety initiatives, and investment in surveillance technology are critical. The South South and North Central, with their high robbery and kidnapping cases, require targeted highway security and strengthened inter-state collaboration. Meanwhile, addressing the dominance of breach of peace in the South West will demand both law enforcement responses and dialogue-based conflict resolution mechanisms. More broadly, tackling poverty, unemployment, and institutional weaknesses (which are factors consistently linked to crime in Nigeria) remains essential for long-term crime reduction.

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