

SPATIAL PATTERN OF KIDNAPPING AND ARMED ROBBERY INCIDENTS IN KOGI CENTRAL SENATORIAL DISTRICT, NIGERIA: A GEOCRIMINOLOGY PERSPECTIVE

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Cite this article as: Shaib, I., Osagbemi, M. O., Adetunji, M. A., and Folorunsho, A. (2026). Spatial pattern of kidnapping and armed robbery incidents in Kogi Central Senatorial District, Nigeria: a geocriminology perspective. *Journal of Interdisciplinary Postgraduate Research*, 1(3), 114–127.

Abstract

Kidnapping and armed robbery have become defining threats to human security in North Central Nigeria, yet the geography of these offences remains poorly documented at the subnational scale. This study analysed the spatial pattern and environmental determinants of both offences in Kogi Central Senatorial District using an explanatory sequential mixed methods design. Ninety five police recorded incidents were compiled for the five Local Government Areas of the district and combined with 109 valid crime victimisation questionnaires, five Focus Group Discussions and ten Key Informant Interviews. Descriptive statistics, chi square tests, concentration measures, thematic analysis and geographical information system mapping were applied. Reported incidents were strongly clustered: Okene and Ajaokuta alone accounted for 71.58 percent of all cases, and a goodness of fit test rejected the hypothesis of an even distribution across the district ($\chi^2 = 43.05$, $df = 4$, $p < 0.001$), with a Gini concentration coefficient of 0.371. Okene recorded the highest counts of both kidnapping (18 cases, 40.91 percent) and armed robbery (19 cases, 37.25 percent), while Ogori-Magongo recorded the fewest. The relative mix of the two offences did not differ significantly between Local Government Areas ($\chi^2 = 1.70$, $df = 4$, $p = 0.792$), indicating that both crimes draw on a shared opportunity structure rather than separate geographies. The Abuja–Lokoja–Okene and Benin–Auchi–Okene corridors, central markets and motor parks, hilly and forested terrain, and state and local government boundaries emerged as the principal environmental enablers, with 52.47 percent of incidents occurring between dusk and dawn. Respondents ranked unemployment (25.77 percent), poverty (21.78 percent) and drug abuse (16.56 percent) as the leading drivers. Although 80.73 percent of respondents were aware of vigilante groups and 79.81 percent were willing to participate in community policing, operational effectiveness was constrained by weak logistics and unresolved jurisdiction at boundaries. The findings support Crime Pattern Theory, Routine Activity Theory and Social Disorganisation Theory, and justify place based policing, corridor surveillance, the equipping of vigilante structures, formal interstate pursuit protocols and targeted youth employment.

Keywords: spatial analysis; kidnapping; armed robbery; crime hotspots; community policing; environmental criminology; Kogi Central

1. Introduction

Violent crime remains one of the most pressing security challenges confronting Nigeria. Among its several expressions, kidnapping for ransom and armed robbery have emerged as the dominant threats to human security, economic activity and social cohesion in the North Central region (United Nations Office on Drugs and Crime, 2022). Unlike opportunistic theft, these two offences are planned, mobile and logistically demanding. They require an escape route, a degree of local knowledge and a target that is predictably present at a predictable time, and they therefore exploit particular environmental features such as trunk roads, market nodes and jurisdictional boundaries (Brantingham and Brantingham, 1995). That such offences persist despite an expanded security presence suggests that their occurrence is not random but is structured by the spatial organisation of people, places and opportunities.

Kogi Central Senatorial District, comprising Okene, Adavi, Okehi, Ogori-Magongo and Ajaokuta Local Government Areas, offers an instructive setting for examining this problem. The district is traversed by the Abuja–Lokoja–Okene highway, a strategic corridor linking the Federal Capital Territory to southern Nigeria, and by the Benin–Auchi–Okene and Itoke–Ajaokuta–Okene routes. It contains nucleated market towns, dispersed rural settlements, hilly and forested terrain, and the Ajaokuta industrial zone. Together these elements produce a complex geography of opportunity and risk. Media reports and security briefings point to a rise in highway kidnapping and market oriented armed robbery in Okene and Adavi, yet systematic evidence on where these incidents concentrate, and why, remains scarce (Council on Foreign Relations, 2024; SBM Intelligence, 2023).

Viewed geographically, crime is a phenomenon of places rather than of undifferentiated regions (Weisburd, Groff and Yang, 2012). Offenders weigh where to act according to what they know of the environment, the availability of targets and the perceived likelihood of apprehension (Clarke, 1997; Cornish and Clarke, 1986). Crime Pattern Theory holds that offences cluster at the nodes, paths and edges where offender activity spaces intersect those of victims (Brantingham and Brantingham, 1995). In Kogi Central the markets and motor parks operate as nodes, the federal highways operate as paths, and the boundaries with Edo State and between local government areas operate as edges. These are precisely the locations that theory would predict to be attractive for kidnapping and armed robbery.

The same logic is reinforced by Routine Activity Theory, which holds that crime occurs where a motivated offender, a suitable target and the absence of a capable guardian converge in time and space (Cohen and Felson, 1979; Felson and Clarke, 1998). Survey evidence from the present study indicates widespread victimisation, with unemployment ranked the leading driver of crime at 25.77 percent and poverty second at 21.78 percent. Such structural conditions enlarge the pool of motivated offenders, while the concentration of traders and cash in periodic markets supplies suitable targets. At the same time 52.47 percent of incidents occurred between six in the evening and six in the morning, a window characterised by reduced natural surveillance and constrained police mobility, which signals weak guardianship.

Despite these pressures, the district retains a dense informal security architecture. Some 80.73 percent of respondents were aware of vigilante or neighbourhood watch groups and 79.81 percent expressed willingness to participate in community policing. Qualitative evidence nevertheless discloses a critical mismatch. Guardianship is dense inside nucleated settlements but thin along the highways and at the borders, which is exactly where the offences concentrate. One vigilante leader captured the difficulty plainly, observing that by the time information reaches them the offenders have already crossed into Edo State. Social capital therefore exists, but it is not spatially aligned with risk.

The problem is compounded by a drug and crime nexus. Some 87.96 percent of respondents agreed that substance abuse drives crime locally, a perception consistent with the tripartite framework in which drug involvement produces violence through psychopharmacological effects, economically compulsive offending and systemic conflict within illicit markets (Goldstein, 1985). In Kogi Central the need to finance consumption, together with the movement of supply along the trunk roads, plausibly sustains both kidnapping and armed robbery.

Notwithstanding the severity of the problem, few Nigerian studies have brought spatial criminology to bear on kidnapping and armed robbery. Much of the existing literature reports aggregate crime statistics or concentrates on insurgency in the North East (Higazi, 2016; Ibrahim and Shehu, 2014). What is missing is place based, mixed methods work that links recorded incidents, survey data, community perception and environmental features in order to explain both where these offences occur and why they occur there. Closing that gap matters because generic security responses are costly and, when the underlying geography is ignored, largely ineffective (Braga, Papachristos and Hureau, 2014).

This study therefore examines the spatial pattern of kidnapping and armed robbery in Kogi Central Senatorial District from a geocriminology perspective. It integrates recorded crime data and victimisation survey responses with Focus Group Discussions and Key Informant Interviews in order to identify hotspots, account for their environmental determinants and appraise the contribution of community policing. The findings are intended to inform place based security planning, corridor patrol design and collaboration between police and community structures in comparable settings across Nigeria and West Africa.

2. Aim and Objectives of the Study

2.1 Aim

The aim of the study is to analyse the spatial pattern and environmental determinants of kidnapping and armed robbery in Kogi Central Senatorial District using a geocriminology framework, and in doing so to establish how settlement morphology, land use and community policing structures shape the concentration and distribution of these offences.

2.2 Specific Objectives

The study pursues five specific objectives. The first is to map and describe the spatial distribution and concentration of kidnapping and armed robbery across the five Local Government Areas of the district. The second is to examine the relationship between settlement types, land use features and the location of hotspots. The third is to assess the contribution of environmental backcloth variables such as highways, markets, forests and administrative borders to the facilitation of these offences. The fourth is to evaluate community perceptions, victimisation experience and the effectiveness of community policing structures using qualitative evidence. The fifth is to propose place specific recommendations for prevention and control.

2.3 Research Questions

The study is guided by five questions. What is the spatial pattern and concentration of kidnapping and armed robbery across the district? How do settlement patterns and land use characteristics influence the clustering of these offences? To what extent do environmental features such as highways, market nodes and border areas facilitate their occurrence? How do community members and security stakeholders perceive the drivers of these offences, and how effective are existing community policing structures? Finally, what place based interventions can be adopted to reduce their incidence?

2.4 Research Hypotheses

Three null hypotheses were tested at the 0.05 level of significance. The first states that there is no significant spatial concentration of kidnapping and armed robbery incidents in Kogi Central Senatorial District. The second states that there is no significant relationship between settlement type and the occurrence of these offences. The third states that community policing awareness and participation have no significant effect on the perceived reduction of kidnapping and armed robbery.

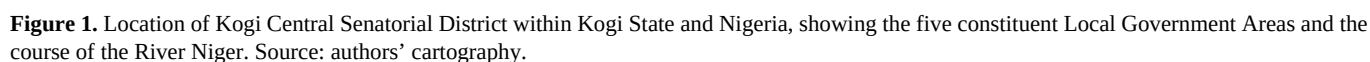
2.5 Significance of the Study

The study is significant in three respects. It extends the application of environmental criminology to the Global South by testing Crime Pattern Theory, Routine Activity Theory and Social Disorganisation Theory in a Nigerian setting, and it demonstrates that mobile violent offences are products of specific place based opportunities rather than of random incidence. It also provides the first mixed methods, place based dataset on kidnapping and armed robbery in Kogi Central, pairing 109 survey responses with qualitative narratives so that the geography and the reasoning behind it are recovered together. Finally, the results carry direct operational implications. With 71.58 percent of incidents concentrated in Okene and Ajaokuta, and a strong perceived link between substance abuse and offending, the evidence supports targeted corridor patrols, market security and economic intervention, and is intended to assist the Nigeria Police Force, the Nigeria Security and Civil Defence Corps, the National Drug Law Enforcement Agency, the Kogi State Government and community vigilante groups in allocating scarce resources.

3. Study Area and Research Methodology

3.1 Study Area

Kogi Central Senatorial District lies in the central part of Kogi State in North Central Nigeria, approximately between latitudes 7°15' N and 7°46' N and longitudes 6°11' E and 6°55' E (Otupuru, 2006). The district comprises Okene, Adavi, Okehi, Ogori-Magongo and Ajaokuta Local Government Areas, with an estimated population of 1.257 million in 2022 based on projections from the last national census (National Population Commission, 2006). Figure 1 presents the location of the district within Kogi State and Nigeria.



These attributes make the district a strategic setting for the study of mobile offences. The highways serve simultaneously as commercial arteries and as reported corridors for kidnapping, while markets and motor parks concentrate cash and people and thereby generate opportunities for armed robbery. The peripheral location of several communities relative to state boundaries also complicates interagency policing.

The study adopted an explanatory sequential mixed methods design (Creswell and Plano Clark, 2018). The quantitative phase compiled recorded incidents and administered a crime victimisation survey in order to establish the distribution and prevalence of kidnapping and armed robbery. The qualitative phase used Focus Group Discussions and Key Informant Interviews to explain the environmental and social conditions underlying the observed pattern. The design suits environmental criminology, which requires both the measurement of where crime occurs and an account of why it occurs in those places.

The target population comprised adult residents aged eighteen years and above who had lived in Kogi Central for at least one year. A multistage sampling technique was employed. At the first stage all five Local Government Areas were purposively selected to ensure complete spatial coverage. At the second stage two communities were selected within each area according to settlement type and reported incidence, one urban or market community and one rural or highway community. At the third stage respondents were selected systematically, with every fifth eligible stakeholder approached for interview.

$$RR = (n_{\text{valid}} / n_{\text{administered}}) \times 100 = (109 / 120) \times 100 = 90.83\% \quad (1)$$

Journal of Interdisciplinary Postgraduate Research 2026, Vol. 1 (3) DOI: 10.61955/RNHHQT

3.3 Instruments for Data Collection

Three instruments were used. The structured questionnaire was organised in five sections covering sociodemographic characteristics, victimisation experience and incident location over the preceding twelve months, perceptions of crime drivers and community policing, willingness to participate in community security initiatives, and perceived priority factors and mitigation measures. The instrument was adapted from the victimisation survey framework of the United Nations Office on Drugs and Crime (2010). Internal consistency was assessed using

$$\alpha = [k / (k - 1)] \times [1 - (\sum s_i^2 / s_T^2)] \quad (2)$$

where k is the number of items, s_i^2 the variance of item i and s_T^2 the variance of total scores. The instrument returned $\alpha = 0.82$, which indicates good reliability. A Focus Group Discussion guide used semistructured prompts on where kidnapping and robbery occur, why they occur there and how the community responds. A Key Informant Interview guide addressed policing constraints, hotspot locations and interagency collaboration.

3.4 Methods of Data Analysis

Analysis proceeded in three phases. Survey data were coded and analysed in SPSS version 27. Descriptive statistics profiled respondents and summarised incident patterns. The share of incidents attributable to each Local Government Area was computed as

$$p_i = (x_i / \sum x_i) \times 100 \quad (3)$$

where x_i is the number of incidents recorded in area i . The degree of clustering was evaluated against the Law of Crime Concentration, which holds that a small proportion of places accounts for a disproportionate share of offences (Weisburd, 2015; Sherman, Gartin and Buerger, 1989). The first null hypothesis was tested with a chi square goodness of fit statistic comparing observed counts with the counts expected under an even spread across the five areas,

$$\chi^2 = \sum [(O_i - E_i)^2 / E_i], \quad E_i = N / k \quad (4)$$

where O_i is the observed count, E_i the expected count, N the total number of incidents and k the number of areas. Whether the two offence types were differently distributed was examined with a chi square test of independence applied to the two by five contingency table of offence type against area,

$$\chi^2 = \sum_i \sum_j [(O_{ij} - E_{ij})^2 / E_{ij}], \quad E_{ij} = (R_i C_j) / N \quad (5)$$

with R_i and C_j the row and column totals. The strength of any association was expressed through

$$V = \sqrt{[\chi^2 / (N \times \min(r - 1, c - 1))]} \quad (6)$$

Two complementary measures summarised concentration. The concentration ratio for the two most affected areas was computed as

$$CR_2 = [(x_{(1)} + x_{(2)}) / \sum x_i] \times 100 \quad (7)$$

where $x_{(1)}$ and $x_{(2)}$ are the largest and second largest counts. Inequality across the full distribution was measured by a Gini coefficient computed on incident counts ranked in ascending order,

$$G = [2 \sum i \cdot x_{(i)} / (n \sum x_{(i)})] - [(n + 1) / n] \quad (8)$$

where $x_{(i)}$ is the i th smallest count and n the number of areas. A value of zero denotes a perfectly even spread and a value approaching one denotes complete concentration in a single area. Offence composition within each area was expressed as the ratio

$$\rho_i = K_i / A_i \quad (9)$$

where K_i and A_i denote kidnapping and armed robbery counts in area i , so that values above unity identify areas of relative kidnapping specialisation.

Incidents were mapped in ArcGIS 10.8. Because exact coordinates were withheld for the protection of victims and participants, incidents were aggregated to settlement and Local Government Area level and overlaid on settlement and road network data, an approach consistent with place based criminology conducted at meso scales (Brantingham and Brantingham, 1995; Eck, Chainey, Cameron, Leitner and Wilson, 2005). Hotspot surfaces were interpolated using kernel density estimation,

$$\lambda(s) = \sum_{i=1}^n (1 / \pi \tau^2) k(d_{is} / \tau), \quad d_{is} \leq \tau \quad (10)$$

where $\lambda(s)$ is the estimated intensity at location s , τ the bandwidth or search radius, d_{is} the distance between location s and incident i , and k the kernel weighting function. Recordings from the Focus Group Discussions and Key Informant Interviews were transcribed verbatim and analysed thematically in NVivo 14. Codes were generated inductively and subsequently organised under three themes, namely environmental enablers, offender mobility and target selection, and community policing

effectiveness. Direct quotations were used to explain and corroborate the quantitative results in line with established practice in mixed methods integration (Creswell and Plano Clark, 2018).

3.5 Ethical Considerations

Informed consent was obtained from every respondent. Participation was voluntary and anonymity and confidentiality were assured. No personal identifiers were collected. In order to protect participants and victims the exact locations of incidents were not recorded and all qualitative quotations are reported without attribution to named individuals.

4. Results

This section reports findings from 109 valid questionnaires, five Focus Group Discussions and ten Key Informant Interviews, together with 95 recorded incidents compiled for the district. Results are organised according to the study objectives.

4.1 Sociodemographic Characteristics of Respondents

Respondents were predominantly middle aged, with 45.87 percent aged between 46 and 55 years and a further 17.43 percent above 56 years. In terms of livelihood, 32.11 percent ran their own businesses, 25.69 percent were civil servants and 18.35 percent were traders. Residential stability was high, with 72.48 percent having lived in the area for more than fifteen years, and 81.65 percent identified as Ebira. These characteristics matter for the interpretation that follows. Residents of long standing are better placed to report local crime patterns accurately, while traders and independent business operators are disproportionately exposed to instrumental violent crime because their activity involves the routine handling and movement of cash.

4.2 Spatial Distribution of Kidnapping and Armed Robbery

Table 1 presents the distribution of recorded kidnapping and armed robbery incidents across the five Local Government Areas, together with the dominant environmental feature of each.

Table 1. Spatial distribution of kidnapping and armed robbery incidents by Local Government Area

Local Government Area	Kidnapping (n)	Kidnapping (%)	Armed robbery (n)	Armed robbery (%)	Total (n)	Total (%)	Dominant feature
Okene	18	40.91	19	37.25	37	38.95	Market and highway
Ajaokuta	16	36.36	15	29.41	31	32.63	Industrial area
Okehi	5	11.36	9	17.65	14	14.74	Forest routes
Adavi	3	6.82	6	11.76	9	9.47	Highway corridor
Ogori-Magongo	2	4.55	2	3.92	4	4.21	Rural and border
Total	44	100.00	51	100.00	95	100.00	

Source: recorded crime incidents compiled for the district and corroborated by the victimisation survey. Percentages for each offence are computed on that offence total; totals may differ from the sum of rounded components.

The distribution is markedly uneven. Okene and Ajaokuta together accounted for 68 of 95 incidents, a concentration ratio of $CR_2 = 71.58$ percent from only two of the five areas, that is from 40 percent of the administrative units. The Gini coefficient computed by equation (8) was 0.371, confirming substantial inequality in the distribution of risk. A chi square goodness of fit test comparing observed counts against the 19 incidents per area expected under an even spread returned $\chi^2 = 43.05$ with four degrees of freedom and $p < 0.001$. The first null hypothesis, which asserts no significant spatial concentration, is therefore rejected. Figure 2 displays the distribution by offence type and Figure 3 expresses the same information as a concentration curve.

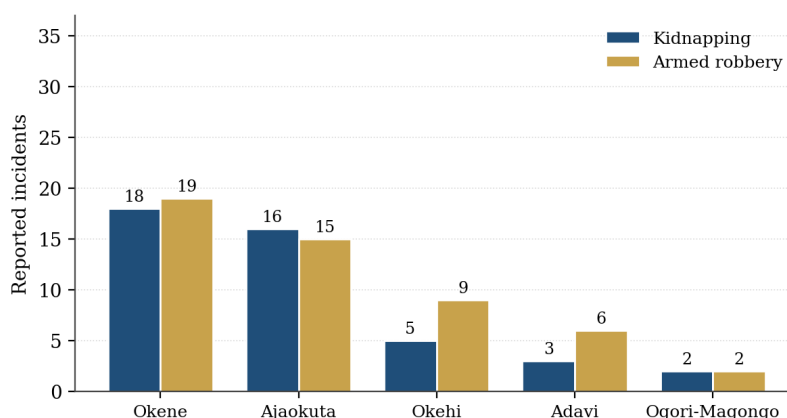


Figure 2. Recorded kidnapping and armed robbery incidents by Local Government Area. Okene and Ajaokuta dominate both offence types, while Ogori-Magongo records the fewest of each.

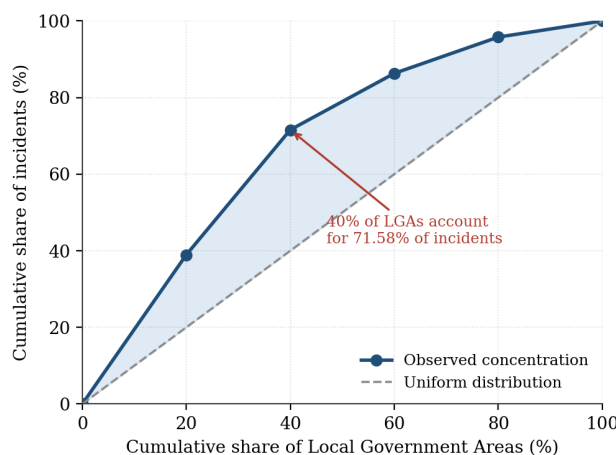


Figure 3. Concentration curve for recorded incidents. The vertical distance between the observed curve and the diagonal of an even distribution expresses the degree of clustering, summarised by a Gini coefficient of 0.371.

A further question is whether the two offences occupy distinct geographies. A chi square test of independence applied to the two by five contingency table of offence type against area returned $\chi^2 = 1.70$ with four degrees of freedom and $p = 0.792$, with Cramér's $V = 0.134$. The relative balance of kidnapping and armed robbery therefore does not differ significantly between areas. This is an important qualification. It indicates that the two offences are not drawn to separate environments but rather share a single underlying opportunity structure, so that places generating one offence tend to generate the other in similar proportion. Figure 4 presents the offence composition of each area against the district benchmark.

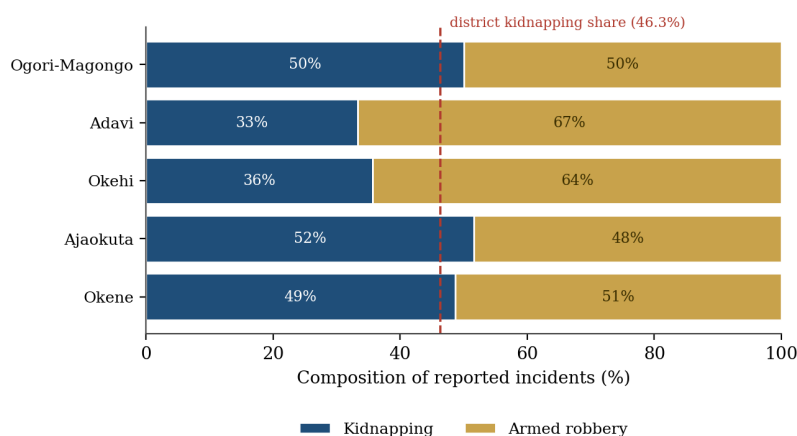


Figure 4. Composition of recorded incidents within each Local Government Area. The broken line marks the district wide kidnapping share of 46.3 percent; departures from it are modest and statistically non significant.

The specialisation ratios computed by equation (9) refine the picture. Values of 1.07 for Ajaokuta, 1.00 for Ogori-Magongo and 0.95 for Okene indicate an approximate balance between the two offences, whereas Okehi at 0.56 and Adavi at 0.50 lean towards armed robbery. The tilt in Okehi and Adavi is consistent with the qualitative accounts, which describe forest cover and market days as favouring rapid robbery and withdrawal rather than the extended custody of a victim that kidnapping requires.

The convergence of these two results carries an operational consequence that deserves emphasis at this point. Because the offence mix is statistically indistinguishable across the district, the marginal return to an offence specific deployment is low: a unit configured solely against kidnapping would be operating in the same places, and during the same hours, as a unit configured solely against armed robbery. Conversely, the steepness of the concentration curve in Figure 3 implies that a comparatively small number of well chosen locations would capture a disproportionate share of the district burden. Securing the two leading areas alone would bring roughly seven in every ten recorded incidents within the ambit of a single coordinated operation. This is the practical meaning of the concentration statistics reported above, and it frames the hotspot analysis that follows, which moves the resolution of the enquiry from administrative units down to the settlements and road segments around which risk actually accumulates.

4.2.1 Hotspot Analysis

Kernel density surfaces interpolated from the reported incident locations refine the administrative picture and identify the specific settlements around which risk accumulates. Figure 5 maps kidnapping intensity and Figure 6 maps armed robbery intensity.

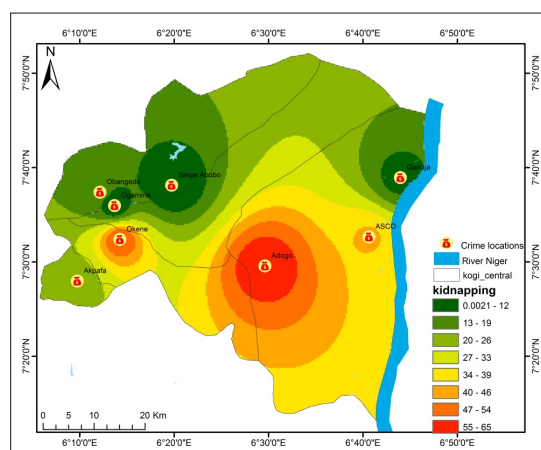


Figure 5. Kernel density surface of reported kidnapping incidents. The principal concentration lies around Adogo in Ajaokuta, with a secondary cluster at Okene. Darker red denotes a higher modelled incidence per square kilometre.

The kidnapping surface peaks sharply at Adogo in Ajaokuta, where modelled intensity reaches the highest class of 55 to 65 incidents per square kilometre, and falls away rapidly with distance from the road alignment. A secondary maximum occurs at Okene town, with lesser concentrations at Itakpe Abobo, Ogamina, Obangede, Ganaja and the Ajaokuta Steel Company settlement. Figure 6 maps the corresponding surface for armed robbery.

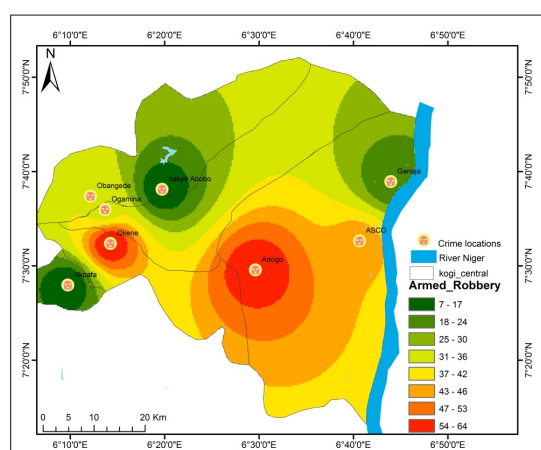


Figure 6. Kernel density surface of reported armed robbery incidents. Peak intensity occurs at Adogo and Okene, with the surface extending south along the corridor towards the state boundary.

Both surfaces display the same essential geometry. Peak intensity occurs at Adogo in Ajaokuta and at Okene town, with subsidiary maxima at Itakpe Abobo, Ganaja and the Ajaokuta Steel Company settlement. The high intensity zones are elongated rather than circular and follow the alignment of the trunk roads, which is the cartographic signature of offences organised around mobility rather than around fixed premises. The convergence of the two surfaces provides independent visual confirmation of the statistical finding reported above, namely that kidnapping and armed robbery in this district are responses to a common opportunity structure.

4.3 Environmental and Settlement Factors Influencing Crime Location

Qualitative evidence supplied the reasoning behind the observed clustering. Participants consistently identified highways, markets and border areas as the locations of greatest risk. A trader taking part in a Focus Group Discussion in Okene explained that most kidnappings occur on the Okene to Ajaokuta road after seven in the evening, that offenders are aware of the position of police checkpoints, and that once an operation is complete they enter the bush and cross into Edo State. The account maps directly onto Crime Pattern Theory, in which offenders use paths to move between nodes and exploit edges to frustrate pursuit (Brantingham and Brantingham, 1995). The federal highways here serve simultaneously as the approach route, the site of the offence and the escape corridor.

A vigilante leader in Okehi drew attention to the role of terrain, noting that the hills present a persistent problem because offenders retreat into forest after operating in the market, that the group lacks vehicles with which to follow, and that the police are similarly unable to enter those areas at night. This is the practical expression of risk terrain, in which particular landscape features simultaneously afford concealment to offenders and suppress the capacity of guardians to respond (Caplan, Kennedy and Miller, 2011).

On the function of markets as generators of targets, a community head in Adavi observed that on market days people arrive carrying substantial sums, that armed robbery rises accordingly, and that offenders concentrate on those travelling to the bank or returning from trading. Commercial land use therefore produces a predictable temporal rhythm of target availability, which is the defining characteristic of a crime generator (Brantingham and Brantingham, 1995; Felson and Clarke, 1998).

Taken together the three accounts identify a coherent environmental syndrome. Nodes supply targets, paths supply access and escape, edges suppress the risk of apprehension, and terrain supplies concealment. Figure 7 summarises the temporal dimension of this syndrome.

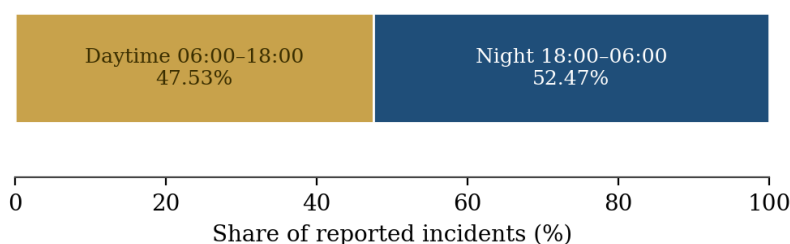


Figure 7. Temporal distribution of reported incidents. A majority of offences occur within the hours of darkness, when natural surveillance and patrol coverage are weakest.

4.4 Community Perceptions and Effectiveness of Community Policing

Table 2 reports awareness of, and willingness to participate in, community policing structures.

Table 2. Awareness of and willingness to participate in community policing

Variable	Response category	Frequency	Percent (%)
Awareness of vigilante or watch group	Yes	88	80.73
	No	21	19.27
Willingness to participate	Yes, actively	69	63.30
	Yes, if given information	18	16.51
	Not interested	12	11.01
	Undecided	10	9.17

Source: field survey, 2024. N = 109. Percentages are computed on the full sample.

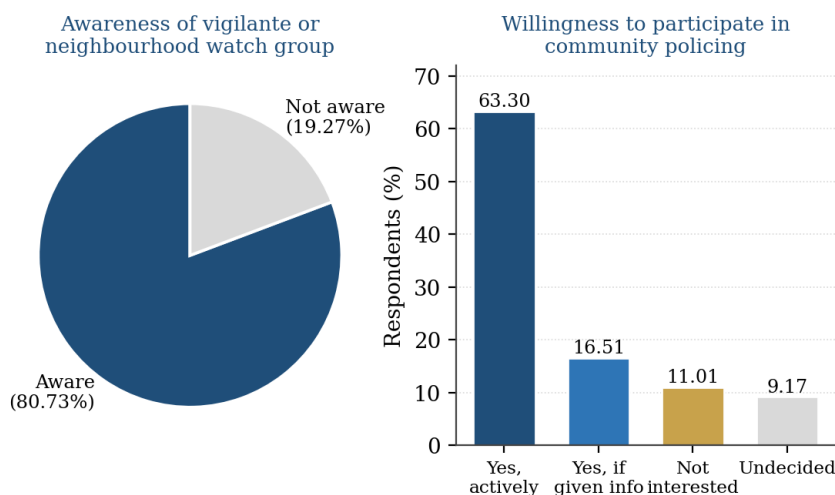


Figure 8. Awareness of community security structures and stated willingness to participate. Latent support is substantial, with almost four in five respondents prepared to contribute in some form.

Awareness is high at 80.73 percent and aggregate willingness to participate, combining those prepared to act and those prepared to supply information, reaches 79.81 percent. Effectiveness nevertheless lags well behind this latent support. A

Divisional Police Officer explained that while the vigilantes are appreciated there is no formal structure, that effort is sometimes duplicated, and that jurisdiction becomes problematic at the borders, a gap which offenders exploit. A youth participant in Ajaokuta added that residents report to vigilantes first because the police take time to arrive, but questioned how groups without firearms or fuel could pursue offenders along a highway.

These accounts expose a disjunction between social capital and operational capacity. Routine Activity Theory treats guardianship as a property of situations rather than of intentions (Cohen and Felson, 1979). In Kogi Central the intention is abundant and the situational capacity is not, and the deficit is concentrated precisely where the offences cluster, namely along the corridors and at the boundaries.

4.5 Perceived Drivers of Kidnapping and Armed Robbery

Asked to rank the factors driving crime locally, respondents placed unemployment first at 25.77 percent and poverty second at 21.78 percent, followed by drug abuse at 16.56 percent, with the remaining 35.89 percent distributed across other factors. Figure 9 presents the ranking.

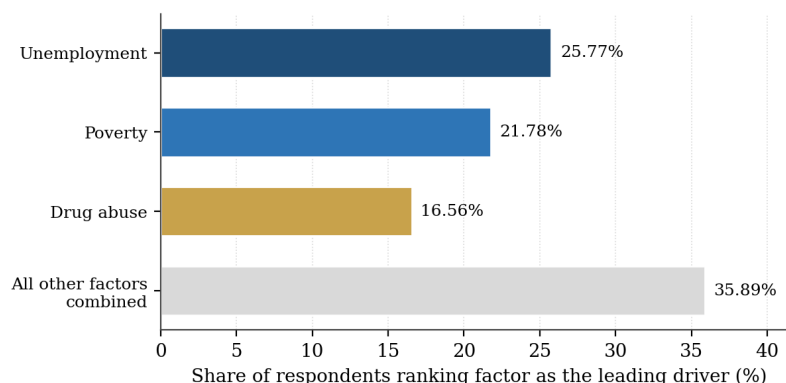


Figure 9. Factors ranked by respondents as the leading driver of kidnapping and armed robbery. Economic factors together account for almost half of all first rankings.

An officer of the National Drug Law Enforcement Agency described the connection directly, observing that many of the young men involved in kidnapping are also drug users, that money is required both to purchase substances and to sustain the group, and that the highway makes it easy to move victims and to escape. The account illustrates the economically compulsive pathway of the tripartite framework, in which the demand for funds to sustain consumption issues in acquisitive violence (Goldstein, 1985). Read alongside the ranking of unemployment and poverty, it indicates that the supply of motivated offenders in this district is sustained by an interaction between structural deprivation and substance dependence rather than by either condition alone.

4.6 Summary of Key Findings

Four findings emerge. Kidnapping and armed robbery are strongly concentrated, with 71.58 percent of recorded incidents in Okene and Ajaokuta and a statistically significant departure from an even distribution. Environmental features, specifically the federal highways, central markets, hilly and forested terrain and administrative boundaries, materially facilitate both offences, and a majority of incidents occur in darkness. Community awareness and willingness to participate in policing are high, yet effectiveness is constrained by logistics and by weak interagency coordination at exactly those locations where risk concentrates. Structural conditions, above all unemployment, poverty and substance abuse, are perceived as the primary drivers. The following section interprets these findings within the theoretical framework of environmental criminology.

5. Discussion

The discussion is organised around the three theoretical frameworks that guided the study, namely Crime Pattern Theory, Routine Activity Theory and Social Disorganisation Theory, and concludes by drawing out the comparative and policy implications of the results.

5.1 Spatial Concentration and Crime Pattern Theory

The concentration of 71.58 percent of incidents in two of five Local Government Areas supports the central proposition of Crime Pattern Theory that crime clusters at particular places rather than distributing itself evenly across territory (Brantingham and Brantingham, 1995). The goodness of fit result, $\chi^2 = 43.05$ with four degrees of freedom and $p < 0.001$, together with a Gini coefficient of 0.371, places that clustering beyond reasonable doubt for the present dataset. Within the district, Okene Central Market and the associated motor parks function as crime generators and attractors because they assemble cash, traders and commuters at predictable intervals. The Abuja–Lokoja–Okene highway operates as the principal path, carrying offenders to targets and away from them. The margins with Edo State operate as edges, where the discontinuity of police jurisdiction

lowers the expected cost of offending.

It is worth dwelling on the second statistical result, because it carries more theoretical weight than its modest magnitude suggests. The absence of a significant association between offence type and area, $\chi^2 = 1.70$, $p = 0.792$, means that Okene is not a kidnapping place and Okehi an armed robbery place in any categorical sense. The two offences track one another across the district. Crime Pattern Theory anticipates exactly this where the offences in question draw on the same nodes, the same paths and the same edges, differing in execution rather than in the geography of opportunity they exploit. The practical consequence is considerable: an intervention that hardens a node or a corridor should suppress both offences simultaneously, whereas an offence specific strategy would displace effort without addressing the shared structure. The result also cautions against reading the modest specialisation ratios of Okehi and Adavi as evidence of distinct criminal markets, since the aggregate test does not support such a reading.

The pattern accords with Nigerian studies reporting the concentration of highway robbery and kidnapping along major transport corridors (Ajayi and Oresanya, 2020; Oluwaniyi, 2011), and with the wider finding that a minority of micro places generates a majority of recorded crime (Sherman, Gartin and Buerger, 1989; Weisburd, 2015). Crime Pattern Theory therefore supplies a satisfactory account of where these offences occur in Kogi Central.

5.2 Environmental Backcloth, Settlement Morphology and Routine Activity Theory

Qualitative evidence established that highways, markets, terrain and the hours of darkness jointly create the conditions for offending, which is the substance of Routine Activity Theory (Cohen and Felson, 1979). Each of the three required elements can be identified in the data. Motivated offenders are sustained by structural strain, with unemployment and poverty ranked first and second among perceived drivers, a pattern consistent with the classical account of anomie in which the gap between culturally endorsed goals and legitimate means to reach them generates innovation through illegitimate channels (Merton, 1938), and consistent too with Nigerian evidence linking deprivation to instrumental crime (Alemika, 2013; Odekunle, 2005). Suitable targets are abundant in nucleated settlements, where market days concentrate traders carrying cash. Capable guardianship is absent in both the temporal and the spatial dimension, with 52.47 percent of incidents occurring at night and vigilante coverage thinning markedly along highways and at boundaries. Figure 10 represents the resulting configuration.

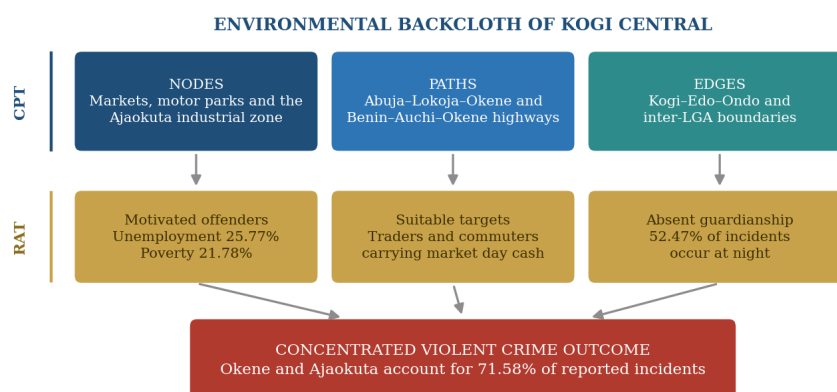


Figure 10. Conceptual model of violent crime concentration in Kogi Central. The upper tier represents the environmental backcloth of Crime Pattern Theory (CPT) and the middle tier the convergence conditions of Routine Activity Theory (RAT), which jointly produce the observed concentration.

The model clarifies why an increase in patrol strength alone has produced limited benefit. Guardianship is not a quantity distributed evenly over territory but a situational property that must be present at the place and at the hour when the other two elements converge. A patrol posted in a nucleated settlement during daylight satisfies none of the operative conditions. This interpretation is consistent with evidence that micro places with weak guardianship attract disproportionate crime (Weisburd, Groff and Yang, 2012) and with the demonstrated effectiveness of concentrating resources on identified hotspots rather than dispersing them (Braga, Papachristos and Hureau, 2014).

5.3 Community Policing, Social Capital and Social Disorganisation Theory

Social Disorganisation Theory holds that crime rises where collective efficacy, social ties and institutional resources are weak (Shaw and McKay, 1942; Sampson and Groves, 1989). The present results present an instructive paradox. On the measures usually taken to indicate social capital the district performs strongly, with 80.73 percent awareness of vigilante structures and 79.81 percent willingness to participate. Yet effectiveness is constrained by three deficits identified consistently in the qualitative data, namely inadequate logistics such as vehicles and fuel, the absence of formal coordination between police and vigilante structures, and unresolved jurisdiction at state and local government boundaries.

The paradox is resolved once collective efficacy is distinguished from institutional capacity. Willingness is a necessary but insufficient condition, and in resource constrained settings informal social control cannot by itself deter mobile offences that

demand a rapid and equipped response (Kubrin and Weitzer, 2003). The point is sharpened by the spatial mismatch documented earlier. Collective efficacy is generated by dense interaction inside settlements, whereas the offences concentrate on corridors and at margins where no community holds continuous presence. Social Disorganisation Theory thus explains the limits of community response in Kogi Central, and in doing so identifies the policy entry point, which is to connect informal guardianship to formal institutional capacity rather than to expand either in isolation.

5.4 The Drug and Crime Nexus and Rational Choice

That 87.96 percent of respondents associated substance abuse with crime, together with the account given by the drug enforcement officer, is consistent with a rational choice reading of offender decision making (Clarke, 1997; Cornish and Clarke, 1986). Offenders in this setting face a favourable calculus. Kidnapping offers a high and relatively predictable return capable of financing consumption and group operations, while the highways afford rapid egress and the forested terrain affords concealment, so that the perceived probability of apprehension is low. The finding accords with evidence from other parts of Nigeria that trafficking routes and kidnapping corridors overlap substantially (United Nations Office on Drugs and Crime, 2021). The implication for policy is that drug control and violent crime prevention cannot sensibly be pursued as separate programmes in this district.

5.5 Comparison with Existing Literature

The degree of concentration observed here is consistent with the law of crime concentration, which in urban settings finds that a small percentage of street segments accounts for around half of recorded crime (Weisburd, 2015). The present analysis operates at a coarser administrative resolution, yet the principle holds, and the kernel density surfaces suggest that concentration at finer scales would be sharper still. Set against studies of insurgency in the North East, the violence documented here is economically motivated and opportunistic rather than ideological (Higazi, 2016). Set against metropolitan robbery studies in Lagos, the Kogi Central pattern is distinguished by the dominance of interurban corridors and terrain rather than of dense urban street networks (Alemika, 2013; Oluwaniyi, 2011). Comparison with maritime kidnapping in the Gulf of Guinea is similarly instructive, since in both settings offenders exploit a transport medium and a zone of contested jurisdiction (Aning and Pokoo, 2014; Onuoha, 2013; Otu and Opara, 2018).

5.6 Theoretical and Policy Implications

Theoretically the study demonstrates that the three frameworks are complementary rather than competing when applied to mobile violent crime in a Nigerian context. Crime Pattern Theory accounts for where offences occur, Routine Activity Theory for how and when the necessary elements converge, and Social Disorganisation Theory for why community response has not matched community willingness. The contribution of the present analysis is to show that the first two operate jointly across offence types, since kidnapping and armed robbery were found to share a single opportunity structure.

From a policy standpoint the implication is that undifferentiated patrolling will remain ineffective. Interventions must be place based and time specific: securing corridor nodes during the hours of darkness, improving lighting and surveillance in markets, equipping police and vigilante structures for boundary operations, and addressing the economic conditions that sustain the supply of offenders. Such targeting is the operational core of intelligence led and evidence based policing (Ratcliffe, 2016; Weisburd, Groff and Yang, 2012), and the concentration documented here indicates that a small number of well chosen locations would capture a large share of the district burden.

In summary, the spatial pattern of kidnapping and armed robbery in Kogi Central is the product of an opportunity structure created by transport geography, weak situational guardianship and economic strain. Addressing it requires an integrated response combining environmental design, institutionally supported community policing and structural economic intervention.

6. Summary, Conclusion and Recommendations

6.1 Summary of Findings

The study analysed the spatial pattern and environmental determinants of kidnapping and armed robbery in Kogi Central Senatorial District using recorded incidents, survey data and qualitative evidence. Incidents proved to be highly concentrated, with Okene and Ajaokuta accounting for 71.58 percent of the total and the hypothesis of an even distribution decisively rejected. The federal highways, central markets, motor parks, hilly terrain and administrative boundaries function as the nodes, paths and edges that structure this concentration, and 52.47 percent of incidents occurred during the hours of darkness. Unemployment, poverty and drug abuse were ranked the leading structural drivers. A community policing paradox was documented, in which high awareness and willingness coexist with limited operational effectiveness owing to poor logistics and weak interagency coordination at boundaries.

6.2 Conclusion

Three conclusions follow. First, the spatial pattern of these offences is environment dependent. The clustering in Okene and Ajaokuta is explained by Crime Pattern Theory, in which markets and highways create generators and attractors while

boundaries create enforcement gaps, and the finding that both offences share the same geography indicates a common opportunity structure rather than distinct criminal markets. Second, from the standpoint of Routine Activity Theory, the convergence of motivated offenders, suitable targets and absent guardianship along the corridors at night creates optimal conditions for violent crime, with terrain and settlement morphology further reducing natural surveillance and providing concealment. Third, Social Disorganisation Theory explains why strong community willingness has not translated into effective control, since informal guardianship cannot address mobile offences without equipment, institutional support and cooperation across boundaries.

Taken together, kidnapping and armed robbery in Kogi Central are products of an opportunity structure created by geography, economic conditions and gaps in governance. Addressing them requires movement beyond generic patrol towards targeted, place based intervention.

6.3 Recommendations

Policy and security measures. A joint corridor security task force should be established by the Nigeria Police Force, the military, the Department of State Services, the Nigeria Security and Civil Defence Corps and organised vigilante and hunter groups, dedicated to the Abuja–Lokoja–Okene, Itobe–Ajaokuta–Okene and Benin–Auchi–Okene transit routes, conducting intelligence led patrol between six in the evening and six in the morning in Okene and Ajaokuta where the majority of incidents occur. Solar powered surveillance cameras and street lighting should be installed at Okene Central Market, Adavi motor park and other major nodes, consistent with the principles of crime prevention through environmental design. The Kogi, Edo and Ondo State Governments should conclude a memorandum of understanding providing for joint patrol and hot pursuit, closing the jurisdictional edges currently exploited at the Magongo to Lampese, Okengwe to Imoga, Oguda to Okpella, Ohuepe to Kabba and Oboroke Ihima to Ayere margins.

Community measures. Vigilante groups in Okehi and Adavi should be equipped with motorcycles, radios and fuel support, and their training in information gathering and first response should be institutionalised within the national community policing framework. An anonymous reporting platform using a telephone tree and messaging application should be established to address the substantial minority of victims who do not report, thereby improving the timeliness of intelligence.

Structural and social measures. Given that unemployment was ranked the leading driver, the Kogi State Government and the National Directorate of Employment should prioritise skills acquisition and agro processing hubs in Okene and Ajaokuta in order to reduce the pool of motivated offenders. The National Drug Law Enforcement Agency and community leaders should expand sensitisation in schools and motor parks, and rehabilitation capacity should be established in Okene to interrupt the drug and crime nexus documented in this study.

Future research. Subsequent studies should employ georeferenced incident coordinates and predictive mapping to identify micro hotspots within Local Government Areas, and longitudinal designs should be used to evaluate the effect of the interventions recommended above.

6.4 Limitations of the Study

The study relied on respondent recall and on data aggregated to Local Government Area level because security considerations precluded the collection of exact incident coordinates. The consequence is that the concentration reported here is almost certainly a conservative estimate, since aggregation to coarse units suppresses variation at finer scales. The survey sample of 109 respondents, while adequate for the descriptive and categorical analyses undertaken, limits the precision of subgroup estimates. Future work incorporating georeferenced records and real time crime data would permit finer spatial analysis and formal tests of spatial autocorrelation.

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