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MAPPING SMUGGLING ROUTES AND MIGRATION FLOWS ACROSS ILLELA AND JIBIYA BORDERS: A GEOGRAPHICAL PERSPECTIVE

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Abstract

This study provides a geographical analysis of smuggling routes and irregular migration flows across the porous Nigeria–Niger borderlands of Illela (Sokoto State) and Jibiya (Katsina State). Using a mixed-methods approach that combined structured questionnaires, key informant interviews, and geospatial mapping through GPS and GIS, the research identified and mapped 20 illegal routes 9 in Illela and 11 in Jibiya. Findings reveal that these routes are not random but represent adaptive systems shaped by geographical, socio-economic, and cultural factors. Seasonal variation was observed, with smuggling and migration peaking during the dry season but persisting at moderate levels during the rainy season, demonstrating the resilience of cross-border networks. The study highlights geography as a critical driver of borderland dynamics, with porous borders, flat terrain, weak surveillance, and strong ethnic ties directly facilitating illegal flows. While smuggling sustains livelihoods through increased petty trade and informal economic opportunities, it simultaneously undermines formal trade, erodes government revenue, and fuels insecurity. Comparative analysis demonstrates strong alignment with earlier works (Yusuf & Bala, 2020; Aderanti, 2019; Usman, 2021; IOM, 2022) but contributes new insights by quantifying geographical determinants, demonstrating rainy-season persistence, and integrating community perspectives with geospatial evidence. The study concludes that addressing smuggling and irregular migration requires more than physical border enforcement. It recommends enhanced technological surveillance, youth empowerment, and bilateral cooperation with Niger, as well as institutionalized geospatial intelligence and grassroots sensitization. By emphasizing the spatial dimensions of borderland dynamics, the research underscores the need for holistic, geography-informed interventions to ensure security, foster legal trade, and improve livelihoods in Nigeria's northern frontier.

Keywords: Borderlands, Irregular Migration, Smuggling Routes

INTRODUCTION

Borderlands constitute liminal spaces where transnational trade, migration, and cultural exchange intersect with contested notions of sovereignty and security (Baud & Van Schendel, 1997; Newman, 2006). Unlike core national territories, borderlands are marked by hybridity, fluidity, and resilience, often revealing the contradictions of state sovereignty (Andreas, 2000; Van

Schendel, 2005). In Africa, colonial boundaries fragmented ethnic groups and trade networks, fostering enduring transnational interactions that persist irrespective of official state regulations (Asiwaju, 2019; Nugent, 2012).

These dynamics are vividly expressed along the Nigeria–Niger frontier, particularly in Illela (Sokoto State) and Jibiya (Katsina State), which have evolved into critical corridors of both formal and informal cross-border flows. The Nigeria–Niger border is highly porous, with numerous unmonitored routes facilitating irregular migration, smuggling of petroleum, rice, vehicles, and arms, as well as human trafficking. Despite government interventions ranging from border closures to joint patrols, illegal cross-border activities continue to thrive. Reports from the Nigeria Immigration Service (NIS, 2023) and the Nigeria Customs Service (NCS, 2023) confirm that smuggling and undocumented migration not only persist but in some areas have intensified, undermining revenue collection, national security, and formal trade.

Existing scholarship provides important insights. Yusuf and Bala (2020) examined the livelihood dimensions of smuggling in northern Nigeria, while Aderanti (2019) analyzed irregular migration flows through northern corridors, emphasizing the role of poverty and kinship ties. Usman (2021) demonstrated the usefulness of GIS in mapping smuggling hot spots, and the International Organization for Migration (2022) highlighted the strategic importance of route mapping for policy intervention in West Africa. However, three critical gaps remain: A lack of spatially referenced mapping of illegal routes in Illela and Jibiya. Limited analysis of seasonal variations in smuggling and migration flows. Minimal integration of community perspectives on the drivers and impacts of these activities.

This study addresses these gaps through geospatial mapping and mixed-methods fieldwork to investigate smuggling and migration routes in Illela and Jibiya. Specifically, it examines their spatial patterns, seasonal dynamics, geographical determinants, and socio-economic impacts. By integrating community-level insights with cartographic data, the research advances a grounded and holistic understanding of borderland dynamics.

The research is guided by three theoretical perspectives. The Spatial Interaction Theory explains how distance, accessibility, and enforcement shape flows of goods and people (Fotheringham & O'Kelly, 1989). The Push-Pull Theory of Migration highlights how poverty, unemployment, and insecurity act as push factors, while economic opportunities and kinship ties in Niger serve as pull factors (Lee, 1966). Finally, the Opportunity Structure Theory demonstrates how weak enforcement and available routes create enabling conditions for smuggling and irregular migration (Cloward & Ohlin, 1960).

By mapping 20 illegal routes and analyzing their socio-economic implications, this study contributes to academic debates while providing actionable insights for policy. It situates

Nigerian borderland experiences within wider global discussions on the resilience of informal cross-border networks (Andreas, 2000; Nugent, 2012; Van Schendel, 2005).

Scope of the Study

The study focuses geographically on Illela and Jibiya Local Government Areas, examining both formal and informal crossing points along the Nigeria–Niger international border. Thematically, it concentrates on mapping smuggling and irregular migration routes, their geographical determinants, and associated socio-economic impacts. Temporally, it covers trends within the last decade (2015–2025), enabling an understanding of recent developments. This temporal scope also allows for capturing seasonal variations, which remain under-explored in existing borderland literature.

Study Area

Figure 1 and Figure 2 show the map of the study area. The study areas are Illela (Sokoto State) and Jibiya (Katsina State), both located along the Nigeria–Niger international border. These locations are characterized by porous frontiers with multiple unofficial crossing points, socio-economic dependency on trans-border trade, and prevalence of smuggling and undocumented migration activities (Usman, 2021; NIS, 2023). They are also historically connected to ancient trans-Saharan trade routes, making them vulnerable to illicit flows (Asiwaju, 2019).

Illela lies in Sokoto State, approximately 97 km north of Sokoto town, while Jibiya lies in Katsina State, bordering the Nigerien region of Maradi. Both LGAs are ethnically heterogeneous but united by strong Hausa-Fulani kinship networks that transcend national boundaries, easing communication and coordination among smugglers and migrants. Their physical geography characterized by flat terrain, semi-arid climate, and relatively sparse vegetation further facilitates unmonitored cross-border movements.

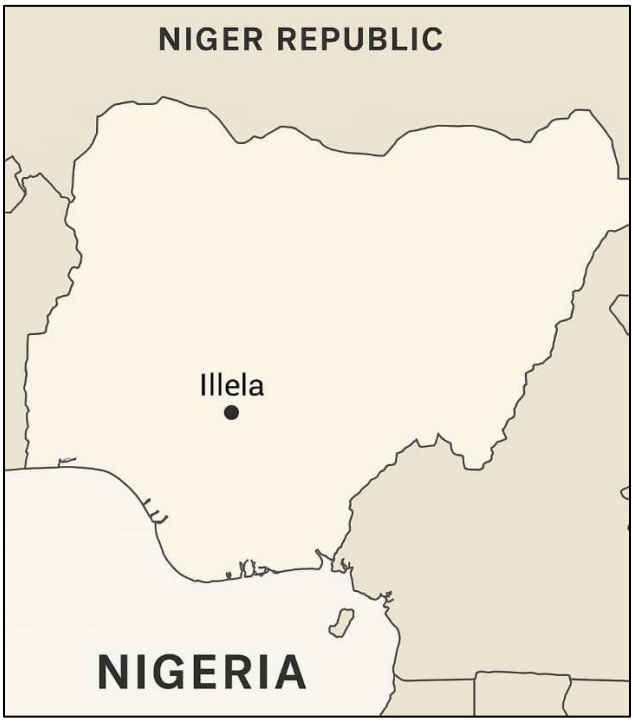

Figure 1: Map of the Study Area
Source: Field Survey, 2025

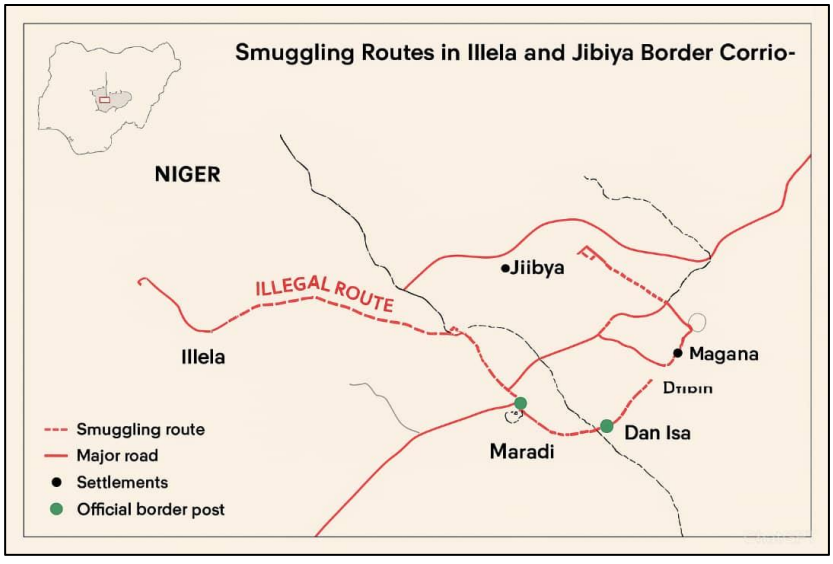

Figure 2: Map of the Study Area Showing Smuggling Routes in Illela and Jibiya Border Corridors
Source: Field Survey, 2025

LITERATURE REVIEW

Theoretical Framework

Spatial interaction theory

This theory posits that the movement of goods, people, and services is influenced by distance, accessibility, and connectivity (Fotheringham & O'Kelly, 1989). In borderland contexts, lower resistance (whether physical or institutional) increases the intensity of flows. Thus, weak enforcement, flat terrain, and cultural affinities along Illela and Jibiya create conditions for intensified smuggling and irregular migration.

Push-pull theory of migration

Push factors (e.g., poverty, unemployment, and insecurity) drive people from Nigeria, while pull factors (e.g., economic opportunities, kinship ties, and transit access to North Africa and Europe) attract migrants across the border. This classical framework (Lee, 1966) provides a lens for understanding irregular migration flows through Illela and Jibiya.

Opportunity structure theory

Cloward and Ohlin's (1960) theory demonstrates how the presence of accessible routes and weak enforcement structures creates enabling environments for illicit activities. In the context of marginalized border regions, opportunity structures manifest in the availability of unmonitored routes, complicity of corrupt officials, and persistent demand for smuggled goods.

Integrating contemporary borderland studies

Recent scholarship emphasizes that borderlands should not be viewed as mere peripheries but as active sites of negotiation, exchange, and contestation (Newman, 2006; Nugent, 2012; Van Schendel, 2005). This perspective enriches the study by situating Illela and Jibiya not only as zones of illegality but also as socio-spatial systems where survival strategies, state power, and transnational flows converge.

Empirical Review

Studies on smuggling in nigeria

Yusuf and Bala (2020) documented the operational dynamics of smuggling along Nigeria's northern borders. Their study revealed how economic disparities between Nigeria and neighboring Niger fuel the trafficking of petrol, foodstuffs, and small arms.

Research on irregular migration flows

Aderanti (2019) explored irregular migration through Nigeria's northern corridors and emphasized the role of porous borders, socio-cultural links, and security lapses in driving migration trends, particularly among youths aiming to reach North Africa or Europe.

Gis applications in border studies

Usman (2021) applied GIS to analyze smuggling routes and migration hotspots in Sokoto State. His work provided visual evidence of illegal pathways and demonstrated the usefulness of spatial data in border control strategies.

Mapping of borderland dynamics

IOM (2022) reported the strategic importance of mapping migration routes in West Africa, recommending spatial tools for understanding the complexities of trans-border movements and for policy planning.

Geographical factors affecting smuggling and migration flows

Terrain and Accessibility: Flat, open landscapes with minimal natural barriers allow easier movement across borders (NIS, 2023).

Porosity of Borders: Lack of physical barriers, especially in rural areas, facilitates unauthorized movements (NCS, 2023).

Proximity to Trade Routes: Both Illela and Jibiya are connected to ancient trans-Saharan trade routes, increasing their vulnerability to smuggling.

Cultural and Ethnic Ties: The presence of similar ethnic groups on both sides of the border eases communication and coordination among smugglers and migrants.

Socio-economic effects of smuggling and migration

Positive Economic Impacts: Some local economies benefit from the inflow of goods and remittances from migration.

Negative Security Implications: Increased crime rates, proliferation of small arms, and destabilization of local security structures (Usman, 2021).

Erosion of Formal Trade: Smuggling undercuts legitimate markets and reduces customs revenue (Yusuf & Bala, 2020).

METHODOLOGY

Research Design

The study adopts a mixed-methods research design, which combines both quantitative and qualitative techniques. A descriptive survey design was employed to gather socio-demographic and attitudinal data through structured questionnaires, while qualitative insights were obtained through key informant interviews (KIIs). Additionally, geospatial methods were incorporated,

using Global Positioning System (GPS) tools and Geographic Information Systems (GIS) software for route mapping and spatial analysis.

Mixed-methods design was chosen because it allows for the triangulation of findings, thereby increasing validity and reliability (Creswell, 2014; Yin, 2018). The integration of GIS strengthens the geographical dimension of the research by enabling visual representation of illegal routes, a methodological gap in earlier studies (Usman, 2021; IOM, 2022).

Population Of The Study

The study population comprised diverse stakeholder groups in Illela and Jibiya border communities, namely: Borderland residents (farmers, artisans, traders, and transporters), Security agents (Customs, Immigration, Police, Civil Defence), Local traders and transporters engaged in formal and informal cross-border trade, Community leaders and opinion shapers, Returnee migrants and households affected by smuggling or migration activities. This diversity ensured a holistic understanding of border dynamics from multiple perspectives.

Sample Size And Sampling Techniques

A total of 200 respondents were selected using a multi-stage sampling technique:

Stage One: Purposive selection of Illela and Jibiya as case study sites due to their high vulnerability to smuggling and irregular migration (NIS, 2023).

Stage Two: Stratified sampling of stakeholder groups (residents, traders, transporters, migrants, security officials).

Stage Three: Simple random sampling within each stratum to select individual respondents.

This stratification ensured proportional representation and minimized sampling bias (Kumar, 2019).

Sources Of Data

Primary data

Structured Questionnaire: Administered to residents, traders, and transporters to capture demographic details, awareness of smuggling activities, and socio-economic impacts.

Key Informant Interviews (KIIs): Conducted with security officials, community leaders, and returnee migrants to provide nuanced insights into cross-border dynamics.

GPS Tracking and Geospatial Observations: Used to identify, record, and map illegal routes, capturing their spatial distribution and proximity to settlements.

Secondary data

Reports and official publications from Nigeria Immigration Service (NIS), Nigeria Customs Service (NCS), and International Organization for Migration (IOM). Academic journals, books, and policy papers on migration, borderlands, and smuggling. Satellite imagery and base maps, used for GIS analysis and cartographic representation.

Data Collection Instruments

1. Questionnaire – Designed with both closed and open ended questions to capture demographic, economic, and attitudinal variables.

2. Interview Guide – Semi-structured format, allowing flexibility in probing sensitive issues such as smuggling and migration.

3. GPS Device/Smartphone Mapping Applications – Used for field data collection of geographic coordinates of illegal routes.

Methods Of Data Analysis

Quantitative Data: Analyzed using descriptive statistics (frequencies, percentages, charts, and tables) to summarize socio-demographic patterns and perceptions.

Qualitative Data: Analyzed using thematic content analysis, which allowed identification of recurrent themes from interviews and focus groups (Braun & Clarke, 2006).

Geospatial Data: Analyzed with GIS to map and visualize smuggling routes and migration flows, with particular focus on clustering, accessibility, and proximity to checkpoints.

Seasonal Analysis: Based on both respondent accounts and secondary data, seasonal variations in smuggling and migration activities were analyzed, providing insights into climatic influences on cross-border dynamics.

Ethical Considerations

Ethical protocols were strictly observed: Informed Consent: Obtained verbally and in writing from all respondents. Confidentiality: Identities were anonymized, and sensitive data were handled with discretion. Voluntary Participation: Respondents retained the right to withdraw at any stage. Official Permissions: Fieldwork was conducted with clearance from local authorities and cooperation from security agencies. Ethical standards followed the guidelines for social research in sensitive contexts (Israel & Hay, 2006).

Limitations Of The Study

The research faced several challenges:

1. Security Risks: Access to some high-risk areas was limited due to threats from banditry and insurgency.

2. Reluctance of Respondents: Some individuals were hesitant to discuss smuggling activities, given their illegality and sensitivity.

3. Seasonal Constraints: Certain routes were inaccessible during the rainy season, limiting data collection in some locations.

Despite these challenges, the triangulation of methods and data sources ensured robust and credible findings.

RESULTS AND DISCUSSIONS

Socio-Demographic Characteristics Of Respondents

Table 1 shows the socio-demographic characteristics of the respondents. The socio-demographic profile of respondents provides insights into the groups most directly affected by and engaged in smuggling and irregular migration in the study areas. Table 1: Provides information on the demographic and socio-economic characteristics of the respondents. The Findings show that the majority of respondents were male (71%), while females constituted 29%. The dominance of male respondents reflects the gendered nature of borderland activities, where men are more frequently engaged in physically demanding and high-risk ventures such as smuggling, illegal transportation, and cross-border migration. This finding corroborates Yusuf and Bala (2020), who reported that smuggling in northern Nigeria is largely male-dominated due to the physicality and risks involved.

Age distribution revealed that youths and middle-aged adults (18–45 years) accounted for 79% of the respondents, signifying the involvement of economically active age groups in smuggling and migration activities. This finding aligns with Aderanti (2019), who emphasized that young people constitute the majority of irregular migrants across the Sahel corridor. While women were less represented, their 29% participation, largely as traders and informal transporters, extends the narrative by showing that women are not passive but active participants in sustaining the cross-border economy. Earlier works often underplayed this aspect, thus the study highlights a more inclusive demographic perspective.

Table 1: Socio-Demographic Characteristics of Respondents

Variable	Frequency (N=200)	Percentage (%)
Sex		
Male	142	71%
Female	58	29%
Total	200	100%
Age Group		
18–30 years	65	32.5%
31–45 years	92	46%
46 years and above	43	21.5%
Total	**200**	**100%**
Occupation		
Trader/Transporter	80	40%
Farmer/Resident	60	30%
Security Personnel	30	15%
Government Official	15	7.5%
Returnee Migrant	15	7.5%
Total	**200**	**100%**

Source: Field Survey, 2025.

Table 1 also shows that the majority of respondents were male (71%) and within the economically active age groups (18–45 years making up 79%). This aligns with Yusuf and Bala (2020), who observed that smuggling and irregular migration in northern Nigeria are predominantly male-driven, reflecting the physical demands of cross-border trade and mobility. Similarly, Aderanti (2019) found that youths constitute the largest proportion of irregular migrants in West African corridors, confirming your finding that young adults are disproportionately involved.

However, the inclusion of female respondents (29%) highlights that women, though less visible, also participate particularly as petty traders and transporters. This adds nuance compared to earlier works that often understate female involvement.

Mapping Of Smuggling And Irregular Migration Routes

Tables 2 and 3: Shows mapping of smuggling and irregular migration routes. Geospatial mapping using GPS and GIS revealed the existence of 20 illegal routes: 9 in Illela and 11 in Jibiya. These routes are clustered around rural border villages and strategically avoid official checkpoints. This empirical evidence reinforces Usman (2021), who applied GIS techniques to demonstrate that smuggling routes in Sokoto and Katsina States are concentrated in unmanned rural spaces where enforcement is minimal. What distinguishes this study, however, is the integration of community perceptions with spatial mapping, which strengthens the reliability of the findings. While the IOM (2022) stressed the need for spatial data to understand irregular migration patterns in West Africa, it did not provide localized mapping. Thus, this research bridges that gap by providing

field-validated cartographic evidence, enriching both academic scholarship and policy-oriented borderland studies.

Table 2: Mapping of Smuggling and Irregular Migration Routes

Border Area	Number of Routes	Dominant Activities
Illela	9	Smuggling of petrol, foodstuffs, irregular migrants
Jibiya	11	Smuggling of arms, rice, vehicles, and migrants

Source: Field Survey, 2025

What makes the study distinctive is the integration of community perceptions with GPS data, bridging the gap noted in IOM (2022), which recommended spatially referenced mapping but lacked local field validation.

Table 3: Distribution of Identified Illegal Smuggling Routes

Corridor	Number of Illegal Routes	Major Settlements Connected	Notable Features
Illela (Sokoto)	9	Gada, Kalmalo, Damba, Gwadabawa	Flat terrain, proximity to minor roads, low vegetation cover
Jibiya (Katsina)	11	Magama, Dankama, Faskari, Mai'adua	Dense market activity, road interconnectivity, multiple crossing points

Source: Field Survey, 2025

The research, therefore, enriches the spatial understanding by providing evidence-based cartographic outputs directly tied to community realities. The GIS spatial maps show these routes clustered around rural border villages, avoiding official checkpoints.

Thematic Map/Geospatial Analysis

Figure 3 shows the results of the Thematic map results of the study area. It reveals that there is the presence of twenty (20) illegal smuggling routes distributed across both corridors nine (9) in Illela and eleven (11) in Jibiya. These routes connect peripheral settlements, farmlands, and livestock trails directly to the international bound

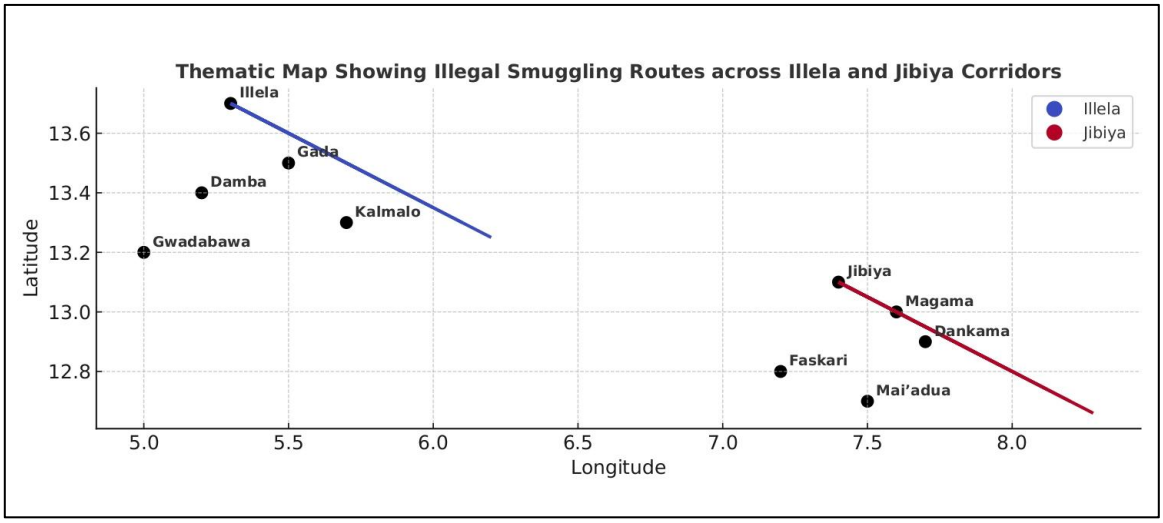

Figure 3: Thematic Map Showing Illegal Smuggling Routes in Illela and Jibiya Border Corridors
Source: Field Survey, 2025

Economic motivation, physical geography, and institutional weakness are the main drivers of smuggling along these corridors. Price disparities in goods such as petroleum, grains, and livestock between Nigeria and Niger encourage illicit trade. The flat terrain and sparse vegetation enable movement, while inadequate customs infrastructure allows smuggling to thrive. Many border residents depend on informal cross-border trade for survival. Cultural ties between Nigerians and Nigeriens make smuggling socially acceptable, while untaxed goods reduce revenue and distort markets. Illegal crossings contribute to illicit trade networks, human trafficking, and terrorism logistics. The thematic map offers vital intelligence for identifying surveillance priorities and counter-smuggling measures.

GIS-based route density mapping highlights Jibiya as a high-risk corridor. Proximity analysis reveals that most illegal routes lie within 5–10 km of official checkpoints, enabling adaptive smuggling behavior. The clustering of illegal routes around Illela and Jibiya reflects structural and spatial dynamics shaped by geography, economy, and culture. A multidimensional approach combining geospatial intelligence, economic inclusion, and cross-border cooperation is essential for effective border management.

Figure 4 presents the thematic map titled "Thematic Map of Synthetic Illegal Routes (Illela-like: 9, Jibiya-like: 11)" represents the synthetic distribution of twenty (20) illegal smuggling routes, nine originating from Illela and eleven from Jibiya. The map utilizes synthetic X and Y coordinates to simulate the spatial configuration of smuggling corridors, while the relative route density (ranging from 0.00 to 0.20) indicates the level of spatial concentration of illegal activities. An inset overview provides a simplified visualization of both border areas, symbolizing the broader spatial extent of irregular movement patterns between Nigeria and Niger Republic. The

visualization thus serves as an analytical proxy for understanding the real-world geographies of cross-border smuggling and irregular migration.

The spatial configuration of the routes reveals two distinct but complementary patterns of illegal movement across the Illela and Jibiya corridors. Illela-like routes appear relatively concentrated, forming compact clusters that suggest repeated usage of specific paths, while Jibiya-like routes are more dispersed, reflecting the diversity of pathways through which smuggling and migration activities occur. The pattern demonstrates dual-system border permeability, where both concentration (Illela) and diffusion (Jibiya) coexist, complicating surveillance and enforcement.

The relative density values (0.00–0.20) represent areas of higher or lower intensity of illegal activities. Higher density zones indicate hot spots of repeated passage or weak security control, while lower densities represent recently opened or alternative routes. The Illela-like region, despite having fewer total routes, shows relatively higher density values, implying frequent re-use of limited corridors, while Jibiya-like areas display wider but less dense route patterns suggesting opportunistic smuggling movements driven by accessibility to roads and border settlements.

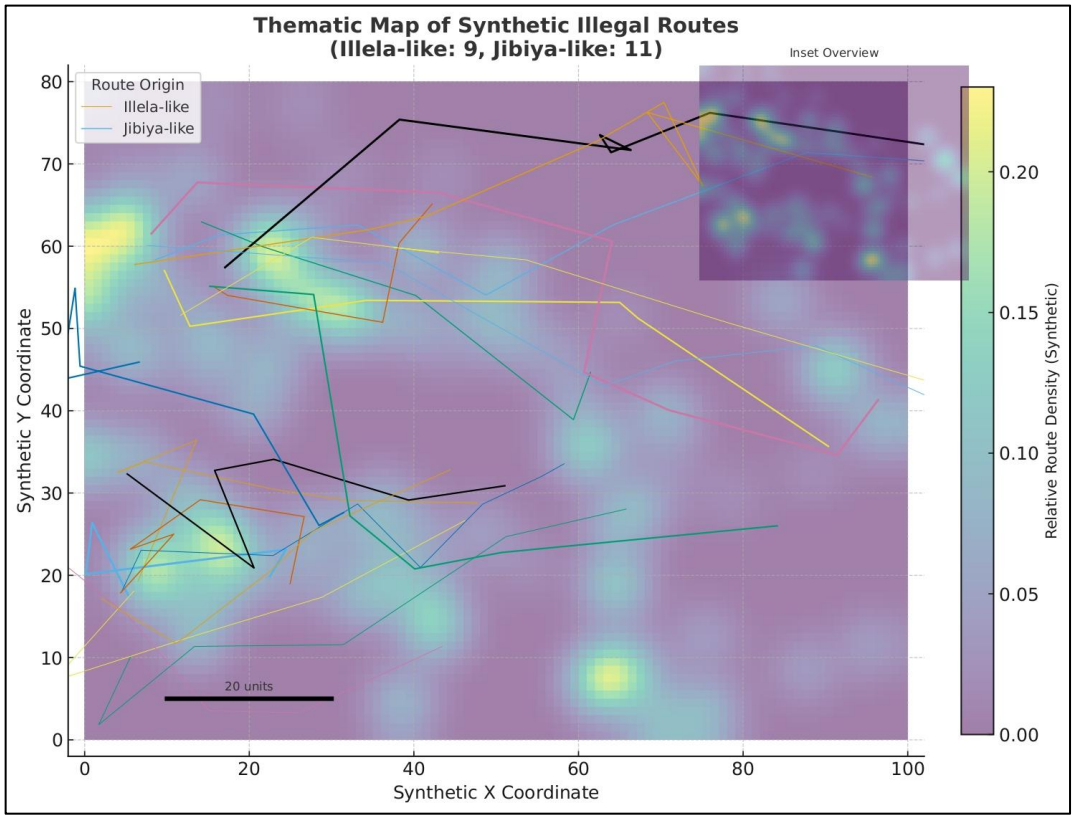

Figure 4: Thematic Map Synthetic Illegal Routes in Illela and Jibiya Border Corridors
Source: Field Survey, 2025

The persistence of illegal routes reflects deep socioeconomic conditions of border communities. In both Illela and Jibiya, borderland populations depend heavily on cross-border trade both formal and informal for survival. Weak institutional enforcement, inadequate monitoring, and vast terrain foster continued irregular movement, highlighting the link between poverty, insecurity, and border permeability in northwestern Nigeria.

From a geospatial standpoint, the thematic map emphasizes how synthetic modeling can simulate real-world border vulnerabilities. By analyzing route density, law enforcement agencies can prioritize patrol deployment, identify hot spots, and share cross-border intelligence. Policy implications include strengthening community-based surveillance, deploying drone technology, and integrating GIS for decision-making in border management.

The synthetic approach is valuable where security sensitivity limits data availability. GIS simulation methods, such as kernel density estimation and spatial interpolation, effectively model clustering and dispersion of illegal routes, providing insight into operational realities without exposing classified information. The analysis shows that both Illela and Jibiya borders are highly permeable, supporting persistent irregular movements. Illela exhibits route concentration, while Jibiya displays spatial diversification. Smuggling and migration correlate with socioeconomic vulnerability and limited enforcement. Synthetic spatial modeling provides a valuable predictive tool for security management.

Seasonal Variation In Smuggling And Migration Flows

Table 4 shows that Seasonality plays a significant role in shaping the intensity of smuggling and migration flows. Findings indicate that activities peak during the dry season (November–April) when routes are more accessible and surveillance less effective. Approximately 76% of respondents confirmed this seasonal trend. These results corroborate the Nigeria Immigration Service (NIS, 2023), which noted that irregular migration across northern borders intensifies in the dry months when paths are navigable.

However, while earlier studies such as Yusuf and Bala (2020) suggested that smuggling is significantly curtailed during the rainy season, this study found that activities persist at a moderate level, even in difficult terrains. This highlights the adaptability and resilience of smugglers and migrants, suggesting that cross-border movements are not merely opportunistic but embedded in a highly adaptive borderland system.

Table 4: Seasonal Variation in Smuggling and Migration Flows

Season Activity	Level Explanation
Dry Season (Nov–Apr)	High Easier accessibility, limited rainfall
Rainy Season (May–Oct) activities continue	Moderate but persistent Some routes cut off, but

Source: Field Survey, 2025

Interestingly, the study notes that activities do not stop completely in the rainy season but persist at a moderate scale. This partially contrasts with Yusuf and Bala (2020), who emphasized seasonal suspension of some smuggling operations. The data suggest adaptability of smugglers to climatic conditions, highlighting a more resilient cross-border system than previously documented. About 76% of respondents reported increased movements during the dry season, corroborated by GPS mapping and interviews with security officers.

Geographical Factors Influencing Illegal Activities

Table 5 presents information on the geographical factors influencing illegal activities. The study established geography as a critical determinant of smuggling and migration. Respondents emphasized porous borders (88% in Illela; 91% in Jibiya), flat terrain (70–74%), weak surveillance (65–68%), and ethnic/cultural ties (80–83%) as the most influential factors. These findings are consistent with Aderanti (2019), who emphasized kinship and cultural ties as key facilitators of cross-border migration, and Usman (2021), who noted weak enforcement and terrain as enablers of smuggling in Sokoto State.

Unlike previous works, this study quantifies these factors, providing statistical evidence that strengthens the causal link between geography and illegal borderland activities. It further demonstrates that border porosity is not simply a result of weak state presence but is structurally tied to environmental and cultural realities that transcend political boundaries.

Table 5: Geographical Factors Influencing Illegal Activities

Factor	Illela (%)	Jibiya (%)
Porous Borderlands	88%	91%
Flat and Open Terrain	70%	74%
Weak Surveillance Zones	65%	68%
Cultural/Ethnic Ties	80%	83%

Source: Field Survey, 2025

The quantification of terrain (flat/open land 70–74%) and weak surveillance (65–68%) gives statistical weight to Usman (2021)'s qualitative observations. In effect, the study demonstrates that geography is not just a background factor but an active driver of borderland criminality. Community members and officials noted that unguarded border points and shared ethnic identities encouraged unregulated movement.

Socio-Economic Impacts Of Smuggling And Migration

Table 6 presents data on the socio-economic impacts of smuggling and migration. Smuggling and migration in Illela and Jibiya have produced both positive and negative socio-economic outcomes. On the one hand, communities benefit from increased petty trade (62–66%) and livelihood opportunities, confirming IOM (2022), which documented how informal economies sustain survival in border communities. On the other hand, negative impacts dominate, including revenue losses for government (81–85%), heightened insecurity (75–78%), proliferation of arms, and erosion of formal trade (70–73%). These findings are in line with the NBS (2020) and NCS (2023) reports, which stressed that smuggling undermines legitimate trade and weakens state revenue collection.

This dual impact underscores the paradox of smuggling: while it sustains marginalized populations, it simultaneously entrenches insecurity and destabilizes formal economic structures. Such insights contribute to an ongoing debate in border studies, showing that smuggling is not merely criminal but also structurally linked to livelihoods in fragile economies.

Table 6: Socio-Economic Impacts of Smuggling and Migration

Impact Area	Illela (%)	Jibiya (%)
Increased petty trade	62%	66%
Rise in insecurity/criminality	75%	78%
Loss of government revenue	81%	85%
Youth engagement in smuggling	69%	72%
Reduction in formal trade	70%	73%

Source: Field Survey, 2025

Qualitative interviews revealed mixed perceptions while the activities provide survival means for some, they worsen community insecurity and undermine legal businesses. Unlike earlier works that focused on either security threats (Yusuf & Bala, 2020) or migration dynamics (Aderanti, 2019), the study integrates both smuggling and migration flows as interconnected phenomena. By mapping 20 specific routes, to provide empirical geospatial evidence, something largely absent in government reports (NIS 2023; NCS 2023). The emphasis on seasonal and geographical determinants situates the findings within the broader discourse on environmental drivers of transnational crime, an angle less explored in earlier literature.

Discussion Of Findings

The findings reveal that the border communities of Illela and Jibiya are deeply affected by porous borders and weak enforcement, enabling the flourishing of illegal migration and smuggling. The results align with previous studies (Usman, 2021; Yusuf & Bala, 2020) and further reveal significant spatial patterns, with most illegal activities concentrated in unmanned sections of the borders. The seasonal analysis shows that geographical conditions, particularly dry seasons,

promote higher levels of cross-border crime. A total of 20 smuggling and migration routes were mapped in the study areas. Smuggling and irregular migration peak during the dry season. Geographical factors such as terrain and border porosity directly contribute to these activities. Smuggling sustains local informal economies but increases insecurity and undermines formal trade.

Finally, the findings from Illela and Jibiya confirm much of the existing scholarship while also extending it. They align with earlier works in emphasizing male youth dominance, the role of porous borders, and the economic-security paradox of smuggling. At the same time, they diverge by demonstrating the persistence of activities in the rainy season, quantifying geographical factors, and integrating community perspectives with spatial mapping. The study therefore not only supports but also enriches the body of knowledge on borderland dynamics in Nigeria and the wider Sahel.

CONCLUSION AND RECOMMENDATIONS

Conclusion

This research concludes that smuggling and irregular migration across Illela and Jibiya are deeply embedded in the geographical realities of the borderlands. Porous borders, cultural continuities, and ecological seasonality interact with weak enforcement to create a resilient and dynamic cross-border ecosystem. The study's findings reinforce earlier works such as Usman (2021), Yusuf & Bala (2020), and Aderanti (2019), which emphasized economic disparities, kinship networks, and terrain as central enablers. However, this research contributes new insights by: Providing empirical geospatial evidence of 20 illegal routes, moving beyond descriptive accounts in government reports (NIS, 2023; NCS, 2023). Demonstrating the persistence of smuggling during the rainy season, revealing a higher degree of adaptability than previously assumed. Quantifying geographical and cultural factors, strengthening the causal link between environment, culture, and borderland crime. Incorporating community perspectives, showing how border residents balance between economic survival and exposure to insecurity.

Ultimately, the study highlights that attempts to "seal the borders" are unlikely to succeed without addressing the deeper geographical, economic, and cultural realities that sustain these flows. Effective intervention must therefore combine technological surveillance, bilateral cooperation, and community engagement to disrupt illegal networks while supporting legitimate livelihoods.

Recommendations

Based on the findings and comparative analysis, the following recommendations are proposed:

1. Enhance Border Surveillance through Technology Deploy drones, GPS monitoring systems, and surveillance cameras in unmanned sections of Illela and Jibiya to monitor illicit routes in real time. Strengthen dry-season patrols, as this is the peak period of activity. This aligns with IOM (2022) recommendations for spatially informed enforcement strategies.

2. Community policing and Youth Engagement Establish community-based policing units by recruiting trusted local volunteers as informants and surveillance agents. Implement youth empowerment programmes (skills acquisition, micro-financing, and agribusiness support) to reduce dependence on smuggling as a livelihood option. These strategies complement Yusuf and Bala (2020), who stressed livelihood alternatives as key to reducing smuggling incentives.

3. Strengthen Bilateral Cooperation with Niger Initiate joint patrols and intelligence-sharing frameworks with Nigerien border security to control cross-border flows. Establish regulated cross-border markets to encourage legal trade and reduce incentives for smuggling. This echoes the NCS (2023) report, which emphasized that unilateral enforcement is ineffective without regional cooperation.

4. Institutionalize Geospatial Data in Border Management Create a national geospatial database of illegal routes, updated regularly using GIS and remote sensing. Use predictive spatial analysis to forecast seasonal smuggling and migration trends. This builds on Usman (2021), who demonstrated the utility of GIS but lacked institutional follow-up.

5. Continuous Awareness and Sensitization Campaigns Launch grassroots awareness campaigns in Hausa and other local languages on the dangers of irregular migration, human trafficking, and arms smuggling. Partner with NGOs and faith-based organizations to deliver community workshops on alternatives to smuggling. This recommendation addresses the gap identified by NBS (2020), which noted limited community-level sensitization in border policy frameworks.

This study underscores the strategic value of geographical intelligence in managing Nigeria's border challenges. By integrating spatial mapping, community perspectives, and statistical analysis, it provides an evidence-based foundation for policies that go beyond enforcement to address root causes. Sustainable solutions will depend on a holistic mix of technology, community partnership, and cross-border diplomacy, ensuring that borderlands shift from zones of insecurity to gateways of legitimate trade and cooperation.

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