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SPECIAL ISSUE: CELEBRATING 20 YEARS OF GEOGRAPHY IN KADUNA STATE UNIVERSITY - ADVANCES AND FRONTIERS IN GEOGRAPHY

The Geography of Insecurity and Its Effect on Livelihoods in Kurfi Local Government Area, Katsina State, Nigeria

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ABSTRACT

Insecurity in Katsina state, Northwest Nigeria, including banditry, cattle rustling, kidnappings, and communal clashes, poses serious threats to rural livelihoods. This study investigates how the spatial distribution of insecurity incidents in Kurfi LGA, Katsina State, affects household livelihood outcomes. Drawing on mixed methods (household surveys, mapping, and interviews) from 420 households, the research examines income loss, asset depletion, food security, and coping strategies. Findings show that households located within 5 km of insecurity hotspots report on average 32% lower farm output and significantly higher livestock losses, as well as more frequent food shortages. Coping strategies include migration, asset sales, and shifting to non-farm labour. The study therefore recommends the for spatially targeted interventions such as market access, livestock restocking, and secure transport routes to strengthen resilience.

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1 Introduction

Nigeria has consistently recorded deaths of over 1,000 from various conflicts unleashed by various armed groups across the country for decades. The Nigeria security tracker and the Armed Conflict Location and Event Data Project (ACLED) had estimated that about 34,260 and 37, 535 lost their lives through various forms of conflicts in the advent of Boko Haram. These deadly activities in the north-eastern Nigeria have been a serious threat not only to lives, but also to food security (Campbell & Harwood, 2018).

Insecurity has emerged as a major development challenge across Northwest Nigeria, significantly undermining rural livelihoods and economic stability (Adamu et al., 2023; Smith & Ukpere, 2022). Kurfi Local Government Area (LGA) in Katsina State exemplifies the intensity of these challenges, where banditry, cattle rustling, kidnappings, and communal violence have intensified over the past decade. These forms of insecurity disrupt the agricultural calendar, force livestock dispersal, limit access to markets, and trigger forced migration, thereby weakening household resilience.

Rural livelihoods are highly dependent on natural and physical capital, yet these assets are directly threatened by violent events. Crop fields are abandoned during attacks, livestock are stolen, and transport routes are rendered unsafe, limiting the sale of farm produce and the purchase of essential goods (Ellis, 2000). Consequently, households experience income losses, reduced food security, and asset depletion, which constrain their ability to recover from shocks.

The literature indicates that insecurity impacts rural livelihoods both directly through asset losses and physical threats and indirectly through spatial and social disruption. Smith and Ukpere (2022) report that cattle rustling in Kaduna State led to a 40% reduction in herd sizes, while Adamu et al. (2023) found that frequent raids caused a 25% decrease in planting area in Northwestern Nigeria. Despite these insights, few studies systematically examine the spatial dimension of insecurity, i.e., how household proximity to hotspots correlates with livelihood outcomes. However, rising insecurity, particularly in northern Nigeria, has severely disrupted agricultural and socio-economic activities (Tsukutoda et al., 2025).

Nigeria, in recent times, has witnessed an unprecedented level of insecurity in many forms. In the southeast it appears in form of the indigenous people of Biafra, in the southwest it appears in the form of the creation of the state of Odudua State, in the northeast Boko haram has pronounced itself, in the northwest and north central, the tragedy appears in form of banditry, armed robbery, kidnappings for ransom, cattle rustling (Saad, 2024).

Katsina state, being one of the states in northwestern Nigeria, is plagued by rural banditry, armed robbery, and kidnappings for ransom, cattle rustling, thus affecting the agricultural activities of the residents of the twenty-three local governments of Katsina state. Kurfi LGA, being one of the affected local governments, is negatively affected by

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insecurity, affecting not only the agricultural production, but even the socio-political background of the people of the area, is adversely affected (Saad, 2024).

The Sustainable Livelihoods Framework (DFID, 1999) provides a useful lens for this study, highlighting how shocks and stresses erode human, social, natural, financial, and physical capital. By integrating this framework with spatial analysis tools such as Geographic Information Systems (GIS), this study seeks to advance understanding of the geography of insecurity and its differential impacts on rural households in Kurfi LGA.

Specifically, the study addresses the following questions:

i. How does proximity to insecurity hotspots affect household income, food security, and asset ownership?
ii. What coping strategies do households employ in response to insecurity?
iii. Which spatial clusters of insecurity correlate with the most severe livelihood losses, and what are the policy implications for targeted interventions?

1.1 What is Armed Banditry

Okoli and Ugwu (2019), in their work titled "Of marauders and brigands: Scoping the threat of rural banditry in Nigeria's North-West," defined banditry as an act that is motivated by either economic or political motives. While the former has to do with banditry motivated by the imperative of material accumulation, the latter refers to those driven by the quest to rob, to assault, or to liquidate a person or a group of persons based on political or ideological considerations (Saad 2024).

Some scholars, for instance, see it as associated with class struggle, whereby a group of people champions the causes of the masses against elite oppression. This group of people, according to Rife (2011), rob from the rich and give to the poor, and in return, the poor aid, admire, and protect the bandits from authorities. Banditry is an act of crime committed either by the residents of a village or people in the lower economic and social strata in order to fulfil their basic needs such as food, clothing, and shelter (Warto, 2011). According to Collins (2000), Banditry consists of the organization of armed bands for the purpose of attacking state or social institutions, enterprises, or individual persons.

Ladan and Matawalli (2020) posit that armed banditry is not restricted to rural settings as claimed by some scholars; it has also extended its tentacles to urban settings. Banditry has also assumed some level of violence as a result of the access of bandits to sophisticated weapons of warfare, such as AK-47 rifles and other small arms and light weapons that are illegally imported into the country through its porous borders. Bandits no longer target the rich people alone, as was the case in recent years; they now victimize the poor, women, and even children. Bandits are usually regarded as outlaws and desperate lawless marauders who do not have a definite residence or destination, and they roam around the forest and mountains to avoid being detected or arrested (Shalangwa, 2013).

Gadzama et al. (2018) revealed that the factors responsible for the incessant rural banditry in northern Nigeria include poverty, greed, corruption, and poor security. They also explained that the presence of security personnel has not really yielded the desired results, as these bandits have continued to rape women/girls indiscriminately, steal farm produce, rustle cattle, rob, and kidnap/abduct residents for ransom. Armed banditry thus prevents people from going about their daily businesses, which in the end, negatively affects the economy of the country. Okoli and Okpaleke (2014) showed that armed banditry, which manifests in the form of cattle rustling, has become a concern in northern Nigeria, where cattle breeding is a major occupation of the people.

2 Materials and Methods

2.1 Study Area

Kurfi Local Government Area is in Katsina state, North-west Nigeria, and has its headquarters in Kurfi town. The LGA is estimated to have a population of 204,417 in 2021, based on the 2006 census. Fulfulde language is commonly spoken in the area, while the religion of Islam is mostly practiced in the LGA. Notable landmarks in Kurfi LGA include the Government Science Secondary School, Kurfi. The LGA is located between Latitudes 12^0 39′ and 12^0 48′ N and Longitudes 7^0 25′ and 7^0 28′ E respectively, and covers a total area of 572 square kilometers and has an average temperature of 34 degrees centigrade (Adeola et al., 2022). The area hosts the Gada River and has an average humidity level of 19%.

The average wind speed in Kurfi LGA is put at 12 km/h. Trade is an important feature of the economic life of the people in the LGA, thereby explaining the reason why the area hosts several markets, which provide platforms for the exchange of a variety of goods and services. The area also has a rich agricultural heritage, with crops such as millet, sorghum, maize, groundnut, and rice also grown in the area. Several farm animals, such as cattle. Sheep and goats, as well as horses, are reared and sold in Kurfi LGA. Other important economic activities in Kurfi LGA include hunting and pottery (Abdurrasheed & Okoh, 2022).

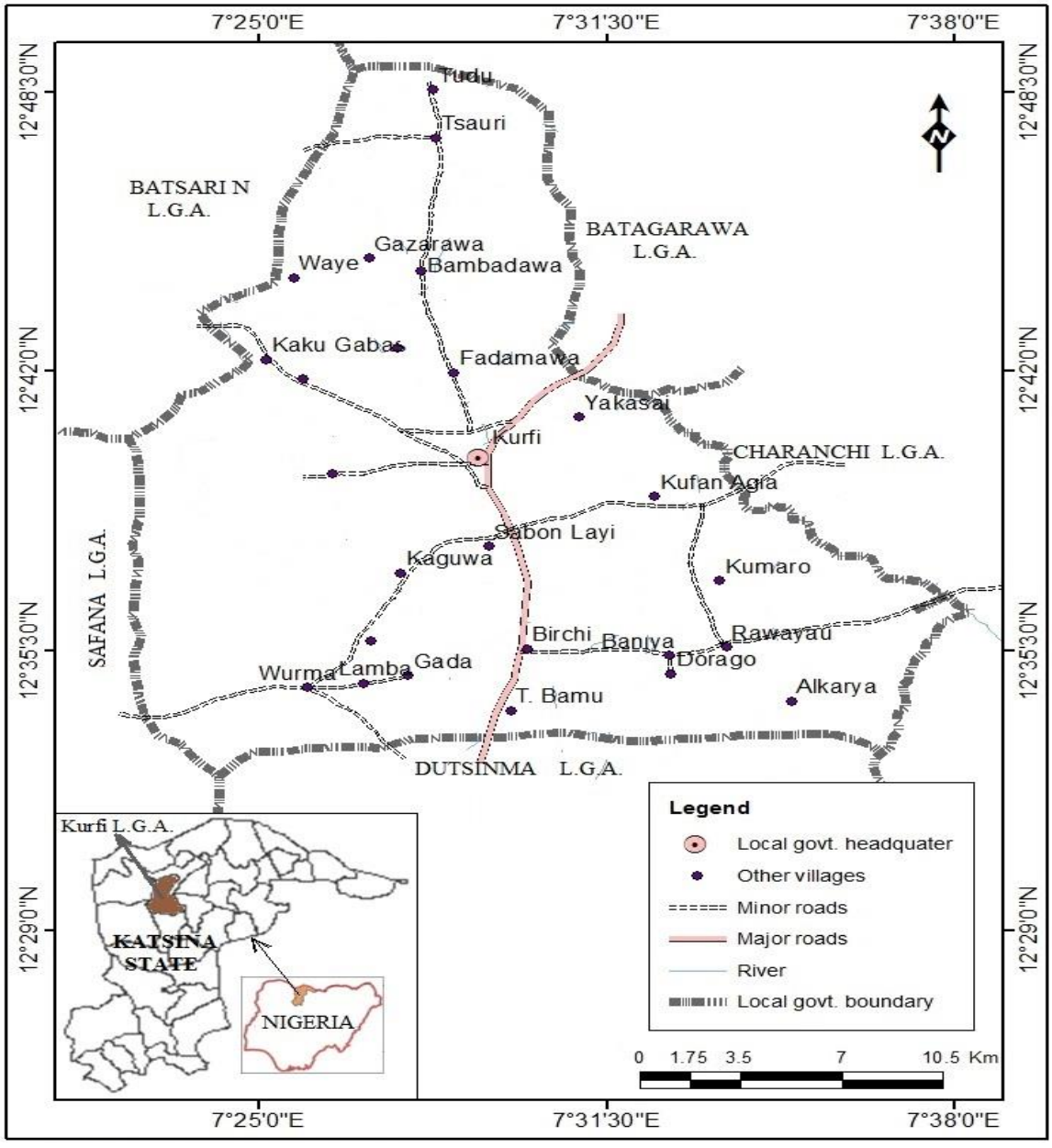

Figure 1: Kurfi Local Government Area of Katsina State
Source: Katsina State Geographic Information Service

2.2 Research Design

A mixed-methods research design was adopted to capture both quantitative and qualitative dimensions of livelihood outcomes in relation to spatially distributed insecurity events.

The study population comprised all households in Kurfi LGA. A multistage sampling technique was applied:

i. Ward selection: Kurfi's ten political wards were categorized into high, medium, and low exposure zones based on police records, local security reports, and historical attack data from 2020–2024 (UNICEF, 2025).

ii. Household selection: Within each ward, households were randomly selected proportional to ward population, resulting in a total sample of 420 households.

iii. Key informants: Interviews were conducted with 15 local leaders, 10 security personnel, and 8 NGO officials working on humanitarian and development programs.

2.3 Data Collection

i. Household Surveys: Structured questionnaires collected information on demographics, landholding size, income, livelihood activities, asset ownership, food security, migration, and coping strategies.

ii. GPS Mapping: Coordinates of surveyed households were recorded using handheld GPS devices, enabling spatial linkage to recorded insecurity incidents.

iii. Insecurity Data: Data on 85 insecurity incidents

(banditry, cattle rustling, and kidnappings) between 2020 and 2024 were compiled from police records, local government reports, and NGO documentation.

iv. Qualitative Interviews: Semi-structured interviews and focus group discussions provided insights into household perceptions, coping strategies, and local governance responses.

2.4 Data Analysis

i. GIS Mapping: Kernel density estimation (KDE) was used to identify hotspots of insecurity.

ii. Global Spatial Autocorrelation: Moran's I statistics measured the clustering of insecurity events and income levels.

iii. Local Spatial Clustering (LISA): Identified wards experiencing high-high clusters of insecurity and severe livelihood losses.

iv. Spatial Regression Analysis: Ordinary Least Squares (OLS) regression linked household livelihood loss to spatial and socioeconomic variables, including proximity to hotspots, household size, and market access.

v. Descriptive Statistics: Calculated mean, standard deviation, minimum, and maximum values for income, farm size, livestock value, and other livelihood indicators.

A total of 420 households were surveyed across wards categorized by exposure to insecurity (high, medium, low). GPS coordinates were collected at the cluster level to map household proximity to hotspots. Kernel density mapping identified high-risk zones, while regression analysis examined the relationship between proximity to insecurity and livelihood outcomes.

3 Results

Table 1: Summary of Livelihood Indicators by Exposure Level

Indicator	High Exposure	Low Exposure	Difference (%)
Average Farm Output (₦)	185,000	272,000	-32
Livestock Value (₦)	96,000	138,000	-30
Days of Food Shortage (per month)	11	5	+120
Households with Migration (%)	42	18	+133

Results show that high-exposure households report 32% lower farm output and 30% lower livestock value. Food insecurity is also more severe, with affected households experiencing twice as many food shortage days as low-exposure areas. Qualitative interviews revealed that households near hotspots often flee during the planting season so as to avoid being captured for ransom, leading to reduced yields. High-exposure households experienced lower farm output, higher livestock loss, and severe food insecurity. This finding is in tandem with that of (Saad, 2024), which posits that there is a strong positive relationship between insecurity and agricultural grain production. Qualitative interviews revealed that households near hotspots often flee during the planting season, reducing yields (Adamu et al., 2023).

Spatial regression confirmed that proximity to insecurity is a significant predictor of livelihood loss ($p < 0.05$). Households within 5 km of hotspots lost on average ₦70,000 more income annually than those beyond 10 km. Coping strategies such as migration and asset sales were common, particularly among poorer households. These findings agree with the results of similar studies conducted by Okoli and Okpaleke (2014), Gadzama et al. (2018), and Ladan (2019).

3.1 Global Spatial Autocorrelation

Global Moran's I statistics were used to measure the degree of spatial clustering in insecurity incidents and livelihood indicators. The results show positive and statistically significant spatial autocorrelation for insecurity and income, indicating that high values tend to cluster together.

Table 2: Global Moran's I Results (Kurfi LGA)

Variable	Moran's I	Z-score	P-value	Interpretation
Insecurity incidents	0.47	3.86	0.0001	Strong clustering of events
Household income	0.36	2.91	0.004	Income levels are spatially clustered.
Livelihood loss vs. distance	-0.29	-2.64	0.008	Negative correlation (closer = higher loss)

Global Moran's I statistics showed positive and significant spatial autocorrelation for insecurity and income. There exists a positive and significant relationship between the level of insecurity and income in the Kurfi

Local Government Area in Katsina State. LISA identified Tsauri and Kuguwa as high-risk hotspots, while Wurma formed a moderate cluster, and Rawayau and Birchi exhibited low or no significant clustering (UNICEF, 2025).

3.2 Local Spatial Clusters (LISA)

Local Indicators of Spatial Association (LISA) were used to identify wards with significant clustering of high or low insecurity impacts. High–high clusters represent areas where households experience severe livelihood losses surrounded by similarly affected communities.

Table 3: Local Spatial Cluster Summary

Ward	Gi* Z-score	Cluster Type
Tsauri	+3.1	High-risk hotspot
Kuguwa	+2.7	High-risk hotspot
Wurma	+2.5	Moderate cluster
Rawayau	-1.9	Low-risk, resilient
Birchi	-0.6	No significant clustering

OLS regression linked livelihood loss to proximity to hotspots, market access, and household size. The model explains 64% of variance (R^2 = 0.64), confirming that spatial proximity to insecurity is a dominant factor affecting household vulnerability (DFID, 1999).

3.3 Spatial Regression Analysis

To further understand the quantitative relationship between spatial variables, an Ordinary Least Squares (OLS) spatial regression was conducted linking household livelihood loss (dependent variable) to proximity to insecurity hotspots, market access, and household size. The model results show that proximity to insecurity hotspots significantly predicts livelihood losses ($p < 0.05$).

Table 4: Spatial Regression Summary

Predictor Variable	Coefficient (β)	p-value	Interpretation
Distance to hotspot	-0.031	0.002	Closer households experience higher livelihood loss.
Access to market	0.045	0.041	Improves livelihood outcomes
Household size	-0.009	0.115	Not statistically significant

The model explains 64% of the variance in livelihood loss (R^2 = 0.64), confirming that spatial proximity to insecurity is a dominant factor shaping livelihood vulnerability in Kurfi LGA. The regression residuals were mapped to identify spatial bias, showing that most outliers are located along the Tsauri–Wurma corridor. Other significant factors shaping livelihood in Kurfi include: access to market and household size. These findings agree with the results of similar studies conducted by Okoli and Okpaleke (2014), Gadzama et al. (2018), and Ladan (2019).

3.4 Descriptive Statistics of Respondent Households

Descriptive statistics provide a summary of the socioeconomic characteristics and livelihood conditions of households in the study area. A total of 420 households were surveyed across the ten political wards of Kurfi LGA. Data were collected on demographic structure, education, income, land ownership, and livelihood activities. The results reveal a predominantly agrarian population with moderate diversification into trading, craftwork, and transport services.

Table 5: Demographic and Socioeconomic Profile

Variable	Mean	Std. Dev.	Minimum	Maximum	Interpretation
Household size (persons)	6.7	2.3	2	14	Large, extended-family structures common
Age of household head (years)	43.6	11.4	21	72	Most heads in the productive age group
Educational attainment (years of schooling)	5.2	3.6	0	16	Low literacy rates in rural wards
Annual household income (₦)	214,000	76,000	55,000	540,000	Below the national rural average
Landholding size (ha)	1.8	1.2	0.3	6.5	Smallholder-dominated agriculture

The descriptive analysis clearly shows that households in proximity to insecurity hotspots experience significantly reduced economic well-being. The large standard deviation in income reflects the unequal effects of violence on rural livelihoods. These variations set the foundation for the spatial correlation analysis, confirming that insecurity has both direct and spatially mediated effects on household welfare.

Demographics: Mean household size is 6.7 persons; heads of households are predominantly in productive age (mean 43.6 years) with low educational attainment (mean 5.2 years).

a. Livelihoods: Crop farming (84.3%) and livestock rearing (62.1%) dominate household income. Non-farm activities contribute modestly.

b. Food Security and Assets: 46% of households experience food shortages; 59% own livestock, down from 82% before 2019; only 21% have savings or microcredit access.

Most respondents rely primarily on subsistence and small-scale commercial farming. Only about 27% reported any form of secondary income, indicating limited economic diversification. The low average education level suggests direct vulnerability to insecurity impacts on livelihood. Other significant factors responsible for vulnerability to insecurity impacts on livelihood include: annual household income, land holding size, educational attainment, age of household head, and household size.

Table 6: Livelihood Activities and Income Composition

Livelihood Source	% of Households Engaged	Mean Monthly Income (₦)	Contribution to Total Income (%)
Crop farming	84.3	13,700	51
Livestock rearing	62.1	8,500	27
Petty trading	31.6	6,800	14
Wage labour	18.9	4,900	6
Craft/Transport	11.2	3,600	2

Agriculture remains the dominant livelihood base, contributing over half of total household income. Insecurity reduces participation in crop and livestock farming, pushing households toward non-farm labour and small trading. The study revealed that there exists a positive relationship between the level of insecurity and the quantity of agricultural products in Kurfi local government in Katsina State.

Table 7: Food Security and Asset Ownership

Indicator	Percentage of Households	Remarks
Own livestock (≥ 2 animals)	59%	Lower than pre-2019 estimates (82%)
Experience food shortage ≥ 1 week/month	46%	Linked to insecurity & displacement
Have savings or microcredit access	21%	Very low financial resilience
Received humanitarian assistance (past 12 months)	17%	Concentrated in high-exposure wards

Households in high-exposure wards (e.g., Kuguwa, Tsauri) report greater livelihood shocks. Food security indicators show that nearly half of the population experiences some level of hunger each month.

Table 8: Spatial Variation in Livelihood Loss

Exposure Level	Mean Income (₦)	Mean Farm Size (ha)	Livestock Value (₦)	% Reporting Migration
High Exposure (≤ 5 km to hotspot)	178,500	1.2	96,000	42
Moderate Exposure (5–10 km)	218,700	1.6	117,000	28
Low Exposure (> 10 km)	272,000	2.1	138,000	18

Income, farm size, and asset values increase with distance from insecurity hotspots, indicating strong spatial inequality linked to safety conditions.

Proximity to insecurity hotspots is a major determinant of livelihood loss, consistent with the Sustainable Livelihoods Framework (DFID, 1999). Coping strategies indicate adaptive capacity, yet low access to financial resources limits resilience (Ellis, 2000; Smith & Ukpere, 2022).

4 Conclusion

The study concludes that insecurity in Kurfi LGA has profoundly reshaped rural livelihoods and undermined household welfare. Persistent attacks have created a climate of fear that restricts mobility, reduces agricultural productivity, destroys assets, and erodes social institutions. Households have adopted various coping strategies, but many of these are unsustainable and further diminish resilience. Addressing the crisis requires coordinated efforts between the government, security agencies, civil society, and community stakeholders. Without decisive action, rural poverty, hunger, and displacement will continue to worsen, threatening long-term development in the area.

The study made the following recommendations:

i. The Government should strengthen the presence of security operatives and coordinate community policing: Increase deployment of trained security personnel to identified hotspots. Establish community-based policing structures and improve intelligence gathering.

ii. Government and stakeholders should restore and support agricultural activities: Provide agricultural inputs, secure farming zones, and soft loans to farmers. Introduce technology-driven early warning systems and encourage cluster farming.

iii. The Government should establish Livelihood Recovery Programs: Support affected households with business grants, livestock restocking, vocational training, and targeted assistance to widows and displaced persons.

iv. Government and other stakeholders should improve Social Welfare and Essential Services: Enhance access to health, education, water, and psychosocial support for victims of violence.

v. Enhance Local Governance and Institutional Capacity: Empower local government councils to coordinate security and development response programs.

vi. Youth should be engaged in crime prevention: Implement skill acquisition programs, sports initiatives, and anti-drug campaigns.

vii. Promoting Community Resilience and Peace-building: Strengthen community dialogues, cooperative societies, and traditional conflict resolution mechanisms.

viii. Conduct Continuous Security Assessments: Use GIS and periodic surveys to monitor changes in insecurity and guide policy interventions.

ix. Implement Long-term Rural Development Initiatives: Improve rural infrastructure, market access, and livelihood diversification to build long-term economic resilience.

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