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Spatial Determinants of IDP Camps in Greater Yola (2015-2025) Using DTM Data

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Abstract

This study analyses spatial distribution and common places of abode for internally displaced persons (IDPs) in camp settings across Greater Yola, Adamawa State, Nigeria, from 2015 to 2019, amid Boko Haram insurgency displacement. Using Displacement Tracking Matrix (DTM) data from the International Organization for Migration (IOM), we mapped 15 camps across eight wards, revealing that 85-88% of IDPs (peaking at 29,000 in 2017) concentrated in peripheral fringes due to land availability and affordability, while core urban wards hosted only 12-15%. Descriptive spatial analysis and demographic surveys (n=269 household heads) highlight vulnerabilities, including 57% female respondents, 86% under age 50, and low education levels exacerbating livelihood challenges. Findings demonstrate non-uniform camp placement, with clustering in low-density outskirts (Namtari, Girei wards), driven by infrastructure constraints rather than security or services. This first ward-level DTM assessment in Adamawa underscores policy gaps in equitable displacement management. We recommend zoning reforms for balanced facility distribution to mitigate urban congestion and enhance resilience, informing scalable interventions amid Nigeria's >3 million IDPs.

Keywords: Mobility Tracking System; Geospatial Patterns; Armed Conflict Actors; Population Displacement Dynamics; Forced Migration

Introduction

Internally displaced persons (IDPs) represent one of the most pressing humanitarian challenges globally, with over 82 million forcibly displaced individuals as of recent estimates, of which approximately 55 million, two-thirds are IDPs remaining within their national borders (Schimmel et al., 2022; Williams et al., 2019). In Nigeria, the Boko Haram insurgency since 2009 has triggered massive internal displacement, particularly in the Northeast, displacing over 3.3 million people by 2015 and sustaining high numbers amid protracted conflict. Adamawa State, including Greater Yola (Yola North, Yola South, and parts of Girei LGAs), has emerged as a key reception area due to its relative security as the state capital, yet the spatial organization of IDP camps remains underexplored at the ward level (Abbara et al., 2022; Akanni et al., 2025; Awotipe, 2025; Beaton, 2024; Fouad et al., 2026; Hirani et al., 2022; Hussien & Ahmed, 2025; Klugman & Ortiz, 2022; Maila & Czimre, 2024; Schimmel, 2022a, 2022b; Williams, 2019). The insurgency, rooted in ideological extremism and exacerbated by Lake Chad's 90% shrinkage from climate change, damming, and overgrazing, has fueled resource competition among 70 ethnic groups, displacing agrarian communities from Borno, Yola, and neighboring states. By 2015-2019, Greater Yola hosted peaks of ~29,000 IDPs in 15 camps across eight wards, with 85-88% concentrated in fringes (e.g., Namtari, Girei) due to land availability, while core areas like Luggere and Adarawo absorbed only 12-15% (Blair, 2026; Dhavan, 2025; Er/Hoss et al., 2025; Schapendonk et al., 2026; Usmane et al., 2025). These uneven distribution strain urban infrastructure, livelihoods, and services, mirroring patterns in other African conflicts where camps cluster peripherally for space but risk isolation from aid. Existing studies document national IDP trends or camp conditions but lack granular spatial analysis of camp siting determinants in secondary urban hubs like Greater Yola.



No prior work leverages ward-level IOM Displacement Tracking Matrix (DTM) data to quantify fringe-core disparities or link them to policy failures in facility zoning. Demographics reveal vulnerabilities 57% female, 86% under 50, low education; yet spatial drivers (affordability vs. security) remain untested (Blair, 2026; Kasah & Islam, 2026; Schapendonk et al., 2026). This study examines the spatial distribution and common places of abode of IDPs in Greater Yola camps (2015-2019), using IOM DTM records and surveys (n=269 households). Specific aims: (1) map camp locations and temporal trends; (2) analyze fringe-core patterns; (3) assess demographic profiles; and (4) recommend equitable zoning. Located at 9°07'-9°19'N, 12°17'-12°22'E, the area spans Yola's twin towns and Girei fringes (Fig. 1). Findings inform resilient displacement planning amid Nigeria's ongoing crisis.

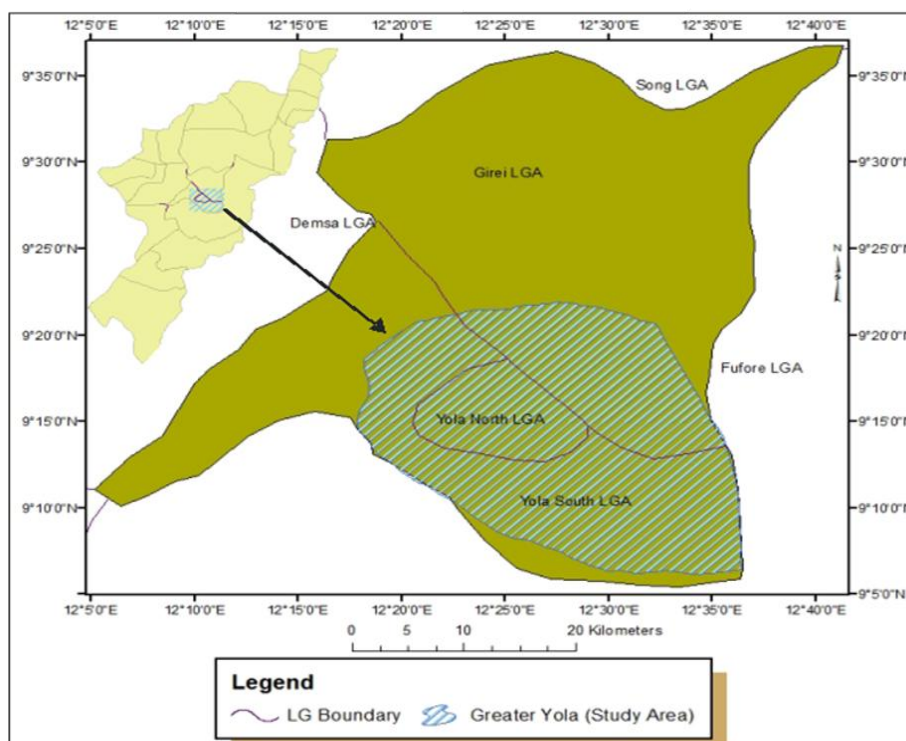


Fig. 1. Map of the study area

Study Area

Greater Yola (9°07'-9°19'N, 12°17'-12°22'E) comprises Yola North and South Local Government Areas (LGAs) plus peripheral Girei LGA wards, covering 150 km² of urban-rural transition zones. This secondary city serves as Adamawa State's administrative hub, hosting 15 IDP camps across eight wards.

Materials and Methods

This study employs a mixed-methods approach, integrating secondary Displacement Tracking Matrix (DTM) data from the International Organization for Migration (IOM) with primary household surveys and geospatial analysis to examine IDP camp distribution in Greater Yola from 2015-2019.

Data Sources and Sampling Procedure

Secondary data comprised IOM DTM records (Jan 2015-Dec 2019), capturing bimonthly IDP counts by camp, ward, demographics, and vulnerabilities via key informant interviews, enumerator assessments, and validation by NEMA/SEMA/NRC teams. Primary data included structured questionnaires administered to 269 household heads (calculated per Saunders et al., 2007: n = 1299 total households across camps), selected via stratified random balloting where Camps (n=15) were purposively selected based on IOM records; households within camps were probabilistically sampled. Table 1 details the distribution.

Data Processing and Analysis

DTM data were aggregated into yearly totals by ward/camp using Excel, yielding temporal trends (e.g., 26,253 IDPs in 2015) and fringe-core splits (fringes: 85-88%). Geospatial mapping (ArcGIS) classified wards as core (Luggere, Adarawo) vs. fringes (Namtari, Girei) based on urban density. Demographics underwent descriptive statistics (frequencies, percentages via SPSS); spatial patterns used choropleth maps and clustering metrics (e.g., % fringe concentration). Trend analysis applied visual line graphs; no inferential tests due to aggregate data limitations. Ethical clearance followed IOM protocols; informed consent obtained.

Geospatial and temporal predictive upgrade

The study upgrades conventional descriptive mapping by integrating statistical and machine-learning models such as logistic regression, random forests, and GIS-based multi-criteria evaluation (MCE) to quantify how determinants like proximity to roads, water sources, elevation, land use, and security zones shape IDP camp siting in Greater Yola. Camp-location coordinates from the Displacement Tracking Matrix (DTM) are modelled against ancillary spatial layers (e.g., Landsat or Sentinel-derived land cover) to shift from mere pattern description toward predictive siting analysis, thereby distinguishing the work from earlier Borno-focused clustering studies. Beyond the 2015–2019 baseline, the analysis extends temporally using post-2019 DTM updates and time-series forecasting (e.g., ARIMA or related models in R/Python) to project camp-location dynamics through 2025 under persistent insurgency and climate-related stressors. Applying ARIMA-type models to annual DTM inflows and camp-counts yields short- to medium-term forecasts of camp proliferation, consolidation, or relocation, capturing the combined effects of recurrent conflict waves and seasonal shocks such as flooding and farmland degradation. The fitted temporal process is non-stationary and structurally increasing, consistent with documented escalations in conflict-induced displacement across northeastern Nigeria, indicating that future camps will continue to cluster along major transport corridors, peri-urban edges, and safer administrative sub-zones rather than dispersing evenly, coupling these temporal projections with GIS-based spatial determinants including distance to conflict hotspots, road access, protected sites, and flood-prone zones the framework simulates scenario-driven camp-location patterns under alternative insurgency and climate pathways. Under a high-intensity conflict scenario, the model predicts a sustained inward shift toward better-protected urban fringes and formal government-designated sites, reinforcing the 2015–2019 pattern of clustering around core wards and major highways. In contrast, under a slower-onset climate-stress scenario, forecasts show incremental expansion into peripheral rural nodes with relatively secure water access and lower land-rent, but higher exposure to flood or erosion risk. From a policy perspective, this integrated temporal-spatial modelling framework moves beyond static 2015–2019 snapshots to support anticipatory planning for humanitarian actors and local authorities. Short-run ARIMA-based forecasts can inform early-warning indicators for camp expansion or relocation, while long-run scenario-driven projections guide infrastructure investments, land-use zoning, and decentralized camp-management strategies that explicitly integrate both conflict dynamics and climate resilience.

Table 1. Names of camps, Number of Heads of households and Sample size in each camp

Site name	LGA	Ward	Households	Sample Size
EYN Vunoclang	Gerei 1	Modire	24	5
St Theresa Cathedral	Yola North	Luggere	139	29
Dokitilla Wurocheke	Yola South	Adarawo	79	16
Hulere	Yola North	Jambutu	0	0
Kilbaje Extension	Yola South	Namtari	57	12
Sangere Dutse	Gerei	Gerei 1	21	4
Nana Villa	Gerei	Gerei 1	60	12
Wadai	Gerei	Damare	12	2
Unguan Abuja	Gerei	Gerei 1	50	10
Chekamederi	Gerei	Gerei 1	99	20
Lowcost Quarters	Gerei	Gerei 1	44	9
Unguan Kara	Gerei	Damare1	138	29
Alkali Gujibabu	Yola South	Yolde Pate	26	5
Malkohi Camp	Yola South	Namtari	24	5
Malkohi Village	Yola South	Namtari	526	109
		Total	1299	269

Source: IOM, 2017

Demographic Background of the IDPs in Camps

This section analysed the demographic characteristics of the respondents from IDP in Camps. The demographic characteristics of the respondents that were analysed for this study include gender, age, marital status and educational status. Table 4.1.1 show the demographic characteristics of IDPs in Camps.

Table 2 revealed that over 50% of the respondents living in the various IDP camps across the study area were females. The higher percentage of females in the camps setting may be due to the fact that the females were not capable of taking care of themselves like males can do and hence their high number in camps for assistance and adequate care. Moreso, men can take refuge anywhere with friends while women cannot. In addition, the insurgency may have claimed the lives of more men than women over time. Table 2 also shows that over 86% of the respondents were below the age of 50 which is an active age group that needs to be on farm since this displaced population came from agrarian communities. These able-bodied men who were supposed to be on the farm were

now kept in seclusion which is a camp setting and have been rubbed off their daily struggle for livelihood which may consequently lead to food insecurity for themselves and also to the State and the entire country at large. The remaining less than 20% were the old men and women who were supposed to be taken care of by the able active group of men and women. Table 2 shows the marital status of the respondents.

Table 2. Demographic Characteristics of IDPs in the Various Camps.

<i>Characteristics</i>	<i>Frequency</i>	<i>Percent</i>
Gender		
<i>Male</i>	115	42.8
<i>Female</i>	154	57.2
<i>Total</i>	269	100.0
Age		
<i>20-29</i>	62	23.0
<i>30-39</i>	100	37.2
<i>40-49</i>	70	26.0
<i>50-59</i>	32	11.9
<i>60 and above</i>	5	1.9
<i>Total</i>	269	100.0
Marital Status		
<i>Single</i>	73	20.1
<i>Married</i>	159	59.1
<i>Widow</i>	45	14.8
<i>Widower</i>	13	4.8
<i>Divorce</i>	3	1.1
<i>Total</i>	269	100.0
Edu. Qualification		
<i>Primary</i>	78	29.0
<i>Secondary</i>	131	48.7
<i>Tertiary</i>	39	14.5
<i>Others</i>	21	7.8
<i>Total</i>	269	100.0

Field Survey, 2019

The table shows that over 50% of the respondents were married while less than 30% were either widows, widowers or divorced. The remaining 20% accounted for singles. The higher percentage of widows and widowers among the IDPs may be because a substantial number of either husbands or wives of the IDPs have been killed during the insurgency hence their presence in camp settings for assistance. Table 2 also shows the educational qualifications of the respondents. Over 80% of the respondents have attained primary, secondary or no education at all. While less than 20% of the respondents had tertiary education. The higher percentage of lower or no educational qualification among the IDPs may be one of the reasons why Boko-Haram had gained ground in recruiting more members in the northern part of the State, north-east and the entire country at large since illiteracy is one of the weapons used by Boko-Haram to recruit member into their sect.

Common Places of Abode of IDPs in Camp setting in the Study Area

The destination of the IDPs according to (IOM 2014) is Greater Yola and its environs, Cameroon Republic, and to other States in Nigeria. Majority of the movement of the IDPs from Northern part of the State was to Greater Yola being the Capital of Adamawa State which serves as a centre of refuge to the IDPs with adequate security. The IDPs in Greater Yola, were not evenly distributed across the wards due availability of facilities to host the IDPs. Majority of the camps that were used for the hosting of the IDPs were mainly in the fringes of the study area (over 80%). There were fifteen (15) total number of camps spread across only eight (8) wards out a total of 11 Wards in the study area. Some wards have more number of camps than the other. During an interactive session with staff of International Organisation for Migration to identify the reason why some wards in the study area had more camps and some do not have camps for the IDPs, the response I got was that the reason was due to availability of space for hosting of the IDPs. Some wards especially those that are located in the outskirts or fringes of the town have available spaces that those in the core areas of the town. Table (1,2,3,4,5), shows the names of the camps located across the wards in the study area, the total numbers of IDPs in each of the camps and the total number of IDPs in each ward from 2015-2019.

Table 3. shows the names of the camps located across the wards in the study area, total number of IDPs located in each camp and the total number of IDPs in each ward across the study area in 2015. The table shows that there were fifteen (15) numbers of camps located in eight (8) wards in the study area. Out of the eight wards, only Luggere and Adarawo were located in the core part of the study area. The rest of the camps are all located in the fringes of

the study area. The reason for this according to International Organization for Migration is due to availability and affordability of space for hosting the IDPs camps. In this regard, since majority of the camps are located in the fringes of the study area, tables 1. shows that 85% percent of the IDPs that were spread across the wards in 2015, had their common places of abode in the fringes of the study area and only 15% had their distribution and common places of abode in the core areas. Fig 2. clearly visualises the distribution/common places of abode of the IDPs in camps in 2015.

Table 3. Shows the Distribution/Common Places of Abode of IDPs in Camps Across the Wards in the Study Area in 2015-2017

	Camp	Ward	JF	MA	MJ	JA	SO	ND	T	GT	N IDPs Town fringes
1	Malkoyi Camp	Namtari	1002	1001	983	981	981	982	5930	12860	22361 (85%)
2	Malkoyi Village	Namtari	1001	981	955	954	955	956	5802		
3	Kilbaji Extention	Namtari	201	199	184	183	181	180	1128		
4	Sangere Dutse	Girei I	101	98	78	75	77	78	507	3841	
5	Nana Villa	Girei 1	102	97	91	91	89	89	559		
6	Unguan Abuja	Girei 1	145	141	138	137	138	139	838		
7	Chakamidarei	Girei 1	271	264	253	252	251	252	1543		
8	Locost Quarters	Girei 1	71	69	64	65	64	61	394		
9	Wadai	Modirei	36	31	29	28	27	26	177	699	
10	E.Y.N Vonoclang	Modirei	99	93	84	81	82	83	522		
11	Anguan Kara	Damare	510	501	498	498	497	495	2999	2999	
12	Hulere	Jambutu	24	21	19	19	18	17	118	118	
13	Rumdi Alkali Gujibabu	BoleYolde Pate	251	285	274	271	281	282	1644	1644	
14	St. Therisa	Luggere	601	591	581	582	583	584	3522	3522	IDPs Core Areas 3892 (15%)
15	Dokitilla Wurocheki	Adarawo	72	69	58	58	57	56	370	370	
	Total		438	4441	4289	4275	4231	4280	26253		

Source: International Organization for Migration (2015)

Table 4. Distribution/Common Places of Abode of IDPs in Camps Across the Wards in the Study Area in 2016

	Camp	Ward	JF	MA	MJ	JA	SO	ND	T	GT	N IDPs Fringes 22580 (86%)
1	Malkoyi Camp	Namtari	1010	1011	1015	1050	1001	981	6068	Namtari 13094	
2	Malkoyi Village	Namtari	1001	1000	1006	1010	980	802	5799		
3	Kilbaji Extention	Namtari	200	202	221	231	191	182	1227		
4	Sangere Dutse	Girei 1	81	97	86	104	98	78	526	Girei 4235	
5	Nana Villa	Girei 1	71	72	74	98	77	71	463		
6	Unguan Abuja	Girei 1	140	139	142	145	141	140	847		
7	Chakamida	Girei 1	251	246	241	251	201	96	1286		
8	Locost Quarters	Girei 1	68	67	243	253	251	231	1113		
9	Wadai	Modirei	31	29	31	32	31	31	185	Modirei 788	
10	E. Y. N Vonoclang	Modirei	100	101	105	110	99	88	603		
11	Anguwan Kara	Damare	452	451	456	601	601	502	3063	Damare 3063	
12	Hulere	Jambutu	25	26	28	42	41	39	201	Jambut 201	
13	Rumdi Alkali Gujibabu	BoleYolde Pate	198	197	201	205	202	196	1199	Yolde 1199	
14	St. Therisa	Luggere	580	582	601	610	501	401	3275	Lugg 3275	
15	Dokitilla Wurocheki	Adarawo	71	70	76	91	90	82	480	Adaraw 480	
	Total		427	4272	4526	4833	4514	3920	26335		

Source: International organization for Migration (2016)

Table 4. show the names of the camps located across the wards in the study area, total number of IDPs located in each camp and the total number of IDPs in each ward across the study area in 2016. Just like 2015, the table shows that there were fifteen (15) numbers of camps located in eight (8) wards in the study area. Out of the eight wards,

only Luggere and Adarawo were located in the core part of the study area. The rest of the camps are all located in the fringes of the study area. The reason for this according to International Organization for Migration (2016) was due to availability and affordability of accommodation for hosting the IDPs camps. In this regard, since majority of the camps are located in the fringes of the study area, tables 2. shows that out of 26,335 IDPs that were spread across the eight ward in the study area 22,580 representing 86% percent of the IDPs in 2016, had their common places of abode in the fringes of the study area and only 3,755 representing 14% had their distribution and common places of abode in the core areas. Fig .3 clearly visualises the distribution/common places of abode of the IDPs in camps in 2016.

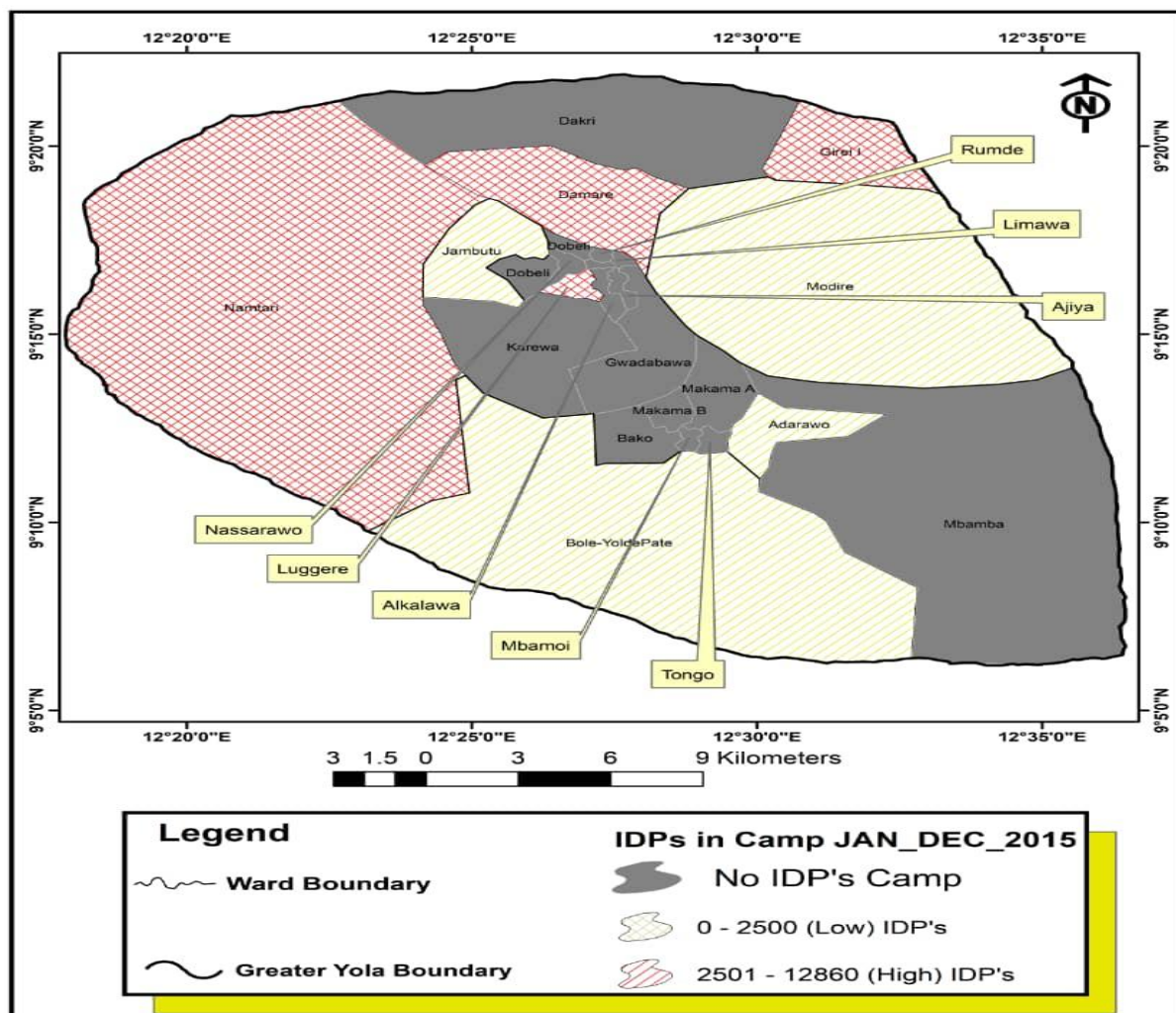


Fig.2. Distribution/Common places of Abode of IDPs in camps in the Study area in 2015

Table 5. show the names of the camps located across the wards in the study area, total number of IDPs located in each camp and the total number of IDPs in each ward across the study area in 2016. Just like 2016, the table shows that there were fifteen (15) numbers of camps located in eight (8) wards in the study area. Out of the eight wards, only Luggere and Adarawo were located in the core part of the study area. The rest of the camps were all located in the fringes of the study area. The reason for this according to International Organization for Migration (2017) was due to availability and affordability of accommodation/space for hosting the IDPs camps. In this regard, since majority of the camps are located in the fringes of the study area, tables 3. shows that out of 29,153 IDPs that were spread across the eight ward in the study area 24,862 representing 85% percent of the IDPs in 2017, had their common places of abode in the fringes of the study area and only 2,491 representing 15% had their distribution and common places of abode in the core areas. Fig 4. clearly visualises the distribution/common places of abode of the IDPs in camps in 2017.

Table 5. Distribution/Common Places of Abode of IDPs in Camps Across the Wards in the Study Area in 2017

	Camp	Ward	JF	MA	MJ	JA	SO	ND	T	GT	N IDPs Town Fringes 24862 (85%)
1	Malkoyi Camp	Namtari	985	1110	1110	1108	1108	1470	6891	Namtari 16092	
2	Malkoyi Village	Namtari	806	1401	1400	1402	1401	1609	8019		
3	Kilbaji Extention	Namtari	185	200	198	197	186	216	1182		
4	Sangere Dutse	Girei I	78	81	80	81	81	74	475	Girei 3694	
5	Nana Villa	Girei 1	71	71	69	72	71	74	428		
6	Unguan Abuja	Girei 1	143	141	142	141	140	141	848		
7	Chakamidarei	Girei 1	96	257	256	256	256	257	1378		

8	Locost Quarters	Girei 1	235	70	68	61	61	70	565		
9	Wadai	Modirei	39	35	31	32	31	37	205	Modirei	
10	E.Y.N Vonoclang	Modirei	93	101	100	98	97	104	690	895	
11	Anguwan Kara	Damare	504	487	451	431	431	487	2791	Damare	
12	Hulere	Jambutu	42	32	31	29	29	31	194	Jambutu	
13	Rumdi Gujibabu	BoleYolde Pate	201	200	198	199	198	200	1196	Yolde pate	
14	St. Therisa	Luggere	450	680	681	671	671	692	3845	Luggere	IDPs Core Areas 4291 (15%)
15	Dokitilla Wurocheki	Adarawo	102	71	69	66	65	73	446	Adarawo	
	Total		4027	4937	4884	4844	4826	5535	29153		

Source: International organization for Migration (2017)

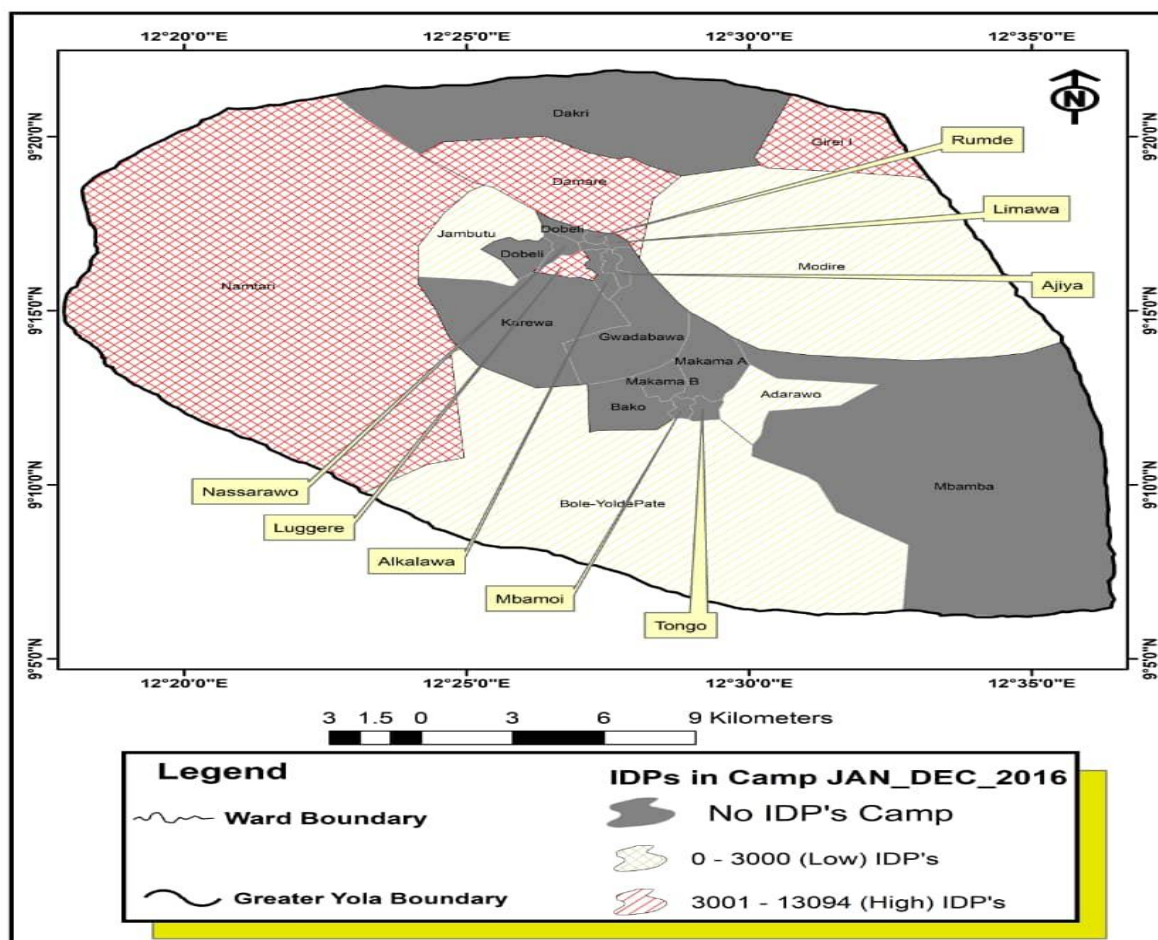


Fig 3. The Distribution/Common Places of Abode of the IDPs in Camps in 2016

Table 6. Distribution/Common Places of Abode of IDPs in Camps Across the Wards in the Study Area in 2018

	Camp	Ward	JF	MA	MJ	JA	SO	ND	T	GT	N	
1	Malkoyi Camp	Namtari	1470	1469	1341	1391	1391	1382	8444	Namtari 17596	IDPs Town fringes	
2	Malkoyi Village	Namtari	1608	1605	1201	1501	1501	1500	7916			
3	Kilbaji Extention	Namtari	214	212	201	205	203	201	1236			
4	Sangere Dutse	Girei I	71	68	62	68	65	61	395	Girei 2978		
5	Nana Villa	Girei 1	84	83	82	86	81	78	494			
6	Unguwan Abuja	Girei 1	38	32	33	36	35	25	199			
7	Chakamidarei	Girei 1	257	251	243	253	251	251	1506			
8	Locost Quarters	Girei 1	70	68	62	62	61	61	384			
9	Wadai	Modirei	37	34	31	34	31	28	195	Modirei 778		24825 (86%)
10	E.Y.N Vonoclang	Modirei	101	99	78	101	103	101	583			
11	Anguwan Kara	Damare	481	451	342	342	341	341	2298	Damare 2298		
12	Hulere	Jambutu	32						32	Jambutu 32		
13	Rumdi Alkali Gujibabu	BoleYolde Pate	201	202	183	185	186	186	1143	Yolde pate 1143		

14	St. Therisa	Luggere	691	682	428	521	520	518	3360	Luggere	IDPs Core Areas 3999 (14%)
15	Dokitilla Wurocheki	Adarawo	71	69	58	61	59	51	369	Adarawo	
	Total		4426	5325	4245	4839	4831	4784	28824	639	

Source: International organization for Migration (2018)

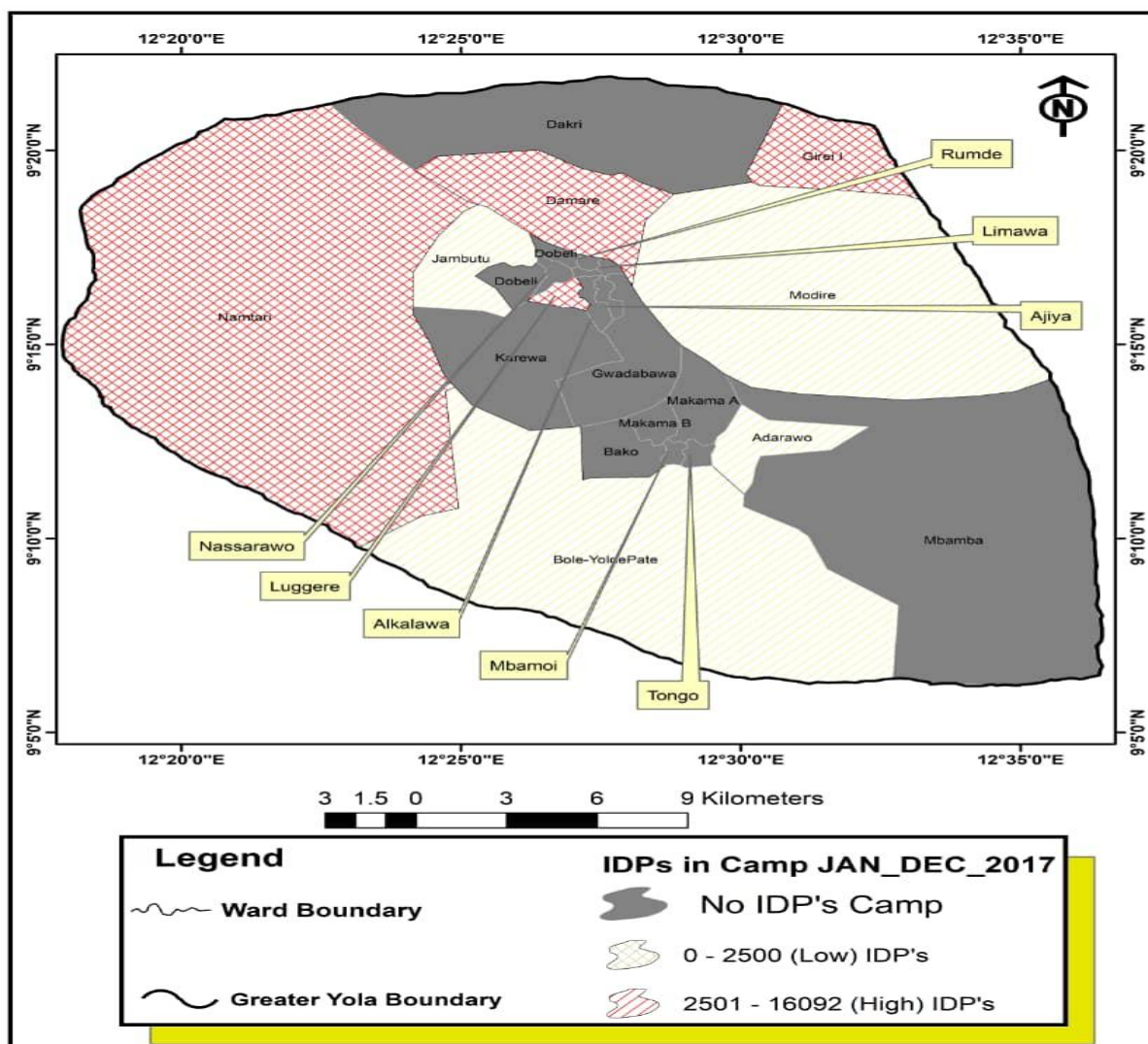


Fig 4. The distribution/common places of abode of the IDPs in camps in 2017

Table 6. show the names of the camps located across the wards in the study area, total number of IDPs located in each camp and the total number of IDPs in each ward across the study area in 2018. Just like in 2017, the table shows that there were fifteen (15) numbers of IDPs camps located in eight (8) wards in the study area. Out of the eight wards, only Luggere and Adarawo were located in the core part of the study area. The rest of the camps were all located in the fringes of the study area. The reason for this according to International Organization for Migration (2018) was due to availability and affordability of accommodation/space for hosting the IDPs camps. In this regard, since majority of the camps are located in the fringes of the study area, tables 4. shows that there were 28,824 total number of IDPs spread across the camps in the study area in 2018. out of 28,824 IDPs that were spread across the eight ward in the study area 24,825 representing 86% percent of the IDPs, had their common places of abode in the fringes of the study area and only 3,999 representing 14% had their distribution and common places of abode in the core areas. Fig 5. clearly visualises the distribution/common places of abode of the IDPs in camps in 2018.

Table 7. Distribution/Common Places of Abode of IDPs in Camps Across the Wards in the Study Area in 2019

S/No	Camp	Ward	JF	MA	MJ	JA	SO	ND	T	GT	N
1	Malkoyi Camp	Namtari	1381	1380	1281	1201	1101	1101	7445	Namtari 16692	
2	Malkoyi Village	Namtari	1408	1401	1333	1323	1333	1281	8079		
3	Kilbaji Extention	Namtari	198	196	195	196	191	192	1168		
4	Sangere Dutse	Girei I	61	55	54	54	52	51	327	Girei 2714	
5	Nana Villa	Girei 1	78	78	78	75	75	74	458		

6	Unguwan Abuja	Girei 1	21	21	21	21	21	21	126	704	IDPs Town fringes 23030 (88%)
7	Chakamidare	Girei 1	249	246	240	241	241	241	1458		
8	Locost Quarters	Girei 1	59	59	59	59	55	54	345		
9	Wadai	Modirei	25	24	24	21	21	21	136		
10	E.Y.N Vonoclang	Modirei	99	94	95	94	93	93	568		
11	Anguwan Kara	Damare	305	302	304	304	304	301	1820	Damare 1820	IDPs in Core areas 3283 (12%)
12	Rumdi Alkali Gujibabu	BoleYolde Pate	185	185	184	183	182	181	1100	Yolde-Pate 1100	
13	St. Therisa	Luggere	502	502	501	501	501	501	3008	Luggere 3008	
14	Dokitilla Wurocheki	Adarawo	51	48	48	45	42	41	275	Adarawo 275	
	Total		4622	4591	4417	4318	4212	4153	26313		

Source: International organization for Migration (2019)

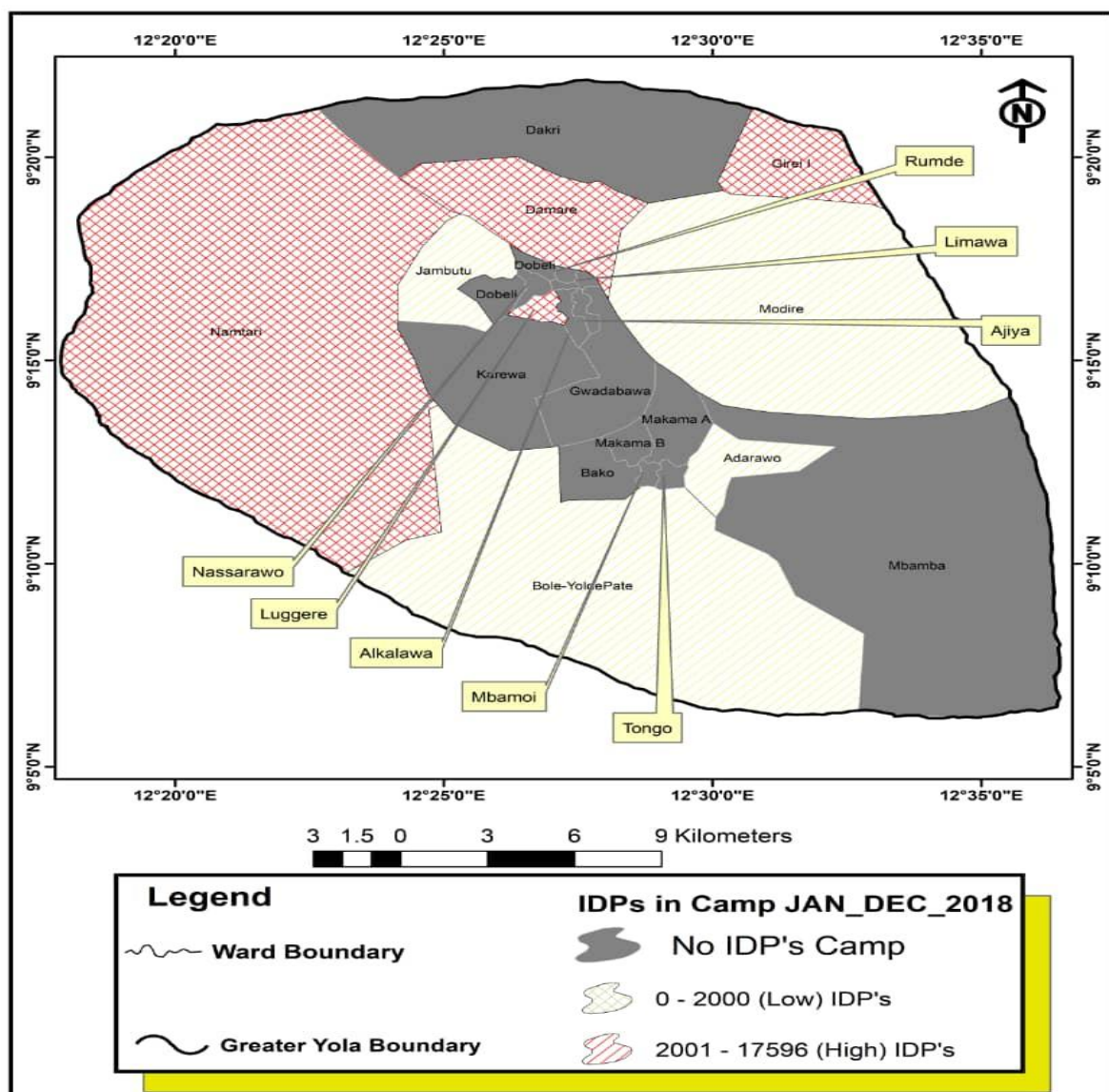


Fig 5. The Distribution/common Places of Abode of the IDPs in Camps in 2018

Table 7. show the names of the camps located across the wards in the study area, total number of IDPs located in each camp and the total number of IDPs in each ward across the study area in 2019. Just like in 2018, the table shows that there were fifteen (15) numbers of IDPs camps located in eight (8) wards in the study area. Out of the eight wards, only Luggere and Adarawo were located in the core part of the study area. The rest of the camps were all located in the fringes of the study area. The reason for this according to International Organization for Migration (2019) was due to availability and affordability of accommodation/space for hosting the IDPs camps. In this regard, since majority of the camps are located in the fringes of the study area, tables 5. shows that there were 26,313 total number of IDPs spread across the camps in the study area in 2019. Out of 26,313 IDPs that were spread across the

eight wards in the study area 23,030 representing 88% percent of the IDPs, had their common places of abode in the fringes or outskirts of the study area and only 3,282 representing 12% had their distribution and common places of abode in the core areas. Fig 6. clearly visualises the distribution/common places of abode of the IDPs in camps across the camps in the study area in 2019.

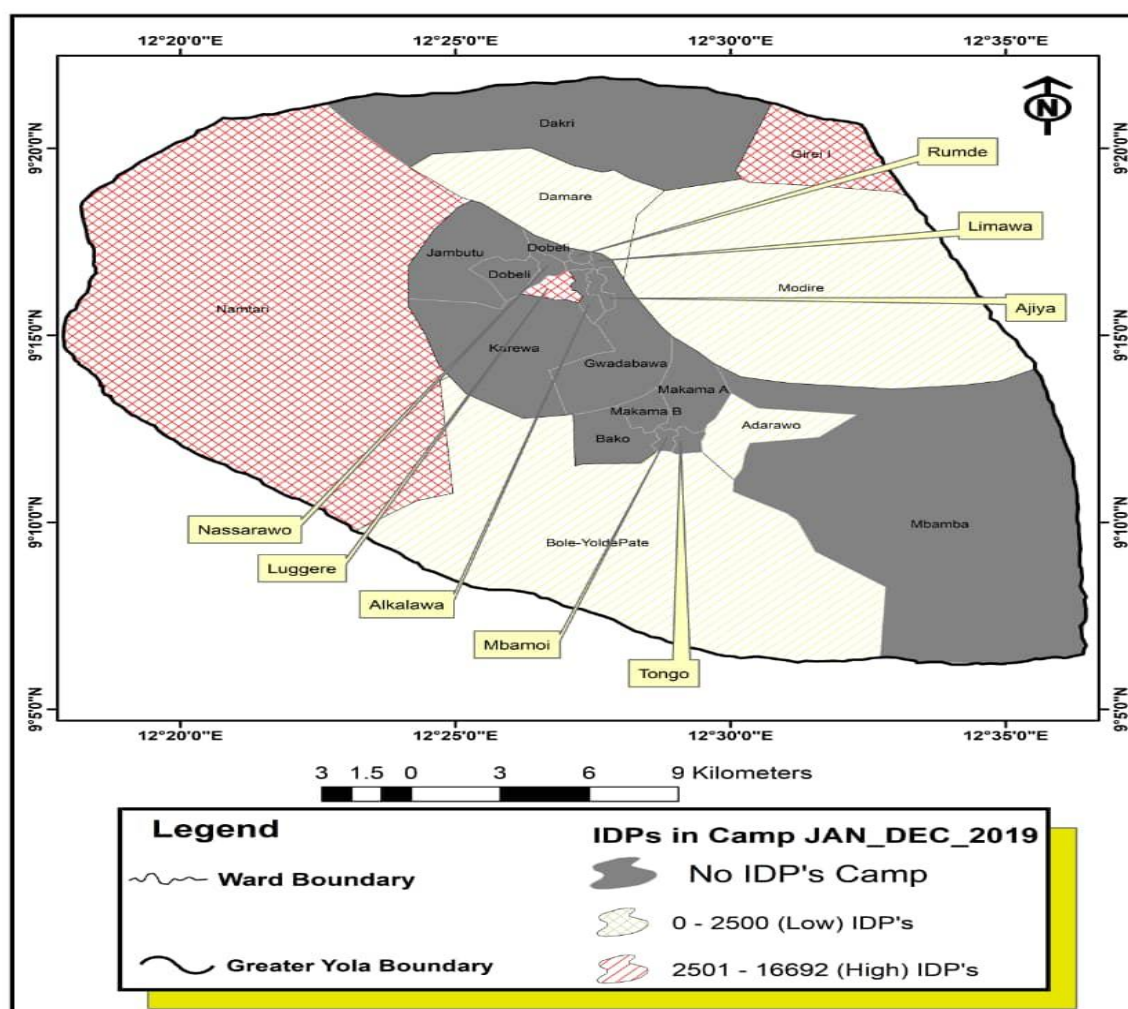


Fig 6. The distribution/common places of abode of the IDPs in camps in 2019

Discussion

The spatial analysis of internally displaced persons (IDP) camps in Greater Yola reveals a persistent imbalance in camp siting, with over 85% concentrated in peripheral wards due to land affordability and availability, while core urban wards host only 12–15%. This distribution pattern underscores how infrastructural constraints, rather than security imperatives or service accessibility, drive camp placement. Such peripheral clustering effectively isolates displaced populations from essential facilities, including healthcare, education, and employment opportunities, thereby reinforcing cycles of marginalization (UNHCR, 2018; UN-Habitat, 2020). Demographic findings 57% female, 86% under 50 years of age, and predominantly low educational attainment highlight acute vulnerabilities that compound livelihood insecurity and food scarcity. These demographic characteristics align with broader evidence that displaced populations often exhibit reduced human capital, which in turn limits adaptive capacity and resilience in protracted crises. The predominance of younger age groups suggests a potential labor force, yet low literacy and skill levels constrain integration into urban economies, perpetuating dependency on humanitarian aid (UNHCR, 2018; UNICEF, 2019). Temporal trends, peaking at 29,000 IDPs in 2017, confirm sustained displacement pressures linked to conflict dynamics in northeastern Nigeria and recurrent climate shocks such as flooding. Predictive modelling further indicates continued clustering along peri-urban fringes and transport corridors, reflecting both land market dynamics and the path dependency of humanitarian siting practices. This spatial persistence raises concerns about the long-term urban morphology of Greater Yola, where informal settlements and camp expansions risk exacerbating congestion and unplanned sprawl (OCHA, 2017; IOM, 2017). These outcomes expose policy gaps in equitable zoning and camp distribution. Current frameworks inadequately integrate conflict-sensitive planning, climate resilience, and balanced facility allocation. Without anticipatory reforms, Greater Yola risks perpetuating long-term marginalization of displaced populations while simultaneously undermining sustainable development goals (SDGs), particularly SDG 11 (sustainable cities and communities) and SDG 10 (reduced inequalities) (Government of Nigeria, 2021; UN-Habitat, 2018). The findings emphasize the need for a paradigm shift in humanitarian urban planning. Equitable camp distribution, integration of IDPs into host

communities, and investment in peri-urban infrastructure are critical to mitigating marginalization. Moreover, proactive alignment of humanitarian response with urban development strategies could transform displacement from a source of vulnerability into an opportunity for inclusive growth.

Conclusion

In conclusion, the study has provided valuable insights into the spatial distribution and settlement patterns of internally displaced persons (IDPs) within camp settings in Greater Yola. The findings clearly show that the majority of IDPs, accounting for over 80%, are concentrated in the fringes of the study area, while less than 20% reside in the core areas of the town. This uneven distribution is largely influenced by the availability of facilities and resources that can accommodate displaced populations. The fringes of Greater Yola appear to offer more suitable spaces for hosting camps, with access to land, basic infrastructure, and community support systems that make them more viable for large-scale settlement. Conversely, the core areas of the town, being more urbanized and densely populated, present limited opportunities for establishing such facilities, thereby restricting the number of IDPs who can be accommodated there. This pattern highlights the importance of resource allocation and infrastructural planning in managing displacement crises. It also underscores the need for policymakers and humanitarian agencies to prioritize the provision of adequate facilities in both fringe and core areas to ensure equitable distribution and improved living conditions for IDPs. Ultimately, the study emphasizes that the location of IDP settlements is not random but shaped by practical considerations of space, resources, and accessibility. These findings contribute to a deeper understanding of displacement dynamics in Greater Yola and provide a foundation for more effective interventions aimed at supporting displaced populations. The study recommends that adequate facilities for hosting internally displaced persons (IDPs) should be made available across all the wards within the study area. Ensuring the presence of such facilities in each of the 15 wards will promote a more even distribution of IDPs and reduce the current concentration in specific wards. Overcrowding in certain locations not only strains existing resources but also creates conditions that may lead to security challenges, social tension, and public health concerns. By decentralizing the hosting arrangements, the burden on individual wards will be minimized, while displaced persons will have greater access to essential services such as shelter, healthcare, and education. Furthermore, equitable distribution will foster inclusivity and community integration, as IDPs will be spread across different neighborhoods rather than clustered in a few areas. This approach requires coordinated planning and investment from both government agencies and humanitarian organizations to ensure that facilities are properly equipped and maintained. Ultimately, the provision of hosting facilities in all wards will enhance resilience, improve living conditions for IDPs, and contribute to sustainable management of displacement in Greater Yola.

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LY, YD, BDB and YDW conceived the concept, wrote and approved the manuscript.

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