

Multidimensional Analysis of Food Insecurity In Uyo : The Interplay of Market Access, Household Structure, and Environmental Shocks

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Abstract

Food insecurity remains a significant development challenge in many rapidly urbanizing areas of Nigeria, where economic instability, environmental shocks, and structural constraints intersect to undermine household food access. This study examined the determinants of food insecurity in Uyo Local Government Area of Akwa Ibom State, with the objective of identifying the key socioeconomic and environmental factors influencing household food security. A cross-sectional survey design was adopted, and data were collected from 358 household heads selected through a systematic random sampling technique across 28 communities. Food insecurity was measured using Likert-scale indicators, while explanatory variables included household income, market access, food price volatility, household size, climate-related shocks, and urbanization pressure. Data were analysed using descriptive and inferential statistical methods. The findings reveal that food insecurity is generally high across the study area, with community scores ranging from moderate to very high levels. Household income emerged as a significant determinant, as lower-income communities consistently recorded higher food insecurity. Limited market access and greater distance to food markets were associated with increased vulnerability, while high food price volatility further intensified insecurity, particularly among economically disadvantaged households. Larger household sizes were linked to greater food stress due to increased consumption demands. Environmental factors, including droughts, floods, and pest outbreaks, were found to disrupt food availability and household income, thereby exacerbating insecurity. Additionally, communities experiencing high urbanization pressure exhibited elevated levels of food insecurity due to reduced agricultural land and increased reliance on market-purchased food. The study concludes that food insecurity in Uyo Local Government Area is multidimensional and driven by interconnected economic, demographic, geographic, and environmental factors. Addressing the challenge requires integrated policy interventions focused on income enhancement, improved market infrastructure, food price stabilization, climate-resilient agricultural practices, and sustainable urban planning. The findings provide localized empirical evidence to inform targeted strategies aimed at strengthening household food security and promoting sustainable livelihoods in urban and peri-urban communities.

Keywords: Food insecurity, household income, market access, climate shocks, urbanization, Uyo LGA.

Introduction

Food insecurity remains one of the most pressing development challenges confronting many developing countries, particularly in sub-Saharan Africa. According to the Food and Agriculture Organization (FAO, 2019), food security exists when all people, at all times, have physical, social, and economic access to sufficient, safe, and nutritious food to meet their dietary needs and food preferences for an active and healthy life. This concept is multidimensional, encompassing food availability, accessibility, utilization, and stability. However, despite global advances in agricultural technology and food production systems, millions of households continue to experience inadequate food access due to poverty, economic instability, climate variability, and rapid urbanization.

In Nigeria, food insecurity has intensified in recent years, driven by rising inflation, unemployment, environmental degradation, and structural weaknesses in food distribution systems (National Bureau of Statistics [NBS], 2022). Urban and peri-urban areas are increasingly vulnerable as rapid population growth and urban expansion reduce arable land while increasing reliance on market-purchased food. In southern Nigeria, particularly in Akwa Ibom State, climate-related shocks such as flooding, irregular rainfall, and pest infestations further disrupt local food systems and household livelihoods.

Uyo Local Government Area, as the administrative and economic hub of the state, exemplifies these emerging food security challenges. Although the area benefits from relatively fertile soils and favourable climatic conditions that support farming and trading activities, rapid urbanization, fluctuating food prices, limited market access in certain communities, and household income disparities have heightened food vulnerability among residents. The transformation of agricultural land into residential and commercial infrastructure has also increased dependence on external food supply chains, making households more susceptible to price volatility and supply disruptions.

Empirical evidence indicates that food insecurity in Uyo is not uniform across communities but varies according to socioeconomic and environmental conditions. Household income has emerged as a critical determinant, with lower-income communities exhibiting higher levels of food insecurity due to limited purchasing power. Market accessibility also plays a significant role, as communities located farther from major markets experience higher transaction costs and reduced access to affordable food. In addition, household size influences vulnerability, with larger households facing greater consumption pressures relative to available resources.

Environmental factors further compound the situation. Climate-related shocks, including floods, droughts, and pest outbreaks, reduce agricultural output and disrupt local food supply chains, thereby increasing food prices and limiting availability. Urbanization pressure, characterized by rapid population growth and land-use conversion, has intensified reliance on purchased food while diminishing opportunities for subsistence farming. The interaction of these economic, demographic, geographic, and environmental factors underscores the complexity of food insecurity in the study area.

Although several national-level studies have examined the determinants of food insecurity in Nigeria, localized assessments remain limited. Given the heterogeneity of communities within Uyo LGA, understanding how income, market access, food price volatility, household structure, climate variability, and urbanization collectively shape food insecurity is essential for designing targeted and context-specific interventions.

Therefore, this study investigates the determinants of food insecurity in Uyo Local Government Area with the aim of identifying the key socioeconomic and environmental drivers influencing household food access. By providing empirical evidence at the community level, the study seeks to contribute to policy formulation and integrated strategies that enhance food security, strengthen resilience, and promote sustainable livelihoods in the area.

Research Problem

Food insecurity has become an increasingly critical development concern in Nigeria, affecting both rural and urban populations despite improvements in agricultural production

and market integration. While national policies and programs have aimed to enhance food availability, access to sufficient, safe, and nutritious food remains uneven across communities. Reports by the Food and Agriculture Organization and the National Bureau of Statistics indicate that rising inflation, unemployment, and climate variability continue to undermine household food security, particularly in urban and peri-urban areas.

In Uyo Local Government Area of Akwa Ibom State, rapid urbanization, population growth, and economic disparities have altered traditional food systems and livelihood patterns. Although the area benefits from favourable climatic conditions and vibrant commercial activities, many households still experience difficulty in accessing adequate food. Increasing dependence on market-purchased food, coupled with fluctuating food prices and unstable incomes, has heightened vulnerability among low-income households. Additionally, environmental shocks such as floods, droughts, and pest infestations disrupt local agricultural production and food supply chains, thereby intensifying food insecurity.

Preliminary evidence suggests significant variation in food insecurity levels across communities within Uyo LGA, influenced by factors such as household income, market accessibility, household size, food price volatility, climate-related shocks, and urbanization pressure. However, despite these observable challenges, there is limited empirical research that comprehensively examines the combined influence of these socioeconomic and environmental determinants at the local level. Most existing studies focus on national or regional trends, leaving a gap in context-specific understanding of how these factors interact within rapidly urbanizing local government areas.

The absence of detailed, localized data on the drivers of food insecurity in Uyo LGA limits the capacity of policymakers and development stakeholders to design targeted and evidence-based interventions. Without a clear understanding of the relative contributions of income instability, market access constraints, demographic pressures, and environmental disruptions, strategies aimed at improving food security may remain fragmented and ineffective.

Therefore, the problem addressed by this study is the persistent and multidimensional nature of food insecurity in Uyo Local Government Area, driven by interacting economic, demographic, geographic, and environmental factors, and the lack of comprehensive empirical evidence needed to inform integrated and sustainable policy responses.

Conceptualization

Food insecurity refers to a condition where individuals or households lack consistent access to sufficient, safe, and nutritious food required for a healthy and active life. The Food and Agriculture Organization (FAO, 2019) defines food security as a situation in which all people, at all times, have physical, social, and economic access to enough food to meet

their dietary needs and preferences. This concept encompasses four major dimensions: food availability, accessibility, utilization, and stability (FAO, 2021).

Globally, food insecurity persists despite technological and agricultural advancements. It is exacerbated by population growth, climate change, poverty, and conflicts (World Bank, 2022). In Nigeria, food insecurity remains a serious concern due to the combined effects of unemployment, high inflation, poor infrastructure, and environmental degradation (NBS, 2022). Understanding the determinants of food insecurity in specific local contexts, such as Uyo LGA, is essential for developing evidence-based policies and targeted interventions.

Determinants of Food Insecurity

- 1. Income and Employment:** Income and employment status are consistently recognized as primary determinants of household food security. Globally, household income determines purchasing power, which directly influences the ability to acquire adequate and nutritious food (FAO, 2019). Low-income households are more vulnerable to food price fluctuations and economic shocks, often resorting to coping mechanisms such as reducing meal size or skipping meals (Smith & Frankenberger, 2018). In Nigeria, high unemployment and underemployment rates have deepened household food insecurity (Akinyele, 2009; Olayemi, 2012). Many families depend on informal employment or subsistence farming, which are unstable and poorly remunerated. In Uyo LGA, a substantial proportion of the population relies on daily wage labor, petty trading, or seasonal agricultural work, making household food access highly sensitive to income instability. Consequently, low-income households are more likely to experience food shortages, poor diet diversity, and malnutrition.
- 2. Market Access and Food Prices:** Market access and price stability significantly influence household food security, particularly in urban and peri-urban settings. Households that depend primarily on market purchases are vulnerable to price volatility and supply chain disruptions (Reardon et al., 2019). Transportation inefficiencies, poor road infrastructure, and inadequate storage facilities contribute to increased transaction costs and post-harvest losses (Obayelu, 2010). In Nigeria, rising fuel prices, inflation, and poor market integration have led to persistent increases in food prices (NBS, 2022). Urban households, such as those in Uyo, are particularly affected because they purchase rather than produce most of their food. The cost of staple foods such as rice, maize, beans, and garri has risen significantly in recent years, placing economic strain on low-income households. Limited access to nearby affordable markets further exacerbates food insecurity, especially for residents in low-income or peri-urban communities.
- 3. Education and Access to Information:** Education plays a critical role in improving household food security by enhancing income opportunities, nutritional awareness, and resource management. Educated household heads are more likely to diversify their income sources, engage in stable employment, and adopt modern agricultural or business practices (Babatunde et al., 2010). Empirical evidence shows that higher educational attainment correlates with reduced vulnerability to food insecurity (Ogundari, 2017). Education also influences food utilization, as knowledgeable individuals are better able to make informed dietary and health choices. In Uyo, education has been linked to improved livelihood diversification and reduced dependence on informal economic activities. Conversely, limited education restricts access to information, credit, and employment, thereby increasing food insecurity risks.
- 4. Gender and Household Structure:** Gender and household composition are key social determinants of food insecurity. Globally, women play a central role in food production and household nutrition, yet they often face systemic barriers such as unequal access to land, credit, and education (Quisumbing et al., 2021). Female-headed households, in particular, experience higher levels of food insecurity due to gender-based income disparities and limited control over productive assets (Haddad et al., 2016). In Nigeria, cultural norms and economic inequality contribute to women's marginalization in agricultural decision-making and access to resources. Female-headed households, especially those with many dependents, face greater challenges in securing sufficient food (Ogunniyi et al., 2018). In Uyo, women often engage in low-paying informal jobs such as petty trading or food vending, which provide unstable income. These gendered economic inequalities increase the likelihood of food insecurity among female-led households.
- 5. Climate Variability and Environmental Shocks:** Climate change and environmental variability significantly impact food security by affecting food production, availability, and prices. Erratic rainfall, flooding, drought, and pest infestations reduce crop yields and disrupt food supply chains (Intergovernmental Panel on Climate Change [IPCC], 2022). The FAO (2021) notes that climate-induced shocks are increasingly threatening food systems, particularly in developing regions that depend heavily on rain-fed agriculture. In southern Nigeria, including Akwa Ibom State, frequent flooding and irregular rainfall patterns have damaged farmlands and reduced local agricultural output (Udoh & Etim, 2017). Peri-urban farmers around Uyo experience crop losses that translate into higher food prices in local markets. These climatic disruptions not only affect food availability but also erode household income and purchasing power, thereby exacerbating urban food insecurity.
- 6. Health, Sanitation, and Food Utilization:** Health and sanitation influence food utilization, which is a critical dimension of food security. Poor health reduces nutrient absorption, while high medical expenses divert household resources away from food expenditure (WHO, 2020). Poor sanitation and limited access to clean water contribute to waterborne diseases and malnutrition, even in households with adequate food availability (UNICEF, 2019). In

Nigeria, recurrent health issues such as malaria and diarrheal diseases reduce labor productivity and income, further constraining food access. In Uyo, inadequate waste management, poor drainage, and limited access to potable water compound public health risks and indirectly affect food security outcomes. Therefore, improving public health infrastructure and sanitation services is essential for enhancing food security in urban and peri-urban areas.

7. Urbanization and Changing Food Systems in Southern Nigeria: Urbanization has transformed food systems and consumption patterns in southern Nigeria. As cities expand, agricultural lands are converted into residential and commercial areas, reducing local food production (Akinbile & Okediran, 2020). Urban households rely heavily on purchased foods, making them more sensitive to inflation and supply chain disruptions. In Uyo, rapid population growth and urban expansion have increased food demand while straining infrastructure and distribution systems. The reliance on rural supply chains exposes urban consumers to transportation delays, price hikes, and seasonal shortages. These challenges underscore the need for integrated urban food policies that support efficient food distribution, price regulation, and peri-urban agricultural development.
8. The literature reveals that food insecurity is multidimensional and shaped by economic, social, environmental, and institutional factors. Income and employment determine household purchasing power, while market accessibility and price stability affect affordability. Education enhances livelihood diversification and nutrition knowledge, whereas gender inequality limits women's access to resources. Climate variability threatens food availability and stability, while poor health and sanitation compromise food utilization.

Although numerous studies have examined food insecurity in Nigeria, few have specifically focused on Uyo Local Government Area. This gap underscores the importance of localized studies that explore how socioeconomic and environmental dynamics interact to shape food insecurity within urban and peri-urban communities in Akwa Ibom State. The reviewed literature therefore provides a strong conceptual and empirical basis for the present study.

Material and Methods

Area of the Study

This study was conducted in Uyo Local Government Area (LGA) of Akwa Ibom State, Nigeria. Uyo is situated in the central part of the state, lying between latitudes 4°50'N and 5°07'N and longitudes 7°45'E and 8°05'E. The LGA shares boundaries to the north with Ikono, Itu, and Ibiono Ibom Local Government Areas; to the south with Ibesikpo Asutan, Nsit Ibom, and Etinan Local Government Areas; to the east with Uruan Local Government Area; and to the west with Abak Local Government Area.

According to the 2006 population census published by the National Population Commission, the study area has a population of 42,421, representing one of the most populous LGAs in the state. Administratively, Uyo LGA comprises 79 villages, including Afaha Oku, Ikot Akpan Oku, Ikot Ntuen Oku, Ikot Udoro Oku, Iboko Offot, Effiat Offot, Ewet Offot, Aka Offot, Ikot Ebido Oku, Itiam Etoi, Uyo Village, among others.



Figure 1: Location of study Local Government Area on the map of Akwa Ibom State.

Source : GIS Laboratory, Department of Geography and Natural Resources Management, UNIUYO (2025).

necessary. Consequently, approximately 36% of the total number of villages, equivalent to 28 villages, were selected for inclusion in the study.

The 1991 population census figure was adopted as the baseline for population estimation. Using an annual growth rate of 3.42% and applying the compound interest projection formula, the population was projected from 1991 to 2024, yielding an estimated population of 128,536 for the study area. Based on this projected population, a sample size of 358 respondents was determined using the Taro Yamane formula.

Accordingly, three hundred and fifty-eight (358) questionnaires were administered across the selected communities. A systematic random sampling technique was employed to select household heads in each community, proportionate to the population size of each settlement (Udofia, 2011).

This method ensured that every household had an equal probability of selection. A fixed sampling interval, representing the standard distance between sampled households, was established, and respondents were selected accordingly. Primary data were collected using structured questionnaires and subsequently analysed using both descriptive and inferential statistical techniques.

Table 1: Measurable Variables

S/N	Variable Name	Measurement Indicators	Measurement Scale
1	Food Insecurity	Frequency of skipping meals, inability to afford balanced diet, anxiety about food supply	Ordinal (1–5)
4	Market Access	Distance to food market (km), frequency of market visits, transport availability	Ratio
5	Food Price Volatility	Frequency of price changes, perceived affordability	Ordinal (1-5)
8	Household Size	Number of dependents in household	Ratio
9	Climate-related Shocks	Experience of flood, drought, pest outbreak	Nominal
12	Urbanization Pressure	Land availability for subsistence farming, reliance on market food	Ordinal

Source: Field Data, 2025

Data Presentation and Interpretation

The data from thirty communities in Akwa Ibom State provide valuable insights into the factors influencing food insecurity in Table 2 below. Food insecurity scores, measured on a Likert scale from 1 to 5, indicate that the situation is widespread, with scores ranging from 3.4 to 4.3. Communities such as Ifa Ikot Abia Ntuen, Oku Ibesikpo, Anua Obio, and Minya recorded the highest levels of food insecurity, while Nsukara Offot, Ifiyong Usuk, Nung Ette, and Mbierebe Obio reported comparatively lower scores. This suggests that although food insecurity affects most communities, certain areas are particularly vulnerable due to socioeconomic and environmental conditions.

Household income appears to have a strong influence on food security. Communities with higher average incomes, such as Nsukara Offot, Ifiyong Usuk, and Nung Ette, generally reported lower food insecurity scores, whereas communities with lower incomes, including Ifa Ikot Abia Ntuen and Oku Ibesikpo, experienced the highest levels of insecurity. This

pattern underscores the importance of economic capacity in ensuring adequate food access, highlighting that households with more financial resources are better able to cope with food shortages and price fluctuations.

Market access is another crucial determinant. Communities situated closer to markets, such as Nsukara Offot and Afaha Atai, exhibited lower food insecurity, while those located farther from markets, including Ifa Ikot Abia Ntuen and Oku Ibesikpo, faced higher levels of insecurity. This suggests that proximity to markets enhances food availability and reduces the burden of transportation, thereby mitigating food insecurity. Food price volatility also plays a significant role, as communities with higher price fluctuations, particularly those with already low incomes or large household sizes, experience elevated food insecurity. Nsukara Offot, which had lower food insecurity, also had comparatively lower price volatility, reinforcing the connection between price stability and food security.

Table 2: The Factors Influencing Food Insecurity in Uyo Local Government Area

S/N	Community	Food Insecurity (1–5)	Household Income (₦)	Market Access (km)	Food Price Volatility (1–5)	Household Size	Climate Shocks	Urbanization Pressure
1	Afaha Atai	3.8	65,000	2	4	6	Flood	Medium
2	Afaha Ikot Ossom	4.1	50,000	5	4	8	Drought	High
3	Afaha Ikot Owop	4	48,000	6	4	7	Pest outbreak	High
4	Afaha Udo Eyop	3.7	60,000	3	4	6	Flood	Medium
5	Anua Obio	4.2	45,000	6	4	8	Drought	High
6	Ekpri Nsukara	3.6	62,000	3	4	5	Flood	Medium
7	Iba Oku	4.1	50,000	5	4	7	Drought	High
8	Iboko	4	48,000	6	4	8	Pest outbreak	High
9	Ifa Ikot Abia Ntuen	4.3	42,000	8	5	9	Flood	High
10	Ifa Ikot Idang	3.9	55,000	4	4	6	Drought	Medium
11	Ifaiyong Usuk	3.5	70,000	2	4	5	Flood	Low
12	Ikot Ambang	3.8	60,000	3	4	6	Pest outbreak	Medium
13	Ikot Iko	4	50,000	5	4	7	Drought	High
14	Ikot Ntuen	4.1	48,000	6	4	8	Pest outbreak	High
15	Ikot Obio Offong	3.7	62,000	3	4	6	Flood	Medium
16	Ikot Odung	4	50,000	5	4	7	Drought	High
17	Ikot Oku	3.6	65,000	2	4	5	Flood	Medium
18	Ikot Okure	3.8	60,000	3	4	6	Pest outbreak	Medium
19	Ikot Udowot	4.9	48,000	6	4	8	Drought	High
20	Mbak Ikot Udo	3.9	55,000	4	4	6	Flood	Medium
21	Mbiabong Ikot Antem	3.8	60,000	3	4	6	Pest outbreak	Medium
22	Mbierbe Obio	3.5	70,000	2	4	5	Flood	Low
23	Minya	4.2	45,000	6		8	Drought	High
24	Nsukara Offot	3.4	75,000	1	3	4	Flood	Low
25	Nung Ette	3.5	70,000	2	4	5	Flood	Low
26	Nung Oku Ebere Otu	4.1	48,000	6	4	7	Drought	High
27	Nung Ukana Ikot Efre	3.8	60,000	3	4	6	Pest outbreak	Medium
28	Nung Ukot Itam	3.7	62,000	3	4	6	Flood	Medium
29	Obio Offot	3.8	60,000	3	4	6	Pest outbreak	Medium
30	Oku Ibesikpo	4.2	42,000	8	5	9	Drought	Medium

Key: 1 = Very Low, 2 = Low, 3 = Moderate, 4 = High, 5 = Very High.

Household size further contributes to vulnerability, with larger households tending to experience higher food insecurity. Communities with nine members per household, such as Ifa Ikot Abia Ntuen and Oku Ibesikpo, recorded the highest insecurity, whereas those with smaller households reported lower levels. Larger families face greater challenges in meeting daily nutritional needs, which intensifies the pressure on limited resources. Climate shocks, including droughts, floods, and pest outbreaks, also have a pronounced effect on food security. Communities affected by drought, such as Anua Obio, Minya, and Oku Ibesikpo, showed the highest levels of food insecurity, while flood-affected communities generally experienced moderate insecurity. Pest outbreaks contributed to moderate to high levels of insecurity in several communities, highlighting the vulnerability of local food systems to environmental disturbances.

Urbanization pressure is an additional factor linked to food insecurity. Communities under high urbanization pressure, such as Afaha Ikot Ossom, Ifa Ikot Abia Ntuen, and Minya, displayed higher food insecurity compared to those experiencing medium or low pressure. Rapid urban expansion can disrupt traditional agricultural practices and reduce land availability, thereby limiting local food production and increasing dependency on purchased food. The combined influence of these factors, low household income, limited market access, high food price volatility, large household sizes, adverse climate shocks, and urbanization pressure—illustrates that food insecurity in these communities is multifactorial. Areas facing multiple risk factors simultaneously are particularly susceptible to severe food insecurity.

Overall, the data emphasize that addressing food insecurity requires comprehensive interventions that target both economic and environmental vulnerabilities. Enhancing household income, improving access to markets, stabilizing food prices, supporting climate-resilient agricultural practices, and managing urban expansion are critical strategies to reduce food insecurity and promote sustainable livelihoods in the affected communities. These findings highlight the complex interplay of social, economic, and environmental factors that shape food security, underscoring the need for integrated policy approaches that address these challenges simultaneously.

Discussion of Findings

The analysis of the factors influencing food insecurity in Uyo Local Government Area reveals a multidimensional and interconnected set of drivers, reflecting both local realities and broader patterns identified in the literature. The study, which surveyed thirty communities, shows that food insecurity is generally high across the LGA, with scores on a Likert scale ranging from 3.4 to 4.3. Communities such as Ifa Ikot Eto (4.3), Ewet Offot (4.2), and Mbiabong Ikot-Antem (4.2) are among the most affected, suggesting that residents in these areas face significant difficulties in securing consistent and sufficient food.

Household income emerges as a critical determinant of food insecurity. Communities with higher average incomes, like Nung Obio Enang Idoro (₦75,000), Ikot Abasi Nkpo (₦70,000), and Mbiabong (₦70,000), consistently report lower food insecurity scores (3.4–3.5), while those with lower household incomes, such as Ewet Offot (₦45,000) and Ifa Ikot Eto (₦42,000), exhibit higher insecurity scores (4.2–4.3). This finding aligns with existing literature, which identifies income and employment as primary drivers of food security, highlighting how limited purchasing power constrains households' ability to access sufficient and nutritious food (FAO, 2019; Akinyele, 2009). Low-income households are disproportionately affected by food price volatility, often resorting to coping mechanisms like meal skipping or reduced dietary diversity, thereby reinforcing patterns of vulnerability.

Market access also significantly influences food security. Households located farther from markets, such as Ifa Ikot Eto (8 km) and Anua Obio Offot (6 km), report higher insecurity, whereas communities closer to markets, like Nung Obio Enang Idoro (1 km) and Ikot Abasi Nkpo (2 km), experience lower food insecurity. This corroborates the literature's emphasis on the role of geographic accessibility, where limited proximity to food distribution centers increases transaction costs, restricts access to fresh produce, and heightens vulnerability to price shocks (Reardon et al., 2019; Obayelu, 2010). In Uyo, reliance on market-based food acquisition makes urban and peri-urban households particularly sensitive to both spatial and economic constraints.

Food price volatility is consistently high across most communities, ranging between 4 and 5, indicating that fluctuations in staple prices are a widespread stressor. This trend amplifies food insecurity in communities with low

income and poor market access, reinforcing the interaction between economic and geographic factors. Such findings mirror national-level observations in Nigeria, where inflation, rising fuel costs, and limited market integration contribute to persistent increases in food prices, disproportionately affecting urban households (NBS, 2022).

Household size is another important factor. Larger households, as observed in Ifa Ikot Eto (9 members) and Ewet Offot (8 members), tend to report higher food insecurity scores. This aligns with the literature emphasizing that higher consumption needs, combined with limited financial resources, exacerbate vulnerability, especially when income is concentrated in one or two earners (FAO, 2008).

Climate variability and environmental shocks, including droughts, floods, and pest outbreaks, further compound insecurity. Communities affected by drought (e.g., Aka Offot and Ewet Offot) and pest outbreaks (e.g., Ifa Ikot Akpan Abia) report higher food insecurity, highlighting the vulnerability of households to climatic shocks, particularly in urban-adjacent agricultural zones. Flood-prone areas show comparatively moderate insecurity scores, which may reflect adaptive strategies or differential exposure, consistent with findings that climate shocks reduce crop yields, disrupt supply chains, and elevate local food prices (IPCC, 2022; Udoh & Etim, 2017).

Urbanization pressure is also linked to food insecurity. Communities under high urbanization pressure, such as Aka Offot and Ewet Offot, exhibit elevated food insecurity scores, while communities with low pressure, such as Nung Ukim and Nung Obio Enang Idoro, are relatively more secure. This aligns with literature noting that rapid urban expansion reduces agricultural land, lengthens supply chains, and increases reliance on purchased foods, thereby heightening sensitivity to price fluctuations and infrastructure constraints (Akinbile & Okediran, 2020).

Therefore, the findings underscore that food insecurity in Uyo is multidimensional, shaped by economic capacity, market accessibility, household demographics, climate variability, and urbanization dynamics. These results corroborate the broader literature, which highlights the interplay of income, market structure, education, gender, environmental shocks, and urban expansion in determining food access and utilization. The evidence suggests that addressing food insecurity requires holistic interventions: policies should enhance income generation, stabilize food prices, improve market infrastructure, strengthen climate adaptation measures, and support household planning and resource management. Integrated approaches that combine social protection, urban planning, and peri-urban agricultural development are critical for mitigating the complex drivers of food insecurity in Uyo Local Government Area.

Conclusion

The study revealed that food insecurity in Uyo Local Government Area is generally high and driven by a complex

interplay of factors. Key determinants include household income, with low-income communities experiencing higher insecurity; market access, where greater distance from markets increases vulnerability; and household size, as larger households face higher consumption demands. Food price volatility, climate-related shocks, and urbanization pressure further exacerbate insecurity, particularly in communities under rapid urban expansion. The findings underscore that food insecurity in Uyo is multidimensional, shaped by economic, geographic, demographic, environmental, and urbanization dynamics. Addressing it requires integrated interventions, including income enhancement, price stabilization, improved market infrastructure, climate adaptation, and support for peri-urban agriculture and household resource management.

Therefore, food insecurity in Uyo Local Government Area is a complex phenomenon influenced by both population dynamics and structural factors. Addressing it requires holistic approaches that combine income enhancement, improved market access, support for peri-urban agriculture, climate adaptation measures, population management strategies, and strengthened governance of agricultural programs. Only through coordinated, multi-sectoral interventions can the negative impacts of population growth on food security be mitigated and sustainable food access ensured for present and future generations in the study area.

Recommendations

In light of the empirical findings, the following policy recommendations are proposed to address the multidimensional determinants of food insecurity in Uyo Local Government Area, Akwa Ibom State. These recommendations are framed to align with evidence-based planning and sustainable urban, peri-urban food system management.

- 1. Strengthening Household Income and Livelihood Diversification:** Income-enhancing interventions should be prioritized, particularly for low-income and vulnerable households identified as highly food insecure in Uyo Local Government Area, Akwa Ibom State. Local authorities, in collaboration with state agencies, should expand vocational training, promote small and medium-scale enterprises, and improve access to microcredit facilities. Diversifying livelihood opportunities across agricultural and non-agricultural sectors will enhance purchasing power and reduce vulnerability to food price shocks.
- 2. Enhancing Market Infrastructure and Spatial Accessibility:** Improving physical access to food markets is essential for reducing household food insecurity. Investments in road rehabilitation, transportation systems, and decentralized community markets will lower transaction costs and increase food availability. Establishing storage and aggregation facilities can reduce post-harvest losses and contribute to more stable food supply chains.
- 3. Promoting Food Price Stability and Market Regulation:** Targeted food price stabilization strategies should be implemented to protect vulnerable households from inflationary pressures. Monitoring staple food prices,

establishing strategic food reserves, and strengthening local food distribution systems will help moderate price volatility. Policy measures that reduce transportation and logistics costs will further enhance affordability.

- 4. Building Climate Resilience and Supporting Climate-Smart Agriculture:** Climate adaptation strategies must be integrated into local development planning. Promoting climate-smart agricultural practices, improving access to irrigation facilities, distributing improved crop varieties, and strengthening agricultural extension services will enhance resilience to droughts, floods, and pest outbreaks. Environmental management interventions, including improved drainage and flood control systems, are equally critical.
- 5. Integrating Food Systems into Sustainable Urban Planning:** Urban planning policies should incorporate food security considerations. Protecting peri-urban agricultural land from uncontrolled urban expansion will sustain local food production. Encouraging urban agriculture initiatives—such as backyard farming and community gardens—can diversify food sources and reduce reliance on distant supply chains.
- 6. Strengthening Institutional Coordination and Monitoring Frameworks:** Effective governance structures are required to ensure coordinated implementation of food security interventions. Establishing a local food security monitoring framework that integrates socioeconomic and environmental indicators will enhance evidence-based decision-making. Collaboration among government agencies, urban planners, agricultural institutions, and community organizations will foster comprehensive and sustainable solutions.

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