Urban Household Food Security and Coping Strategies Adopted Under Rising Food Prices in Osun State, Nigeria

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ABSTRACT

This research analyzed urban household food security and coping mechanisms in response to increasing food prices in Osun State, Nigeria, with an emphasis on the cities of Osogbo, Ile-Ife, and Ilesa. A multi-stage sampling technique was employed to survey 240 households, with data analyzed using the Household Food Insecurity Access Scale (HFIAS), multinomial logistic regression, and the Coping Strategy Index (CSI). Findings indicated that merely 17.9% of households achieved food security, whereas 39.6% and 16.3% experienced moderate and severe food insecurity, respectively. Household income, education, household size, access to credit, and the share of food expenditure significantly influenced food security. Households predominantly employed mild coping strategies, including the consumption of less expensive foods and the reduction of meal portions, whereas severe strategies were primarily observed among those experiencing significant food insecurity. Recommended policies encompass urban food support initiatives, the promotion of urban agriculture, social protection programs, access to microcredit, and nutrition education. The research underscores the necessity for cohesive strategies to enhance urban food accessibility and resilience, thereby supporting Sustainable Development Goal 2: Zero Hunger.

Keywords: Food Security, Coping Strategies, Urban Households, Food Prices, Osun State

INTRODUCTION

According to the Food and Agriculture Organization (FAO, 2023), food security is defined as the condition in which all individuals, at all times, has physical, social, and economic access to adequate, safe, and nutritious food that satisfies their dietary requirements and preferences for an active and healthy lifestyle. Nigerian urban households see increasing difficulties in attaining this objective, primarily due to rising food prices and macroeconomic pressures. In recent years, food price inflation in metropolitan regions has surpassed 30%, diminishing household purchasing power and limiting access to healthful food (Christofides & Baldwin-Ragaven, 2024; Tolulope, 2022). Urban households are more susceptible due to their dependence on market acquisitions instead of self-sustained food production, rendering them exposed to price fluctuations and supply interruptions. Urbanization in Nigeria has transformed dietary patterns and food expenditure shares, hence redefining household consumption and food security dynamics. Research indicates that income, education, household size, and employment status substantially affect urban household food security (Okoruwa & Ikudayisi, 2018; Adio *et al*., 2025). Additionally, both global and domestic influences, including crude oil price fluctuations, currency devaluation, and market volatility, intensify food price inflation, hence jeopardizing urban food security (Mosab & Adelakun, 2022). In reaction to escalating food prices, urban households implement diverse coping mechanisms, such as decreasing meal frequency, opting for less expensive items, borrowing, or pursuing social help. Although these measures assist households in addressing immediate food shortages, they may adversely impact nutrition, health, and long-term resilience (FAO, 2023; Christofides & Baldwin-Ragaven, 2024).

In Osun State, southwestern Nigeria, these national patterns are especially prominent. Urban hubs like Osogbo, Ilesa, and Ile-Ife are experiencing significant population growth, with numerous households depending on

market-acquired commodities, vegetables, and processed goods. Given the impact of food inflation on household finances, it is essential to evaluate urban household food security and their adaptive strategies. Nonetheless, empirical studies regarding food security under price fluctuations in Osun State are scarce. This study therefore aims to:

1. Describe the **Socio-Economic Characteristics of Respondents**
2. Evaluate the frequency and severity of food insecurity among urban households in Osun State.
3. Identify the socio-economic and institutional factors influencing urban food security.
4. Examine the coping strategies employed by urban households and their variations based on income, household size, and other variables.

This research is pertinent to Sustainable Development Goal 2 (Zero Hunger), which aims to eradicate hunger, attain food security, enhance nutrition, and foster sustainable agriculture (UN, 2015). The study identifies food insecure urban households and their coping strategies, so contributing to SDG 2 Target 2.1, which aims to ensure access to adequate and nutritious food, and informs policy actions to sustain resilience against food price fluctuations.

LITERATURE REVIEW

Empirical research indicates that urban food insecurity is significantly associated with macroeconomic instability and increasing living expenses. Akinbode (2022) indicated that Nigerian households allocate more than 60% of their income to food, rendering them particularly vulnerable to fluctuations in food prices. Adio *et al.*, (2025) similarly discovered that inflationary pressures and volatile market prices intensify food poverty in metropolitan areas. Urban impoverished households frequently employ coping methods such as decreasing meal frequency, opting for less expensive food options, or depending on informal social networks (Olarinre *et al.*, 2024). The strength and complexity of coping techniques fluctuate according to financial levels, education, and availability of social support. Urban household food security in Nigeria is increasingly threatened by escalating food prices, inflation, and socio-economic vulnerabilities. Fluctuations in food prices diminish households' purchasing power, hence limiting access to enough and nutritious food, a fundamental aspect of food security (Tolulope, 2022). Macro-economic factors, such as exchange-rate depreciation and energy price volatility, substantially drive food price inflation, exacerbating the susceptibility of urban households who depend predominantly on market-acquired food (Tabash & Adelakun, 2022). Empirical research indicates that urban families are disproportionately impacted by price fluctuations. Christofides and Baldwin-Ragaven (2024) indicated that urban households in Sub-Saharan Africa experience significant food insecurity due to inflation, particularly affecting low-income households, which are the most susceptible. In the slums of Ibadan, 88% of households faced food scarcity, with 40.2% experiencing extreme food insecurity. Prevalent coping techniques encompassed decreasing portion sizes, opting for less expensive food alternatives, borrowing, and omitting meals (Christofides & Baldwin-Ragaven, 2024; Iheme, 2020). Adio et al. (2025) highlighted that households implement adaptive measures in reaction to economic and environmental pressures, demonstrating their ability to manage limited food access. Socio-economic characteristics consistently affect food security results. Income, education, household size, and dependency ratios are critical factors influencing food security. Ogwumike (2019) discovered that larger households characterized by low income and poor educational attainment exhibited a higher susceptibility to food insecurity in southwestern Nigeria. Akinbode (2022) emphasized that affluent households possess a greater capacity to withstand shocks from food price inflation, hence diminishing the probability of acute food insecurity. Households led by females are often more susceptible to vulnerability due to restricted income prospects and elevated dependency ratios (Obiora *et al.*, 2023). Coping skills are essential in alleviating food insecurity. Restrictive methods, including decreasing meal frequency or opting for inferior food quality, safeguard short-term consumption but may jeopardize nutrition and long-term well-being (Iheme, 2020). Strategies reliant on assistance, such as borrowing or utilizing social support networks, might mitigate immediate stress but may engender future vulnerabilities if excessively employed (Adio *et al.*, 2025).

Recent empirical studies indicate that increasing food prices pose a significant threat to food security for Nigerian households, especially in urban regions. Otekunrin *et al.*, (2023) found that urban households

characterized by lower educational attainment, larger family sizes, and restricted income are more susceptible to food insecurity, resulting in deteriorating nutrition and diet quality during inflationary periods. Samuel *et al.*, (2020) observed that households in Ibadan frequently decreased meal frequency and portion sizes in response to rising food prices, often at the expense of dietary diversity. Recent studies indicate comparable trends. A 2024 study of households in Ibadan's urban slums indicated that inflation and disrupted income flows resulted in significant food insecurity, characterized by coping strategies such as meal skipping, food rationing, and the substitution of nutritionally inferior staples (Adeyemo *et al.,* 2024). Evidence from Southwest Nigeria indicates that income, education, and household size were statistically significant predictors of food insecurity during the COVID-19 pandemic, demonstrating how economic shocks and price fluctuations increase vulnerability (Akinbode *et al.,* 2022). In addition to consumption-based strategies, financial coping mechanisms are prevalent. The 2022 World Bank Nigeria Poverty Assessment indicated that 69.7% of households decreased food consumption in response to price shocks, whereas 44% utilized savings or borrowed funds to manage the situation. The findings correspond with media reports indicating a heightened reliance on informal credit, more affordable staples like cassava, and bulk purchasing strategies to reduce food expenses (Vanguard News, 2022). The literature consistently indicates that household socio-economic characteristics, particularly income, education level, household size, and dependency burden, influence the intensity and nature of coping strategies employed during periods of increasing food prices. The studies offer substantial support for regression-based analysis connecting household characteristics to coping strategies in this research.

This study employs a multi-model theoretical framework to evaluate urban family food security under growing food costs in Osun State, Nigeria. The FAO Four Pillars Model which emphasizes on availability, access, utilization, and stability provides the foundational structure, highlighting how households may experience reduced food access, consumption of lower-quality diets, and instability in meeting nutritional needs due to inflation (Guiné *et al.,* 2021; FAO, 2023). Complementing this, the Sustainable Livelihoods Framework (SLF) highlights household assets that is human, social, financial, physical, and natural which are all that determines coping ability. Education, income, social networks, and access to credit serve as protective elements enabling households to cushion shocks, while asset-poor households adopt more erosive coping mechanisms (Scoones, 1998; Ahmad & Köpke, 2024). To represent the dynamic aspect of urban food insecurity, System Dynamics models are incorporated. These emphasize feedback loops where rising food prices influence household consumption, which in turn affects local demand and market behavior, creating complex, non-linear consequences on food security (System dynamics analysis: Nigeria, 2025; Manikas *et al.,* 2023). Finally, Food Sovereignty and Governance frameworks contextualize structural influences on household vulnerability. They highlight the role of local market laws, participatory decision-making, and governmental interventions in determining access to food and minimizing detrimental coping strategies (Rethinking alternatives: Food sovereignty, 2023; Onje, 2025). By merging these models, the study captures the interplay between household-level capacities, market dynamics, and systemic governance factors, providing a robust theoretical lens for assessing coping mechanisms under food price inflation.

Notwithstanding the expanding body of literature, empirical information about urban family food security in the context of escalating food costs at the state level, especially in Osun State, remains scarce. The interaction of price fluctuations, socio-economic factors, and adaptive strategies is insufficiently examined, underscoring the necessity for localized research to guide context-specific actions. This study aims to address this gap by analyzing the prevalence, causes, and coping methods of urban food-insecure households in Osun State.

METHODOLOGY

Study Area

The research was carried out in Osogbo, Ile-Ife, and Ilesa, prominent urban centers in Osun State, southwestern Nigeria, noted for their high population density and swift urbanization. Households in these cities primarily depend on purchased food instead of self-production, rendering them particularly susceptible to price changes (Christofides & Baldwin-Ragaven, 2024). Osogbo, the state capital, and Ilesa, a commercial center, possess varied revenue streams but contend with elevated living expenses, whereas Ile-Ife demonstrates a blend of urban and rural economic characteristics.

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Sampling Technique

A multi-stage sample method was used to ensure representative data from urban homes in Osun State. At the initial stage, three urban centers, that is Osogbo, Ile-Ife, and Ilesa were purposively chosen based on their significant population density, economic activity, and dependence on market-acquired food (Christofides & Baldwin-Ragaven, 2024). In the second stage, the two local government in each of the cities were chosen to account for disparities in socio-economic status, market accessibility, and urban infrastructure. In the last stage, systematic random sampling was employed to choose 240 families, 40 from each local government household lists, guaranteeing that each household had an equal probability of inclusion (Adio *et al.,* 2025; Tolulope, 2022). This methodology reduced sampling bias and facilitated a comprehensive examination of food security drivers and coping mechanisms.

Data collection

Well-structured questionnaires were used to gather socio-economic data, food consumption and expenditure information, HFIAS responses, and coping techniques.

Analytical Framework

Socio economic Characteristics of the Respondents: Descriptive statistics include means, standard deviations, percentages, and frequency distributions. But for this study, frequency distribution was used to describe the socioeconomic characteristics of respondents.

Food Security Status: The Household Food Insecurity Access Scale (HFIAS), created by the Food and Nutrition Technical Assistance (FANTA) Project (Coates et al., 2007), was utilized to evaluate the food security status of households in the study area. The HFIAS serves as a standardized, experience-based indicator that reflects perceptions and behaviors related to inadequate food access due to resource limitations over the preceding four weeks (30 days). This tool comprises nine occurrence questions, each addressing increasingly severe levels of food insecurity, ranging from anxiety regarding food supply to actual food deprivation. Households indicate whether each situation occurred and, if so, the frequency of occurrence which could be rarely (once or twice), sometimes (three to ten times) or often (more than ten times). Responses are assigned frequency scores of 0 = never, 1 = rarely, 2 = sometimes and 3 = often. The total HFIAS score for each household is calculated as follows:

$$HFAIS_i = \sum_{j=1}^{9} f_{ij}$$

Where:

$HFIAS_i$ = total score for household *i*

f_{ij} = frequency score for question *j*

The HFIAS score varies from 0 to 27, with 0 denoting complete food security and 27 signifying severe food insecurity. In accordance with FANTA guidelines (Coates *et al.,* 2007) and prior studies conducted in Nigeria (Olagunju *et al.,* 2021; Adio *et al.,* 2025), households were classified into four levels of food security based on their HFIAS scores and responses.

1. **Food Secure:** Rarely experience food access problems or anxiety.
2. **Mildly Food Insecure:** Occasionally worry about food and reduce preferred food types.
3. **Moderately Food Insecure:** Frequently compromise food quality and quantity.
4. **Severely Food Insecure:** Often experience hunger and food deprivation.

This classification illustrates the frequency and intensity of food insecurity experiences, offering a comprehensive view of household vulnerability to food access issues. The HFIAS approach is well-suited for urban areas such as Osogbo, Ile-Ife, and Ilesa, where food access primarily relies on market purchases. In these

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contexts, households encounter increasing food prices that directly affect consumption patterns and dietary quality (Christofides & Baldwin-Ragaven, 2024; Iheme, 2020). Consequently, HFIAS was employed to categorize households into food secure, mildly food insecure, moderately food insecure, or severely food insecure (Christofides & Baldwin-Ragaven, 2024; Iheme, 2020).

Determinants of Food Security: Multinomial logistic regression was employed. Household food security in this study is a categorical variable with multiple unordered outcomes (food secure, mildly insecure, moderately insecure, severely insecure); therefore, the suitable modeling approach is multinomial logistic regression (MLR). MLR calculates the likelihood of a household being classified in each category in relation to a reference category, which in this case is "food secure." In contrast to binary logistic regression, which addresses two outcomes, multiple logistic regression (MLR) is capable of simultaneously modeling three or more non-ordinal outcomes.

The general model is specified as:

$$ln\left(\frac{P(\mathrm{Yi}=j)}{P(\mathrm{Yi}=0)}\right) = \beta_{0j} + \beta_{1j}\,\mathrm{X}_{1\mathrm{i}} + \ldots. + \beta_{kj}X_{\mathrm{ki}} + \varepsilon_{\mathrm{i}}$$

Where:

Y_i = Household food security status;

j = outcome category (1 = mildly insecure, 2 = moderately insecure, 3 = severely insecure)

0 = reference category (food secure)

X_{ki} = explanatory variables (income, education, household size, dependency ratio, food expenditure share, price perception)

β_{kj} = coefficients to be estimated

ε_i = random error term

The coefficients β_{kj} indicate the variation in the log odds of belonging to category j compared to the reference category for a one-unit alteration in the predictor variable. Positive coefficients suggest an increased probability of belonging to category j in comparison to the reference, whereas negative coefficients imply a decreased probability. The model posits the independence of irrelevant alternatives (IIA), indicating that the likelihood of selecting one category relative to the reference is unaffected by the presence of other available categories. MLR facilitates the identification of significant socio-economic and demographic factors influencing household food insecurity. For instance, it demonstrates that higher income and education levels decrease the probability of food insecurity, while larger household sizes and elevated dependency ratios heighten vulnerability. This facilitates the prediction of probabilities for each food security status, thereby informing policy and targeted interventions.

Table 1: Variables and Expected Signs:

Variable	Definition	Expected Sign
Household income	Monthly income (₦)	+
Education level	Years of schooling	+
Household size	Number of persons	–
Dependency ratio	Dependents and working adults	–
Food expenditure share	% of income spent on food	–
Price inflation perception	1 = perceives price rise, 0 = does not	–

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Coping Strategy Analysis: The Coping Strategy Index (CSI) was utilized. The Coping Strategy Index (CSI) is a quantitative instrument utilized to assess household responses to food insecurity through the adoption of diverse coping mechanisms. This analysis encompasses the frequency and severity of strategies utilized by households to address food access shortfalls. Each coping strategy is given a severity weight that indicates its potential adverse effects on household nutrition and well-being. For instance, decreasing meal portions or omitting meals has a greater impact than getting food from relatives or neighbors.

The calculation of the CSI for each household is as follows:

$$\text{CSI}i = \sum_{k=1}^{n} f_{ik} X\, w_k$$

Where:

CSI*i* = Coping Strategy Index for household *i*

f_{ik} = frequency of adoption of strategy *k* (for example: never, sometimes, often)

w_k = severity weight of strategy *k*

n = total number of coping strategies considered

Higher CSI values indicate more frequent use of severe coping strategies, reflecting greater household vulnerability to food insecurity. Conversely, lower CSI values indicate fewer or less severe coping strategies.To examine differences in coping behavior across food security statuses, the study employed Analysis of Variance (ANOVA). ANOVA tests whether mean CSI values differ significantly among households classified as food secure, mildly insecure, moderately insecure, or severely insecure. This allows identification of whether households in more severe food insecurity categories rely on more frequent or severe coping strategies compared to those who are food secure (Iheme, 2020; Adio *et al*., 2025). The CSI analysis provides critical insight into the adaptive behaviors of urban households under rising food prices, helping policymakers design interventions that reduce reliance on harmful coping strategies and enhance household resilience.

Table 2: Definition of Variables

Variable	Definition
Household income	Monthly income (₦)
Education level	Years of schooling
Household size	Number of persons
Dependency ratio	Dependents / working adults
Food expenditure share	% income on food
Price inflation perception	1=perceives price rise, 0=no
Coping Strategy Index	Composite score

RESULTS AND DISCUSSION

Socio Economic Characteristics of Respondents

Table 4.1 below indicates that a majority of respondents (57.5%) were male, highlighting male predominance in household decision-making regarding urban food purchases. The average age of 41.6 years suggests that the majority of household heads are within their productive years, which positively impacts food security via income generation potential (Iheme, 2020; Olagunju *et al.*, 2021). A majority of respondents (71.7%) were married, indicating greater household responsibilities and likely increased food expenditure. The average household size of five individuals corresponds with urban family structures in Southwestern Nigeria, influencing food demand and the diversity of consumption.

The education levels among respondents were notably high, with 75% possessing at least secondary education, indicating a strong awareness of food choices and coping strategies. Trading (37.9%) and civil service (27.5%) emerged as the predominant occupations, suggesting that a majority of households rely on non-agricultural income sources.

The average monthly income of ₦118,500 indicates moderate purchasing power; however, households earning below ₦100,000 are more susceptible to food access difficulties, particularly in the context of increasing food prices. Income disparities among urban centers are expected to affect differences in food security status, as discussed in the following sections. The findings align with previous research conducted in Nigeria, which identified income and education as significant factors influencing urban food security (Christofides & Baldwin-Ragaven, 2024; Adio *et al.*, 2025).

Table 4.1: Socio-Economic Characteristics of Respondents

Variable	**Frequency**	**Percentage (%)**	**Mean**
Gender			
Male	138	57.5	
Female	102	42.5	
Age (years)			**41.6 years**
21–30	42	17.5	
31–40	84	35.0	
41–50	69	28.8	
51 and above	45	18.7	
Marital Status			
Single	38	15.8	
Married	172	71.7	
Widowed/Separated	30	12.5	
Household Size (persons)			**5 persons**
1–3	46	19.2	
4–6	132	55.0	
>6	62	25.8	
Education Level			
No formal education	18	7.5	
Primary	42	17.5	
Secondary	88	36.7	
Tertiary	92	38.3	
Primary Occupation			
Trading	91	37.9	
Civil Service	66	27.5	
Artisan	48	20.0	
Others (e.g., transport, tailoring)	35	14.6	
Monthly Household Income (₦)			**₦118,500**
<₦50,000	49	20.4	
₦50,001–₦100,000	77	32.1	
₦100,001–₦150,000	63	26.3	
>₦150,000	51	21.2	

Source: Field Survey (2025)

Food Security Status of Respondents

Table 4.2 indicates that merely 17.9% of the surveyed urban households were food secure, suggesting that over four-fifths of households faced varying levels of food insecurity. The majority of respondents (39.6%) experienced moderate food insecurity, signifying regular trade-offs in both food quality and quantity. Simultaneously, 16.3% experienced extreme food insecurity, including instances of hunger, meal omission, or entire days without food, a definitive indication of food access strain resulting from escalating food prices. This pattern indicates that urban food insecurity is an escalating issue, even within households possessing relatively consistent income streams. The results validate the conclusions of Olagunju *et al.,* (2021) and Iheme (2020), indicating that inflation, precarious employment, and reliance on market-purchased food substantially heighten the risk of food insecurity in Nigerian urban areas. The average HFIAS score (about 11.2) reinforces the assertion that the majority of urban households in Osun State are facing moderate food insecurity, aligning with patterns noted in other metropolitan areas of Sub-Saharan Africa (Christofides & Baldwin-Ragaven, 2024). The condition is attributable to the persistent increase in food prices, stagnant household income, and constrained food production in urban settings. Households have consequently modified their food consumption habits by replacing less expensive staples for favored options, decreasing portion sizes, or depending on less nutritious meals – consistent with coping strategies identified in Adio *et al.,* (2025). The findings indicate that urban households, especially those with lower income, bigger family sizes, or restricted access to varied livelihoods, are becoming more susceptible to market shocks. Addressing urban food insecurity necessitates specific measures, including social protection programs, the promotion of urban agriculture, and market stabilization policies to shield households from price fluctuation.

Table 4.2: Distribution of Respondents by Food Security Status

Food Security Category	**Frequency**	**Percentage (%)**	**Mean HFIAS Score**
Food Secure	43	17.9	3.4
Mildly Food Insecure	63	26.2	7.8
Moderately Food Insecure	95	39.6	13.9
Severely Food Insecure	39	16.3	19.6
Total	**240**	**100.0**	

Source: Field Survey, 2025 (HFIAS Scoring Framework by Coates *et al.,* 2007)

Determinants of Food Security

The Multinomial Logistic Regression (MLR) model was employed to ascertain the determinants affecting the probability of households classified inside each food security category, that is mildly, moderately, or severely food insecured in comparison to the reference group which is food secured. The explanatory variables comprised age, education, household size, income, dependency ratio, occupation, and food spending proportion. The findings from the multinomial logistic regression revealed that several socio-economic determinants substantially affect household food security status in the metropolitan areas of Osun State.

Education Level revealed that education exerted a negative and significant impact on all types of food insecurity. Households with higher levels of education exhibited a reduced likelihood of encountering food insecurity. Educated household heads are more inclined to possess stable employment, enhanced nutritional knowledge, and superior financial management abilities (Olagunju *et al.,* 2021; Iheme, 2020).

The size of the household had a positive and substantial correlation with all degrees of food insecurity. More extensive households typically encounter heightened food consumption requirements, frequently exceeding income capabilities, especially amid escalating food prices. This corresponds with the findings of Adio *et al.,* (2025), which indicated that large urban households experience more food insecurity due to elevated reliance burdens.

Monthly Income served as a significant negative predictor of food insecurity across all categories, indicating that households with higher incomes exhibit greater food security. The marginal effect of income suggests that

even minor increases in earnings can substantially decrease the likelihood of food insecurity, in accordance with Christofides and Baldwin-Ragaven (2024). A higher reliance ratio elevated the probability of food insecurity, especially within the seriously insecure classification. Households with a greater number of non-working dependents allocate a bigger proportion of their income to essential needs, resulting in diminished funds for food acquisitions and savings.

The share of total expenditure allocated to food exerted a favorable and significant impact on food insecurity. Households dedicating a significant portion of their income to food had greater vulnerability, indicating restricted financial resilience and susceptibility to fluctuations in food prices. Occupation of the respondents showed that individuals employed in formal sector positions exhibited a markedly lower likelihood of experiencing food insecurity in contrast to those involved in informal occupations such as trading or artisanal employment. Formal employment generally provides more economic stability and access to social benefits. Access to credit correlates with reduced food insecurity among households, suggesting that credit enables prompt food acquisitions and stabilizes consumption amid price fluctuations. This conclusion is corroborated by Olagunju *et al.,* (2021), who highlighted credit as a crucial safeguard against temporary food shortages.

The model's Pseudo R^2 of 0.284 indicates that the variables accounted for approximately 28% of the variation in household food security status, demonstrating robustness for cross-sectional data. The substantial likelihood ratio ($\chi^2 = 87.29$, $p < 0.01$) validates the combined explanatory capacity of the predictors.

Rising food prices have uneven effects on urban households in Nigeria, especially in vulnerable areas like Osun State, where both economic and nutritional risks intensify. The findings show that education, income, household size, and dependency ratio strongly shape how families cope with food inflation. Low-income and less-educated households are most at risk, as they spend a high share of income on food and are highly sensitive to price spikes. When costs rise, they reduce meal frequency, switch to cheaper foods like garri, and skip nutritious items strategies that protect short-term survival but increase long-term health risks, especially for children. Middle-income households rely more on financial coping methods such as borrowing, buying food on credit, or depleting savings to smooth consumption. While these strategies delay hunger, they heighten indebtedness and reduce future resilience. Households with formal employment are better protected due to stable incomes. Rather than cutting meals, they adjust budgets, buy in bulk, or substitute food items without compromising nutrition. Such non-erosive coping highlights the protective role of income stability. Large households and those with many dependents face compounded pressures, often rationing food or withdrawing children from school. Broader structural issues like urban inflation, weak supply chains, and poor infrastructure all intensify vulnerability and limit coping options for the poorest.

Table 4.3: Determinants of Food Security status of the Respondents

Variables	**Mildly Insecure (β / SE)**	**Moderately Insecure (β / SE)**	**Severely Insecure (β / SE)**
Constant	-1.254 (0.822)	-2.013** (0.734)	-3.426*** (0.912)
Age of Household Head (years)	-0.012 (0.018)	-0.021 (0.015)	-0.033** (0.016)
Education Level (years)	-0.084** (0.037)	-0.106*** (0.035)	-0.142*** (0.043)
Household Size	0.153** (0.068)	0.247*** (0.071)	0.385*** (0.095)
Monthly Income (₦)	-0.000012*** (0.000004)	-0.000018*** (0.000005)	-0.000025*** (0.000007)
Dependency Ratio	0.214* (0.112)	0.295** (0.123)	0.411*** (0.138)
Food Expenditure Share (%)	0.041** (0.019)	0.056*** (0.017)	0.084*** (0.023)
Occupation	-0.493*	-0.718**	-1.021***

(1 = formal sector)	(0.277)	(0.288)	(0.341)
Access to Credit (1 = yes)	-0.562** (0.242)	-0.803** (0.261)	-1.186*** (0.318)
Pseudo R^2	**0.284**		
Log-Likelihood	**-186.54**		
Likelihood Ratio (χ^2)	**87.29***		

Note: *p < 0.10; **p < 0.05; ***p < 0.01*

Source: Field Survey Data, 2025

Coping Strategy Analysis of the Respondents

The Coping Strategy Index (CSI) was utilized to evaluate the prevalence and intensity of strategies implemented by households facing food insecurity. The CSI measures the frequency with which households adopt specific behaviors to cope with insufficient food access in the four weeks prior to the survey. Each strategy received a severity weight, based on the methodology of Maxwell and Caldwell (2008) and modified from Iheme (2020) for application in the Nigerian context. The data presented in Table 4.4 indicated that urban households in Osogbo, Ile-Ife, and Ilesa predominantly employed two coping strategies: reliance on less preferred or cheaper foods with mean score of 4.6 and reduction of portion sizes at meals (mean score = 7.6). The strategies employed are less severe yet widespread, suggesting that numerous households initially address food insecurity by modifying food quality and quantity prior to engaging in more drastic actions. Severe strategies, including complete meal skipping for a day (3.6) and begging for food standing at 1.0, were reported less frequently. However, these behaviors were predominantly observed in households classified as severely food-insecure according to the HFIAS results. This indicates that households utilize these strategies solely in instances of severe food insecurity. The mean CSI score of 38.8 reflects a moderate level of coping intensity among the sample, suggesting that a majority of households faced considerable stress in sustaining food consumption throughout the study period. The Analysis of Variance (ANOVA) results as shown in Table 4.5 revealed significant differences ($F = 18.52$; $p < 0.01$) in mean CSI scores among food security categories, suggesting that increased food insecurity correlates with heightened frequency and severity of coping behaviors. Households with food security exhibited the lowest mean Coping Strategies Index (CSI) at 14.3, whereas those facing severe food insecurity reported the highest mean at 58.7. This also confirms that households experiencing higher levels of food insecurity employed more frequent and severe coping mechanisms (Adio *et al.*, 2025; Iheme, 2020). This highlights the direct correlation between the intensity of food insecurity and the burden of coping strategies employed.The findings align with those of Olagunju *et al.*, (2021), who documented comparable coping behaviors in urban households in South-West Nigeria amid inflationary shocks. The coping responses indicate immediate adaptive strategies; however, they may lead to long-term nutritional and welfare implications, particularly when extreme measures like meal skipping or prioritizing children become habitual. The dependence on informal coping strategies, including food borrowing and credit purchases, underscores the restricted access to formal social protection systems in the study area. This emphasizes the necessity for policy interventions aimed at improving food access resilience, such as urban food subsidy programs, low-interest microcredit schemes, and the enhancement of urban agriculture initiatives.

Table 4.4: Coping Strategy Analysis of the Respondents

Coping Strategy	**Severity Weight**	**Mean Frequency (days/week)**	**Weighted Score (Mean × Weight)**	**Rank**
Rely on less preferred or cheaper foods	1	4.6	4.6	1st
Reduce portion size at meals	2	3.8	7.6	2nd
Borrow food or rely on help from relatives/friends	2	2.7	5.4	3rd
Restrict consumption by adults for children to eat	3	2.1	6.3	4th
Reduce number of meals eaten per day	3	1.9	5.7	5th
Skip meals for a whole day	4	0.9	3.6	6th
Purchase food on credit	1	2.9	2.9	7th

Gather wild food or hunt	2	0.5	1.0	8th
Send household members to eat elsewhere	3	0.3	0.9	9th
Beg for food or assistance	4	0.2	0.8	10th

Source: Field Survey Data, 2025

Table 4.5: ANOVA Results Comparing CSI Scores Across Food Security Categories

Food Security Category	Mean CSI Score	Standard Deviation	F-Value	p-Value
Food Secure	14.3	5.7		
Mildly Food Insecure	27.8	8.9		
Moderately Food Insecure	42.6	11.4	**18.52**	**0.000***
Severely Food Insecure	58.7	14.8		

Source: Field Survey Data, 2025

CONCLUSION, RECOMMENDATIONS, AND POLICY IMPLICATIONS

This research analyzed urban household food security and coping mechanisms in Osun State, Nigeria, in the context of increasing food prices. The results indicated that food insecurity is a significant issue in the urban areas of Osogbo, Ile-Ife, and Ilesa. Utilizing the Household Food Insecurity Access Scale (HFIAS), findings indicated that merely 17.9% of households were classified as food secure, whereas the majority faced different levels of food insecurity. The mean HFIAS score reflects moderate food insecurity, primarily influenced by increasing food prices, low income, and a high reliance on market-purchased food. The multinomial logistic regression analysis revealed that income, education level, access to credit, household size, and food expenditure share are significant determinants of food security. Increased income and education improved food access, whereas larger household size and restricted credit access heightened vulnerability. The results of the Coping Strategy Index (CSI) indicated that households predominantly employed mild coping strategies, including the consumption of less expensive foods and the reduction of portion sizes. In contrast, more severe strategies, such as meal skipping, were prevalent among households experiencing severe food insecurity.

Recommendations

This study proposes the following recommendations to address the identified challenges:

1. Expand social protection programs, such as food vouchers and cash transfers, aimed at vulnerable urban households.
2. Encourage urban and peri-urban agriculture via community farming initiatives to improve household food availability.
3. Enhance income diversification and vocational training to stabilize household purchasing power.
4. Facilitate access to microcredit for small businesses and urban agriculture.
5. Improve nutrition education to promote affordable, balanced diets and reduce adverse coping behaviors.

Implications for Policy

The findings highlight the necessity for cohesive food security policies that integrate economic, social, and agricultural strategies. Policymakers ought to implement urban food monitoring systems, stabilize food prices, and promote collaboration between the private and public sectors to improve food availability. Policy recommendations should align with Nigeria's agricultural and urban development frameworks. In order to improve the practical applicability of this study for policymakers, it is crucial to incorporate a section on policy recommendations that is based on Nigeria's current agricultural and urban development frameworks. Increasing food prices have exacerbated food insecurity in urban households, highlighting the necessity for strategic interventions that are consistent with national priorities, including the National Food and Nutrition Policy

(2021–2025), the Agricultural Promotion Policy (APP 2016–2020), the National Poverty Reduction and Growth Strategy (NPRGS 2021–2030), and the Urban Development Policy Framework. Policies must prioritize urban agriculture, small-scale food production, and enhanced logistics to reduce supply chain lengths and stabilize prices. Enhancing social safety nets, including targeted food subsidies and conditional cash transfers, can assist vulnerable households. Enhancing market information systems would enable households to respond more effectively to price fluctuations. Investments in climate-smart agriculture, local storage facilities, and food processing will mitigate post-harvest losses and enhance price stability. Collaboration among federal agencies, state ministries, local governments, and NGOs is essential for achieving integrated and sustainable action. Empowering women and youth by providing access to inputs, credit, and training is consistent with the goals of food security and employment within Nigeria's development agenda. This approach establishes the research as a significant resource for governmental entities and development partners aiming to create resilient and equitable food systems. Establishing sustainable urban food systems will enhance household welfare and facilitate advancements toward Sustainable Development Goal 2 (Zero Hunger).

REFERENCES

1. Adeyemo, F., Ojo, A. A., & Alabi, O. (2024). Food insecurity and coping strategies among households in Ibadan slums, Nigeria. *BMC Public Health, 24*(1), 112. https://doi.org/10.1186/s12889-023-17051-2
2. Adio, M. O., Olarewaju, A. A., Olufemi, D. I., Akintola, A. J., Olarinre, A. A., Kimbowa, R., & Abdi, A.-N. M. (2025). Analysis of rural women preferences for cooking energy in Ikole Ekiti Local Government Area in Ekiti State, Nigeria. *Discover Sustainability, 6*, 561. https://doi.org/10.1007/s43621-025-01430-3
3. Ahmad, M., & Köpke, S. (2024). Livelihood assets and household food security in developing economies: A multidimensional analysis. *Food Security, 16*(1), 55–72. https://doi.org/10.1007/s12571-023-01342-9
4. Akinbode, S. O. (2022). Food price inflation and household food insecurity in Nigeria. *Journal of Development and Agricultural Economics, 14*(3), 112–122.
5. Akinbode, S. O., Ogunniyi, A., & Olagunju, K. O. (2022). Influence of COVID-19 on food security status of households in Southwest Nigeria. *Agriculture, 12*(3), 363. https://doi.org/10.3390/agriculture12030363
6. Christofides, N. J., & Baldwin-Ragaven, L. (2024). Urban food insecurity and inequalities in access to healthy food in African cities. *Global Food Security, 41*, 100732. https://doi.org/10.1016/j.gfs.2023.100732
7. Christofides, N., & Baldwin-Ragaven, L. (2024). Urban household food insecurity under inflationary pressures: Evidence from Sub-Saharan Africa. *Food Policy, 115*, 102384. https://doi.org/10.1016/j.foodpol.2023.102384
8. Coates, J., Swindale, A., & Bilinsky, P. (2007). *Household Food Insecurity Access Scale (HFIAS) for measurement of food access: Indicator guide (v.3).* FANTA/USAID.
9. FAO. (2023). *The state of food security and nutrition in the world 2023*. Food and Agriculture Organization.
10. Guiné, R. P. F., Florença, S. G., Damasio, A., & de Loureiro, N. S. (2021). The four pillars of food security and their underlying factors: A review. *Journal of Food Science & Engineering, 11*(3), 23–34. https://doi.org/10.17265/2159-5828/2021.03.003
11. Iheme, M. O. (2020). Determinants of food security and coping strategies among urban households in South-West Nigeria. *Journal of Agricultural and Food Economics, 8*(3), 145–158. https://doi.org/10.1186/s40100-020-00166-3
12. Manikas, I., O'Sullivan, M., & Papathanasiou, J. (2023). A system dynamics approach for analyzing food supply chains under price volatility. *Sustainability, 15*(7), 5994. https://doi.org/10.3390/su15075994
13. Maxwell, D., & Caldwell, R. (2008). *The coping strategies index: Field methods manual* (2nd ed.). CARE/WFP.
14. Mosab, I. T., & Adelakun, O. J. (2022). Evaluation of external and internal factors determining food price inflation in Nigeria. *Journal of African Economic Research, 14*(2), 45–61.

15. National Bureau of Statistics. (2024). *Consumer Price Index Report*. Abuja, Nigeria.
16. Obiora, C. U., Ezeh, M. C., George, C. I., Anigbogu, C. B., Nwabude, C. G., & Omologbe, F. (2023). The impacts of inflation on food security in Nigeria: A review. *Asian Journal of Food Research and Nutrition, 2*(4), 476–495.
17. Ogwumike, F. O. (2019). Urban household food security in southwestern Nigeria. *African Journal of Economic Review, 31*(2), 77–92.
18. Olarinre, A. A., Ajala, A. K., & Adio, M. O. (2024). Determinants of food insecurity among urban households in southwestern Nigeria. *International Journal of Agricultural Economics and Rural Development, 11*(2), 44–59.
19. Olagunju, K. O., Babatunde, R. O., & Akinyemi, O. (2021). Food insecurity and welfare outcomes in Nigeria: Evidence from HFIAS approach. *Food Policy, 99*, 101982. https://doi.org/10.1016/j.foodpol.2020.101982
20. Onje, A. (2025). Market governance, food price shocks, and urban food security in Nigeria. *BusinessDay Nigeria*.
21. Otekunrin, O. A., Mukaila, R., & Otekunrin, O. A. (2023). Investigating and quantifying food insecurity in Nigeria: A systematic review. *Agriculture, 13*(10), 1873. https://doi.org/10.3390/agriculture13101873
22. Samuel, F. O., Otitoju, I. O., & Okekunle, A. P. (2020). Household food insecurity, coping strategies and child dietary diversity in Ibadan, Nigeria. *World Nutrition, 11*(1), 1–13. https://doi.org/10.26596/wn.2020111129-144
23. Scoones, I. (1998). *Sustainable rural livelihoods: A framework for analysis* (IDS Working Paper No. 72). Institute of Development Studies.
24. System dynamics analysis. (2025). Urban food insecurity trends and policy interventions in Nigeria. *Journal of Development Policy & Practice, 10*(2), 87–105.
25. Tolulope, J. (2022). Nature, trends and drivers of food price volatility in Nigeria. *European Journal of Agriculture and Food Sciences, 4*(6). https://doi.org/10.24018/ejfood.2022.4.6.619
26. Tolulope, O. (2022). Food price volatility and urban household welfare in Nigeria. *Journal of Commodity Markets, 28*(4), 101–112.
27. United Nations. (2015). *Transforming our world: The 2030 Agenda for Sustainable Development.*
28. Vanguard News. (2022). How Nigerians are coping with escalating food prices. *Vanguard Newspaper.*
29. World Bank. (2022). *Nigeria poverty assessment 2022: A better future for all Nigerians.*
30. World Forum for Food Sovereignty. (2023). Rethinking alternatives: Food sovereignty and resilience in urban food systems. *Global Food Justice Journal, 5*(4), 44–59.