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Front Cover Painting: *Freight Cars, Gloucester* by Edward Hopper



1049-6505(2006)7:2/3



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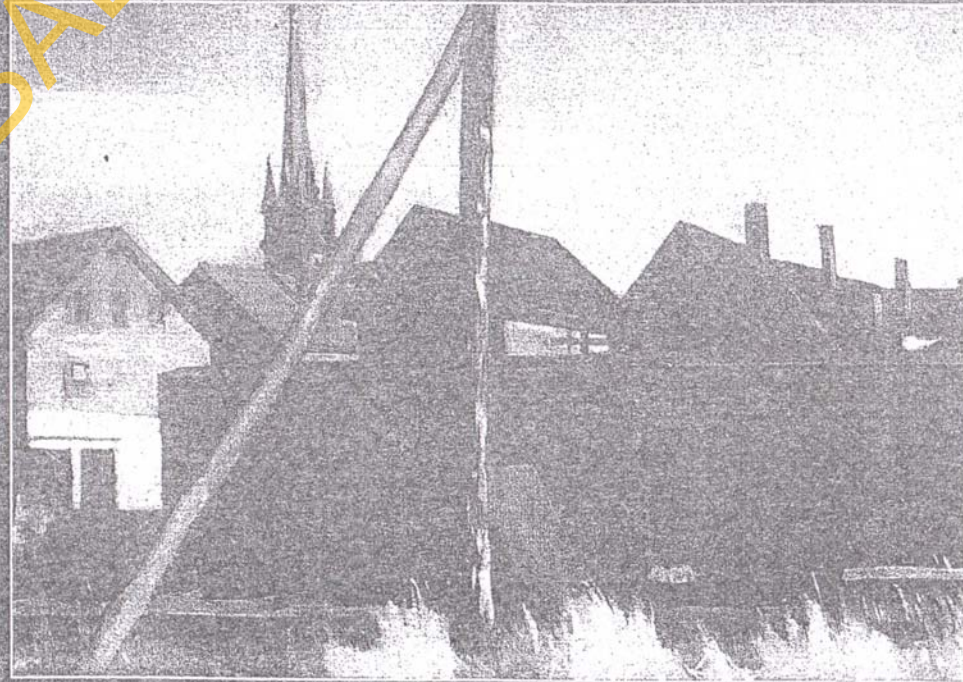
Volume 7, Numbers 2/3 2006

PRINT ISSN: 1049-6505

ELECTRONIC ISSN: 1540-4722

► **JOURNAL OF**

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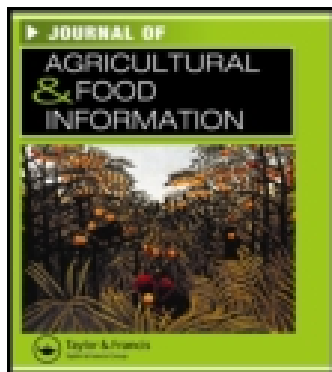
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Publisher: Taylor & Francis

Informa Ltd Registered in England and Wales Registered Number: 1072954 Registered office: Mortimer House, 37-41 Mortimer Street, London W1T 3JH, UK



Journal of Agricultural & Food Information

Publication details, including instructions for authors and subscription information:

<http://www.tandfonline.com/loi/wafi20>

Urban-Rural Differential in Food Consumption in Nigeria: A Case Study of Ilesa and Atakumosa LGAs of Osun State

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Published online: 24 Oct 2008.

To cite this article: O. I. Ajewole & B. T. Omonona (2006) Urban-Rural Differential in Food Consumption in Nigeria: A Case Study of Ilesa and Atakumosa LGAs of Osun State, Journal of Agricultural & Food Information, 7:2-3, 145-157, DOI: [10.1300/J108v07n02_11](https://doi.org/10.1300/J108v07n02_11)

To link to this article: http://dx.doi.org/10.1300/J108v07n02_11

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Urban-Rural Differential in Food Consumption in Nigeria: A Case Study of Ilesa and Atakumosa LGAs of Osun State

O. I. Ajewole
B. T. Omonona

ABSTRACT. This study focused on the differential in food consumption between urban and rural households in Osun State, Nigeria. The data used in the study were obtained through the use of a structured questionnaire administered to randomly selected food consuming households in the Ilesa and Atakumosa local government areas (LGAs) of Osun State. The analytical tools used include descriptive statistics and ordinary least squares (OLS) regression.

The study revealed that urban households have higher levels of per capita food expenditure than their rural counterparts. In addition, household size and the income and educational level of the household head are significant determinants of food consumption among urban dwellers. On the other hand, in rural households, only the income of the household head was significant in determining food consumption. *[Article copies available for a fee from The Haworth Document Delivery Service: 1-800-HAWORTH. E-mail address: <docdelivery@haworthpress.com> Website: <<http://www.HaworthPress.com>> © 2006 by The Haworth Press, Inc. All rights reserved.]*

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Journal of Agricultural & Food Information, Vol. 7(2/3) 2006

Available online at <http://jafi.haworthpress.com>

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doi:10.1300/J108v07n02_11

KEYWORDS. Urban, rural, food consumption, Osun State, Nigeria

INTRODUCTION

Food is basic to life. It is one of the basic requirements for the attainment of a higher standard of living. Adequate nutrition is a precursor for good health, required to raise productive capacity and generate the productivity necessary for the successful implementation of any programme or project.

Human food requirements can be met through either food supply or demand or a combination of the two. Food supply refers to the physical access to food through production, while food demand is the economic access to food through market and exchange. It is a well-known fact that not all households can be food self-sufficient. Hence, recourse is made to the market either to augment what is produced with market supplies or to totally depend on the market for food needs. To obtain food from the market, many factors come into play, which in turn have implications for the attainment of food security for the consuming units. Paramount among these factors are the amount of disposable income of the consumer, the price of one commodity versus another, the size of the household, and the age and gender of the head of the household. Other influences include socio-cultural and geographical factors. Differences in geographical location are very crucial in the consumption of food items. There is a marked difference in the pattern of food consumption between urban and rural dwellers. While a rural based household may be restricted to the type of food produced in the locality, the urban counterpart may have access to a variety of food items produced outside its area.

In Nigeria, according to Olayide (1980), planners and policy makers tend to take for granted those factors affecting demand for food in their attempts to make provisions for the future. Hence, consumer surveys and food prices have been largely based on urban conditions to the detriment of rural communities. Olayemi (1998) revealed that much emphasis has been placed on increasing food supplies, in an attempt to bridge the food supply demand gap in Nigeria, without anything being done to manage or control the level of food demand. This was exactly the situation in Nigeria in the years before 1986, when the Structural Adjustment Programme (SAP) was established. The government planners and policy makers made food supply management the core of government strategy, while food consumption and demand were left to grow uncon-

trolled as if growth in food supply deficit was not a function of differential growth in both supply and demand.

The implementation of SAP led to the recognition of the importance of food demand management strategy by policy makers and planners. Both the supply of food and food demand are interdependent. According to Ahmed and Shams (1994), an adequate effective demand for food is needed to sustain growth in food production. It is the food consumption parameters that effectively link food production and its marketing. For instance, the availability of location-specific (urban/rural) food demand parameters is essential in formulating food production policies and programmes.

The revealed importance of food demand in sustaining local food production and supply and the enhancement of food security make the study of the pattern, determinants, and elasticity of food consumption very crucial. Because of the differences in food consumption in urban and rural areas, the analysis of this differential is invaluable.

METHODOLOGY

The data used in this study were obtained from the survey of food consuming households, collected with the aid of pretested and structured questionnaires administered between the months of February and March 2002. Hence, the data are basically primary in nature. The study covered two local government areas (LGAs) of Osun State: Ilesa and Atakumosa, representing urban and rural areas, respectively. This categorization was premised on the presence and magnitude of social and infrastructural amenities, the presence of academic institutions, and the level and type of economic activities predominant in the areas.

The sampling procedure used for this study is a two-stage stratified random sampling process. First, ten urban enumeration areas (EAs), delineated by the National Population Commission (NPC) during the 1991 census, were selected from the Ilesa LGA, while another ten rural EAs were randomly selected from Atakumosa LGA using the table of random numbers. Secondly, from the list of households already compiled by the NPC, fifteen households were randomly selected from the selected EAs in each LGA, using the table of random numbers, to yield a total of 300 households. However, due to the improper completion of some of the questionnaires, only 280 were acceptable for this study, 140 each for the urban and rural areas, respectively.

The analytical tools used in this study are both descriptive statistics and the ordinary least squares (OLS) regression analysis. Descriptive statistics were used to determine the mean, while the (OLS) regression analysis was used to estimate the determinants of the consumption of food in the study area. The model is thus stated as:

$$Y_j = f(X_1, X_2, X_3)$$

where Y_j is the household food consumption expenditure in the j th location (1 = urban, 2 = rural)

X_1 = Household's disposable income

X_2 = Years of formal education of the head of household and

X_3 = Household size.

It is expected that $\partial y_j / \partial x_1$, $\partial y_j / \partial x_2$ and $\partial y_j / \partial x_3 < 0$.

Four functional forms were tried in order to select the lead equation for each location. These are

- (i) Linear $\Rightarrow Y_j = b_0 + b_1 X_1 + b_2 X_2 + b_3 X_3 + e_i$
- (ii) Exponential $\Rightarrow \ln Y_j = b_0 + b_1 X_1 + b_2 X_2 + b_3 X_3 + e_i$
- (iii) Semi-logarithmic $\Rightarrow Y_j = \ln b_0 + b_1 \ln X_1 + b_2 \ln X_2 + b_3 \ln X_3 + e_i$
- (iv) Double-logarithmic $\Rightarrow \ln Y_j = \ln b_0 + b_1 \ln X_1 + b_2 \ln X_2 + b_3 \ln X_3 + e_i$

The criteria used in selecting the lead equation include the conformity of the signs of the regression coefficient with economic theory, the coefficients of multiple determination (R^2), and the significance of the model through F-test and that of the coefficients of the independent variables through the T-test. Lastly, the elasticity coefficients were computed as shown in Table 1, depending on the type of functional form that became the lead equation.

RESULTS AND DISCUSSIONS

Socioeconomic Characteristics of the Sampled Households

The socio-economic characteristics of the households constituting the study population are summarized in Table 2.

TABLE 1. Formulae Used in Calculating Elasticity Coefficient

Functional Form	Model Specification	Elasticity Coefficient
Linear	$Y_j = b_0 + b_1X_i + e_i$	$b_1 \bar{X}_i / \bar{Y}_j$
Exponential	$\ln Y_j = b_0 + b_1X_i + e_i$	$b_1 \bar{X}_i$
Semi-logarithmic	$Y_j = \ln b_0 + b_1 \ln X_i + e_i$	b_1 / \bar{Y}_j
Double logarithmic	$\ln Y_j = \ln b_0 + b_1 \ln X_i + e_i$	b_1

TABLE 2. Percentage Distribution of Households Based on Socio-Economic Characteristics

Variable	Urban	Rural
(i) Marital Status		
Married	86	83
Single	14	17
(ii) Age of Household Head		
Below 30 years	29	17
30-55 years	59	48
Above 55 years	12	35
(iii) Highest Educational Attainment of Household Head		
No formal education	3	13
Primary Education	4	11
Secondary Education	31	23
Tertiary Education	62	53
(iv) Household size		
1-5	64	54
6-10	36	46
(v) Main Occupation of Household Head		
Salaried job	75	69
Self Employment	25	17
Farming	0	14
(vi) Disposable Income of Household per Month (N)		
Low	25	36
Medium	49	56
High	26	8

As shown in Table 2, married household heads dominate the sampled households in both urban and rural locations, with singles (which include divorced, widowed, and separated) constituting less than one-fifth of the sample size. As for the age of household heads, the urban area has higher percentages of those less than 56 years, while the rural area has a higher percentage of aged respondents (above 55 years). This is not unconnected to the fact that people tend to migrate to urban areas during their working years but return to rural areas at retirement. Younger peo-

ple in the rural areas also migrate to enjoy the infrastructural facilities that are lacking in their area, but which are readily available in urban areas.

With regard to the highest educational attainment, a higher percentage of the rural household heads have not had formal education or have only a primary education; the urban household heads have a higher percentage with secondary and tertiary education. Household size follows a similar pattern as educational attainment. While households with fewer than six people are more prevalent in the urban area, those with 6 to 10 persons are more common in the rural area. The average size of rural households is 5.3, while the size of the urban is 4.8.

Those household heads with salaried jobs or who are self-employed are primarily in the urban area, while those engaged in farming are primarily located in the rural area. Lastly, the rural area has more households that are in the low and medium income class. The urban area has a higher percentage of those in the high-income class. All these observations follow a priori expectation.

Average Monthly Expenditure on Categorized Food Items by Location

An attempt was made to compare the percentage of food expenditures for various categorized food groups: staples, fish and meat, eggs, milk and beverages, and others. Staples consist of rice, yam, beans, maize, gari and yam flour; the "other food" sub-group is made up of food not categorized elsewhere. Such food items include locust bean, fruits, food seasonings, and vegetables.

Table 3 shows the average amount spent per month per person on various food items. For all the food groups, the urban households expend more per capita than the rural households. In addition, the percentage of the total expenditure for each food item was higher for urban households than for rural households, except in the case of staples. This observed discrepancy could be attributed to the fact that staples are relatively cheaper when compared with other categories of food items and, since the rural economy is, on the average, poorer than the urban economy (as reflected by the income distribution of the household heads as shown in Table 2), rural households are expected to devote a higher proportion of their food expenditure to staples. In addition, rural households are often larger. With more mouths to feed and lower income

TABLE 3. Average Monthly Per Capita Expenditure (PCE) on Categorized Food Item by Location

Item	Per capita expenditure in Naira (₦)	
	Urban	Rural
Staples	654.19 (40.04)*	633.67 (46.72)
Meat and Fish	333.76 (20.41)	269.03 (19.84)
Eggs	58.96 (3.60)	43.86 (3.23)
Milk and Beverages	143.05 (8.75)	100.39 (7.40)
Other food	444.87 (27.20)	309.29 (22.80)
Total Food Expenditure	1635.55 (100)	1356.24 (100)

*Figures in parentheses are percentages of the total per capita food expenditure.

levels, rural households are more or less constrained to spend more on the cheaper food items, i.e., staples.

Another interesting observation from Table 3 is the sharp difference between expenditures on “other foods” (27.2% of PCE in the urban area vs. 22.8% in the rural). One plausible reason for this discrepancy is the fact that some of the food items in this category (vegetables, fruits) are obtained from farmers in the rural area. The cost of such food items is not properly accounted for in the food expenditure of the rural household. It can also be deduced that, apart from price, income, and demographic factors which are the primary determinants of food expenditure, there are other salient factors such as culture and the type of food crops being cultivated in a particular area that determine dietary patterns and, subsequently, food expenditures in the area. For instance, tuber crops (yam, cassava) and grain (rice, maize), which are the major staples, are the most frequently cultivated food crops in the study area.

For both urban and rural locations, staples comprised the lion’s share of per capita food expenditure. While approximately 40% of the PCE in the urban area was for staples, leaving 60% for other food items, approximately 47% of the PCE was spent on staples in the rural area, with about 53% available for other food items. This pattern exists because the rural areas are less prosperous than the urban areas, that is, the average income of urban dwellers is higher than their rural counterparts. This study confirms the Federal Office of Statistics’ (1999) results which show that the proportion of poor people is higher in rural areas than in urban. The urban poverty incidence in Nigeria was 58.2% in 1996 as compared to 69.3% for rural areas.

Determinants of Household Food Expenditure

The results of the ordinary least squares (OLS) regression of determinants of consumption of food in the study area are presented by location.

Urban Households' Food Expenditure Determinants

The OLS regression results of the determinants of food consumption in the urban area are presented in Table 4.

The double logarithmic function was selected as the lead equation, based on the criteria stated in the methodology. This is mathematically expressed as:

$$\ln Y = \ln 0.2763 + 0.7776 \ln X_1 + 0.0170 \ln X_2 + 0.1609 \ln X_3$$

$$(0.0861)^{***} \quad (0.0604)^{***} \quad (0.0042)^{***} \quad (0.0802)^{***}$$

$$R^2 = 0.81$$

$$F = 100.00$$

*** represents statistical significance of coefficient at 1% level, while the figures in parentheses are standard errors.

An R^2 (coefficient of multiple determination) value of 0.81 connotes that 81% of the variability in household food consumption in the urban area is accounted for by the regressor included in the model. In addition, the F-value was significant at 1%, which means that the regression model is significant. The positive signs of the coefficients of income of the household head, years of formal education of household head, and the size of the household indicate a direct relationship with food expenditure. In addition, all these coefficients are significant at a 1% level. It follows, therefore, that household food expenditure will increase by 77.76, 1.7, and 16.09 percent with a 100% increase in household income, years of formal education of the household head and household size, respectively. This shows that the degree of responsiveness of food expenditure to a change in any of the regressors is inelastic, because the regression coefficients in double logarithmic function equal the elasticity values (see Table 1). The rather low elasticity value for household size (0.1609) suggests that food expenditure by a household is highly inelastic to a change in household size (though the positive sign of the regression coefficient suggests a direct relationship between the two). This observation is in line with the findings of Goreux (1960) and

TABLE 4. Urban Households' Consumption Expenditure Regression Results

Functional Form	Household Head Income	Education of Head	Household Size	Intercept	R ²	Adjusted R ²	F-Value
Linear	0.3036*** (0.0248)	3.0689 (7.6407)	21.4697*** (9.8233)	99.2065** (40.2145)	0.7531	0.7463	73.22***
Exponential	0.0002*** (0.00001)	0.0011 (0.0068)	0.0225*** (0.0087)	2.3573*** (0.7964)	0.6273	0.6171	40.40***
Semi-logarithmic	106.9304 (97.6370)	39.0418 (67.6645)	113.4389 (129.6393)	-2710.6105** (1210.2151)	0.7361	0.7289	101.15***
Double-logarithmic	0.7776*** (0.0604)	0.0170*** (0.0042)	0.1609*** (0.0802)	0.2763*** (0.0861)	0.8064	0.8011	100.0***

***, **, and * denote significance of coefficients at 1, 5, and 10 percent respectively. Figures in parentheses are standard errors.

Benus et al. (1976), among others, who submit that there are economies of scale in food expenditure as household size increases. Hence, the per capita food expenditure does not increase significantly or proportionately as household size increases.

Rural Households' Food Expenditure Determinants

The results of the determinants of food consumption by rural households are presented in Table 5.

The lead equation, based on the criteria stated in the methodology, is presented as:

$$\ln Y = \ln 0.2362 + 0.9561 \ln X_1 - 0.0339 \ln X_2 + 0.0616 \ln X_3$$

$$(0.1440)^* \quad (0.1261)^{***} \quad (0.0297) \quad (0.0955)$$

$$R^2 = 0.62$$

$$F = 26.08$$

*** and * denote statistical significance of coefficients at 1 and 10 percent levels, while the figures in parentheses are standard errors.

The regression result of the determinants of food expenditure in the rural location is of particular interest. The coefficients of household income and household size carried positive signs, while that of the years of education of the household head carried a negative sign. The R^2 value of 0.62 indicates that 62% of the variability in food expenditure among rural households is explained by the regressors included in the model. The F-value also showed that the model is significant at the 1% level. Of all the regressors, only the coefficient of the household income was significant at a 7% level. The other regressors were not significant. The implication is that rural household food expenditure will rise by 96% for every 100% rise in income. This shows an inelastic situation.

When one compares the result obtained for rural households with that of the urban households, one sees a remarkable difference. The non-significance of the coefficients of household size and years of formal education of household heads in the rural regression and the lower value of the coefficient of multiple determination than that in the urban regression show that some other important determinants of food consumption among rural people have been omitted from the model. This conforms with the findings of Falusi (1985). For a rural community that is characterized by peasantry, where the bulk of the population are engaged in farming, such omitted variables may include farm-related factors such

TABLE 5. Rural Households' Consumption Expenditure Regression Results

Functional Form	Household Income	Education of Head	Household Size	Intercept	R ²	Adjusted R ²	F-Value
Linear	0.4162*** (0.0588)	-6.0892 (6.0609)	5.7327 (11.6573)	93.6448* (52.0249)	0.5424	0.5238	18.96***
Exponential	0.0003*** (0.0001)	-0.0006 (0.0052)	0.0156 (0.0100)	2.2024 (1.3032)	0.5420	0.5233	18.94***
Semi-logarithmic	1098.1113*** (97.6370)	-65.9353 (67.6645)	49.4010 (129.6393)	-2688.0319 (1371.4286)	0.5328	0.5137	18.24***
Double-logarithmic	0.9561*** (0.1261)	-0.0339 (0.0297)	0.0616 (0.0955)	0.2362* (0.1440)	0.6198	0.6043	26.08***

***, **, * denote significance of coefficient at 1, 5, and 10 percent respectively. Figures in parentheses are standard errors.

as the farm size, the method of land acquisition, and the food production capacity and taste of the rural households. In addition, the type of food consumed in a rural area is highly dependent on the people's food culture.

SUMMARY OF FINDINGS AND CONCLUSION

The study revealed that urban households consume more per capita of various food items than their rural counterparts, although the proportion of total expenditure on staples is higher for rural households. For the rural areas, about 47% of the expenditure was for staples, while the remaining 53% was spent on other food items such as meat and fish, eggs, milk and beverages, and other food items. As for the urban areas, the consuming households allocated about 40% to staples and 60% to other groups of food items.

The regression analysis revealed that the income and size of the household and the educational level of the head of household significantly affect the level of food consumption in the urban areas, while only the income of the household significantly affects that of the rural areas. More precisely, a 100% increase in household income, years of formal education of the head of household, and household size will lead to a 77.76, 1.7, and 16.09% increase in urban food consumption. For the rural areas, a 100% rise in the household income will raise household food consumption by 96%.

Based on the above, it is suggested that the populace needs to be gainfully employed in order to earn a good income. Both the government and the private sector have roles to play in this effort. Government should create an environment conducive to job creation, so that a vast majority of the people can be gainfully employed. Closely linked to this is the fact that employers should pay wages that are commensurate with the productivity of labour. The fact that income is a strong determinant of food consumption in the rural areas means that the government should design special programmes aimed at providing economic protection (safety nets) to low income earners who spend the bulk of their income on food consumption. To this effect, government should intensify efforts at improving the operations of employment-generating agencies such as the National Directorate of Employment (NDE) and the National Poverty Eradication Programme (NAPEP) in the training of the unemployed or in the administration of the special work programme.

The significance of household size as a determinant of food consumption also points to the fact that the government needs a more serious population control strategy. At the household level, there should be an awareness of the need to adopt birth control measures.

The educational attainment of the household head is an important influence on household food consumption. Education allows individuals to make more informed food choices and to recognize the importance of population control. Hence, it is necessary to ensure that all Nigerians become better educated in order to improve society as a whole.

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Received: 01/06/05

Revised: 05/05/05

Accepted: 05/11/05