FOOD CONSUMPTION PATTERN IN URBAN HOUSEHOLDS: THE CASE STUDY OF UYO METROPOLIS IN AKWA IBOM STATE, NIGERIA.

Gabriel S. Umoh
Dept. of Agric. Economics/Extension
University of Uyo, Uyo
Nigeria.

and

J.T. Alobatele
Dept. of Agric. Economics
University of Ibadan, Ibadan,
Nigeria.

ABSTRACT
This research was conducted to assess the household food consumption pattern in Uyo metropolis of Akwa Ibom State, Nigeria. Cross-sectional data were collected from 90 households for analysis. The results show inverse relationship between per capita food consumption expenditure and family size. Consumption expenditure per household however increases with the level of education, household size and income level. Regression analysis results confirm household disposable income to be major determinant of household consumption of all foods, staples and beverages respectively. The problem highlighted include efforts toward equitable redistribution of income among all income earners.

INTRODUCTION
The attainment of adequate nutritional levels is an important criterion in evaluating the success of development policies. The primary objective of Nigeria's development policy has been to achieve a rapid increase in the standard of living of the average Nigerian. This stems from the role played by adequate nutrition as a precursor for good health which could lead to increased productivity. However, the food situation in the country has become critical as to constitute a nearly intractable problem. Various projections show that the problem is that of supply deficit. For instance, Okuneye (1989) maintained that Nigeria's domestic food supply has been far short of the need of the populace. In consonance with this, Shofowa (1993) quoted Food and Agricultural Organisation's (FAO) (1993) report which classify Nigeria as a low-income, food, deficit and coastal country that requires 1.4 million tonnes of total commercial cereal import for 1992/93.

The problem of food consumption is compounded by rising prices. The federal Office of Statistics 1992
reports confirmed there is a substantial rise in the price index. This is attributed to
sharp price increases in food items, drinks, household goods, transport fares, medicaments
and vehicle spare parts. The implication of this is that most essential household goods
required to meet basic needs are increasingly falling out of the reach of the average
Nigerian. The impact of this hardship under the current depression in the country may
not be equally felt by all socio-economic groups. Davies (1982) in his study of
interrelationship between socio-economic characteristics, food expenditure pattern and
nutritional status of low income households concluded that there is a significant
difference in the consumption pattern between individuals with a minimum of high school
and those with a maximum of primary school. The opportunity for meeting essential living
requirement could thus vary from one socio-economic group to another. This has a high
potential impact on consumption and therefore on the nutrition of targeted groups.

1. Most micro-level studies of food consumption have identified household
disposable income, household size and the educational level of household head as some of
the important socio-economic factors that influence food consumption.

2. Benus et al (1976) in analyzing household expenditure pattern held that differences in the
consumption patterns are in an economic analysis, ascribed as far as possible to variations in the disposable income of household, since this is the only economic factor that varies between households. They maintained that any difference not explained by income variation was attributed to non-
economic factor such as differences in taste which in itself is a reflection of the
variation in size and composition of the household.

Similar studies in Nigeria have also found these variables to impact significantly on food consumption in urban as well as rural households (Antonio, 1996; Antonio and Oni, 1974; Antonio and Adeyokunnu, 1974, Adesimi 1978; Adeyokunnu 1978; Falusi 1988; Umoh, 1994). Therefore, the objectives of this study was:

(a) to assess the socio-economic characteristics of households and how they affect consumption pattern in the study area; and;
(b) to examine the determinants of consumption of various food categories.
METHODOLOGY

The procedure adopted for the survey was multistage stratified random sampling. The study area was stratified into cells of high, medium and low density areas which correspond to low, middle and high income areas respectively. This was done with the belief that representative data which reflect the characteristics of the residents of the metropolis could be obtained. The first stage sampling was the streets which were chosen alternately. The second stage sampling unit was the households which were selected by simple random sampling procedure. Cross-sectional data were obtained from 120 respondents using structured questionnaire. 90 of the questionnaire (75 percent response rate) were duly completed with useable data. Questions were designed to cover household income, size, educational level of household head and expenditure on various food items. The survey was conducted between August and September 1993. In the data analysis, household expenditure on each of the food items was used to represent the level of consumption of such items. The relationship between food consumption and household purchasing power was estimated through regression analysis. Four functional forms were initially fitted to the data for exploratory purposes. These were linear, semi-log, exponential and Cobb-Douglas (Log-Log) functions. The choice of the lead equations was based on statistical accuracy of the fitting, the theoretical justification with regards to the signs and magnitudes of the co-efficients, the coefficient of multiple determination (R2) and the t-ratios. The implicit form of the equation is:

\[ C1 = f(X1, X2, X3) \]

\[ C1 = \text{Consumption expenditure on the } i\text{th group of food items per month} \]

\[ C2 = \text{Consumption expenditure on all food items.} \]

\[ C3 = \text{Consumption expenditure on staples.} \]

\[ X1 = \text{Total household disposable income.} \]

\[ X2 = \text{Household size.} \]

\[ X3 = \text{Years of formal education of household head.} \]

It is expected a priori that the coefficients of regression of the variables \( X1, X2 \) and \( X3 \) will be positively related to the consumption expenditure of the food items under investigation.

In order to determine the partial effects of income on consumption and the additional expenditures that could result from a unit change in income, the income elasticities and the marginal propensities to consume (MPC) were computed for
the three categories of food items. However since the Cobb-Douglas function was found to be the lead equation for all foods, staples, as well as beverages, the regression coefficients were the direct elasticities of the variables. The Marginal Propensity to Consume (MPC) was computed using the formula:

$$\text{MPC; } \frac{b_1c_1}{X_1}$$

Where;

$$b_1 = \text{regression co-efficient of } X_i$$

$$c_1 = \text{assumption expenditure on } i\text{th food item}$$

$$X_1 = \text{household disposable income}$$

### EMPIRICAL ANALYSIS AND RESULTS

#### Average Monthly Consumption Expenditure of Household Classified by Size

Table 1 presents average monthly consumption expenditure of household classified by size. Based on the mean household size in the study area, household size range of 5 was adopted. The result shows that the modal household size is 1 - 5 while only 6.7 percent of households have size greater than 10 persons.

This confirms Amadi's (1990) finding which recorded the same household size for Port-Harcourt an urban area. Average per household and per capita expenditure of N2,084.70 and N359.40 respectively were recorded. Per capita food expenditure decreased as the household size increases. The result conforms with that reported by Goreux (1960) and Ajewole (1992) that economic efficiency of household management is greater on large household than in small ones.

#### Average Monthly Consumption Expenditure of Household Classified by Educational Level of Household Head

An examination of table 2 reveals that an average of 48.9 percent of household heads have up to secondary education, 17.8 percent have NCE and other higher certificates while 33.3 percent of the household heads are holders of University degrees, higher diplomas or other equivalents.

Food expenditure per household increase with the level of education so also are per capita food expenditure. This is in line with Davies (1982) submission that there is a significant difference in the consumption pattern between individual with a minimum of high school and those with a maximum of primary school. The finding follows expectation that those with higher education should earn more income and thus comparatively record higher food expenditure.
Average Monthly Consumption Expenditure of Households Classified by Income Group

Based on the average household income in the study area as computed from survey data, income groups were classified in the range of N3,000.00. Households with monthly income less than N3,000.00 is classified as low income households, those with N3,000 - N6,000.00 are grouped as middle while households with income greater than N6,000.00 are classified as high income households. 55.6 percent of the sampled household are in low income group, 33.2 percent in the middle income group and only 12.2 percent in the high income group. An observable pattern in the result is that the higher the income level, the larger the household size and also the higher the food expenditure per household and per caput respectively.

Regression Analysis Results

Consumption Function for all Food Items

The lead equation for the regression equation result of consumption of all food items comprising yam, garri, rice, beans, plantain, meat, fish, eggs and beverages was found to be the double logarithmic functional form. It offered the highest R2 value of 0.83 and F-ratio of 149.24. The function is given as:

\[ \text{LNE} = 474977 + 0.728943 \text{LnX1} + 0.0922691 \text{LnX2} + 0.046426 \text{LnX3} \]

(2.145)**

R2 = 0.83

F = 149.23***

Values in parenthesis are calculated t-values

** Significant at 5 percent
*** Significant at 1 percent

The R2 of 0.83 means that 83 percent of the variation in the household consumption of all foods per month is accounted for by the independent variables. An F-test indicates that the equation is significant at 1 percent level. The income and household head's educational level's coefficients are positive and significant at 1 and 5 percent levels respectively implying that income and level of education are directly related to food consumption expenditure. There could be three possible explanations for this. Firstly, there is high level price distortion in the market mechanism in the country which renders the determinants ineffective. Secondly, majority of the households in the study area are low income earners (see table 3) who may continue to consume more food as their income increases. And, lastly, the social responsibility of having to cater for a large number of dependent relatives as ones income increases may be responsible for the direct relationship between income and food consumption.

(1.622)
Consumption Function for Staples.

The Double Logarithmic function with an R2 of 0.79 was selected as the lead equation. It was given as:

\[ \ln C = 0.311594 + 0.806318 \ln X1 + 0.073844 \ln X2 + 0.105491 \ln X3 \]

\[ (1.190) \quad (1.774) \quad (15.636) \text{***} \]

R2 = 0.79

F = 244.47

Values in parenthesis are calculated t-values. *** Significant at 1 percent.

The R2 value of 0.79 implies that 79 percent of the variation in the expenditure on staple food items in Uyo metropolis is explained by income, household size, and educational level of household heads. The only income coefficient is significant at 5 and 1 percent levels. The household size and household head's educational level coefficients are not significant at 1 and 5 percent levels, but vary in the same direction as staples consumption. The results show that consumption of staple foods is a direct function of household disposable income.

Consumption Function for Beverages

The Double logarithmic function offers the highest R2 value of 0.32 and F-value of 30.31 and was thus selected as the lead equation. It is given by:

\[ \ln C = 0.124993 + 0.83900 \ln X1 + 0.15253 \ln X2 + 0.02978 \ln X3 \]

\[ (5.505) \text{***} \quad (1.358) \quad (0.269) \]

R2 = 0.32

F = 30.31

Values in parenthesis are calculated t-values. The regression analysis result shows that household disposable income significantly affect expenditure on beverages. Although other variables do not largely determine consumption of beverages, there exist a positive relationship.

The R2 of .32 indicates that income, household size and the level of education of household heads explain only 32 percent of total variation on household consumption. 60 percent are explained by factors not included in the model. This at once, suggest the need for further research into determinants of consumption of beverages in order to identify those variables, which are significant. Those identified here could explain the changes in beverage consumption.

Income Elasticity and Marginal Propensity to Consume (MPC)

Table 4 and 5 present the income elasticities and the MPC for the consumer goods considered. They are employed to measure the direction of household consumption expenditure's responsiveness to change in income. The elasticities are the direct partial effects of income while
the MPC is the additional expenditure resulting from a one unit increase in disposable income.

The MPC for all foods, staples and beverages are 0.48, 0.34 and 0.05 respectively. These values appear to have the relative magnitude which a priori reasoning would lead one to expect. The results suggest that 48, 34 and 5 percent of an increase in household income will be allocated to the consumption of these categories of food items.

Computed elasticities for all foods, staples and beverages are 0.73, 0.81 and 0.84 respectively. This suggests that in response to income increases, households would consume this category of commodities relatively more than others.

CONCLUSION

The research findings clearly bring to light that food consumption increases with the level of education and income. Income is also found to be the major determinant of food consumption. That more than half the sampled households have heads that have acquired only up to secondary education and the clear evidents that majority of the people are low income earners whereas food consumption increases with income and level of education are indications of high level of food insecurity in the area. These call for efforts toward redistribution of income among all income earners and the need to suppress household sizes. Making higher education accessible at affordable cost to the citizenry may be able to empower the people more and raise them above the present level of food insecurity. Furthermore, investigation into other determinants of consumption of beverages could be the right steps towards making this category of food available to the people.

REFERENCES


University of Ibadan, Ibadan. 112pp.
### Table 1: Household Consumption Expenditure by Household size

<table>
<thead>
<tr>
<th>Household size group</th>
<th>Percent of total household</th>
<th>Average household size</th>
<th>Consumption expenditure per household (n)</th>
<th>Consumption expenditure per caput (n)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 - 5</td>
<td>52.20</td>
<td>3.50</td>
<td>1621.60</td>
<td>461.90</td>
</tr>
<tr>
<td>6 - 10</td>
<td>41.10</td>
<td>7.60</td>
<td>2584.10</td>
<td>339.00</td>
</tr>
<tr>
<td>11 - 15</td>
<td>5.60</td>
<td>11.80</td>
<td>2927.40</td>
<td>248.10</td>
</tr>
<tr>
<td>Over 15</td>
<td>1.10</td>
<td>16.00</td>
<td>1159.00</td>
<td>105.40</td>
</tr>
<tr>
<td>All Group</td>
<td>100</td>
<td>5.8</td>
<td>2084.70</td>
<td>359.40</td>
</tr>
</tbody>
</table>

### Table 2: Household Consumption Expenditure by Educational Level of Householder.

<table>
<thead>
<tr>
<th>Educational level of household head</th>
<th>Percent of total households</th>
<th>Average household size</th>
<th>Consumption expenditure per household (n)</th>
<th>Consumption expenditure per caput (n)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Up to Secondary</td>
<td>48.90</td>
<td>6.60</td>
<td>2198.57</td>
<td>333.12</td>
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<tr>
<td>School</td>
<td>17.80</td>
<td>6.30</td>
<td>2088.56</td>
<td>458.50</td>
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<tr>
<td>* NCE, etc.</td>
<td>33.30</td>
<td>6.30</td>
<td>3204.87</td>
<td>508.73</td>
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<tr>
<td>University and Polytechnic</td>
<td>100</td>
<td>5.80</td>
<td>2084.70</td>
<td>359.40</td>
</tr>
</tbody>
</table>

* Includes, OND, City and Guild and other Higher Certificates.
** Includes, HND, B.Sc., M.A., MBA, Ph.D, D.Sc. and other equivalent degrees.
Table 3: Household Consumption Expenditure by Income Group

<table>
<thead>
<tr>
<th>Income group</th>
<th>Percent of total household</th>
<th>Average household size</th>
<th>Average household income</th>
<th>Consumption expenditure per household (n)</th>
<th>Consumption expenditure per caput (n)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Low (Less than N3,000)</td>
<td>55.60</td>
<td>5.10</td>
<td>1595.00</td>
<td>1181.00</td>
<td>230.70</td>
</tr>
<tr>
<td>Middle (N3000-N6000)</td>
<td>32.20</td>
<td>6.10</td>
<td>4108.40</td>
<td>2818.90</td>
<td>461.90</td>
</tr>
<tr>
<td>High (greater than N6000)</td>
<td>12.20</td>
<td>8.10</td>
<td>8459.10</td>
<td>4256.90</td>
<td>526.10</td>
</tr>
<tr>
<td>All Groups</td>
<td>100.00</td>
<td>5.80</td>
<td>3182.70</td>
<td>2084.70</td>
<td>359.40</td>
</tr>
</tbody>
</table>

Table 4: Income Elasticities of Demand for Food Items

<table>
<thead>
<tr>
<th>Food items</th>
<th>Elasticities</th>
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</thead>
<tbody>
<tr>
<td>All Foods</td>
<td>0.73</td>
</tr>
<tr>
<td>Staples</td>
<td>0.81</td>
</tr>
<tr>
<td>Beverages</td>
<td>0.84</td>
</tr>
</tbody>
</table>

Table 5: marginal propensity to consume (mpc)
The various Food Items

<table>
<thead>
<tr>
<th>Foods items</th>
<th>Marginal Propensity to Consume</th>
</tr>
</thead>
<tbody>
<tr>
<td>All Foods</td>
<td>0.48</td>
</tr>
<tr>
<td>Staples</td>
<td>0.34</td>
</tr>
<tr>
<td>Beverages</td>
<td>0.05</td>
</tr>
</tbody>
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