

## Socio-Economic Determinants of Household Food Expenditure in a Low Income Township in South Africa

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**Abstract:** *The study, on which this article is based analysed the impact of selected socio-economic characteristics on food expenditure patterns of a low-income township in South Africa. The results are based on a household survey using questionnaires. A multiple regression model was used to explain responses in monthly household food expenditures to socioeconomic factors. Household income, household size, age, employment status, and the educational attainment of the household head were found to exert a strong positive impact on food expenditures. The marital status of the household head was associated with a negative impact on household food expenditure, and the coefficient for the variable was significant. Household size, employment and marital status of the household head are the most significant predictors of food expenditure. The gender of the household head had no significant impact on household food expenditure. This study contributes to the understanding of low income townships in South Africa by modelling the factors influencing household food expenditure.*

**Keywords:** *Food expenditure; determinants; low income households; township; South Africa.*

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### 1. Introduction

Determinants of household expenditure have been a topic of interest for economists for centuries. Several researchers have made important contributions to the understanding of factors associated with consumer choice (Engel, 1895; Barton, 1955; Becker, 1976). Engel focused on the relationship between expenditure on food and income. According to Engel's Law, the household budget spent on food decreases as income increases. He suggested that a higher propensity of households experiencing increasing income spend a bigger proportion of the food budget on a diversified diet thus improving the nutritional status of the household members. Engel's original work showed the relevance of income and family size in influencing household expenditure, and later studies confirm that larger families typically have larger budget shares of necessities than smaller families at the same income level. Becker's (1965) theory of household production is often used to model household expenditure analysis. The theory extends to consider how households choose the best combination of commodities to maximize utility, while subject to time, resources, and technology constraints.

The nature and patterns of food expenditure continue to reflect the socio-economic and demographic characteristics of households under consideration. From an empirical perspective, several studies have been undertaken to provide an understanding of the factors that affect household food expenditure. Gheblawi and Sherif (2007) examined the factors affecting expenditure on rice, fish, and meat in the UAE. Their results indicated that income and household size are important factors affecting the amount of money spent on the three examined food groups, and that the expenditure on the three examined food items was not highly responsive to changes in households' incomes. Several researchers (Bansback, 1995; Dickinson et al., 2003) indicate that non-economic factors (i.e. non price/income factors) are becoming more important in determining consumers' purchasing decisions. For example, in a study by Bansback (1995) on the demand for meat in the EU, he showed that, for the period 1955 to 1979, price and income factors accounted for a higher proportion of the explanation of changes in meat consumption (Bansback, 1995).

Statistics South Africa (2008) reports that housing, water, electricity, gas and other fuels, transport and food and non-alcoholic beverages are the main components of household consumption in South Africa. The expenditure on food and non-alcoholic beverages amounted to 14.4% of household expenditure. The black African population was found to spend on average 21.4% of household expenditure on food and non-alcohol beverages. Evidence continues to point to increasing inequality and deprivation in South Africa. It is estimated that about 35 per cent of the population in South Africa is vulnerable to food insecurity and approximately a quarter of the children under the age of 6 years are estimated to have had their growth stunted by malnutrition (Human Sciences Research Council, 2004). Most studies on food expenditure use a demand system approach in the understanding of the major determinants of food expenditure in a South African context (Dunne & Edkins, 2005; Selvanathan & Selvanathan, 2006). A study by Balyamujura et al. (2000)

analyzed the impact of HIV/AIDS on the demand for food. The study cites increasing strain on food expenditure brought about the impact of HIV / AIDS. These studies find an association between food demand and the socio-economic and demographics of the samples under study.

It is well documented that South Africa's historical circumstances have shaped the present configuration of poverty and opportunities along racial lines. Disadvantaged groups were systematically left with relatively little in the way of land and other resources, were not afforded education of a quality comparable to that of whites, and were compelled to adopt coping strategies. Food consumption is an important issue in South Africa, given its relation to poverty and deprivation. With the pressing need to increase food security, understanding the determinants of demand for food has become a vital task. A formerly blacks only township in South Africa provides an ample case study. A random sample of households was surveyed in a township called Bophelong (about 70km south of Johannesburg). Previous studies have found seemingly high poverty levels in the area; where 67% of the households were found to be living below their poverty lines in 2003 (Slabbert, Bophelong: a socio-economic & environmental analysis, 2003). A study by Sekhampu (2004) reported that 62% of the households were poor. A similar study by Slabbert (2009) revealed increasing levels of poverty where 69% of the sampled population in Bophelong was found to be poor. A logistic regression model was used to determine the socio-economic factors affecting the reported impact of high food prices.

The main objective of this study was to identify and quantify the relationship between household food expenditure and the socio-economic and demographic characteristics of the household. The findings of the study are important to government and industry efforts to understanding the factors that influence food expenditure in a South African township. The article is organized in the following manner. First, the research model is discussed. Second, the empirical results are presented and interpreted. Finally, conclusions are provided.

## 2. The research methodology

The data for this study were collected in Bophelong during March 2012. A total of 585 questionnaires were randomly administered in the area through face to face interviews. The survey questionnaire was tested before its distribution and necessary adjustments were made. The questionnaire included information on demographics, respondents' income and expenditure patterns and their general view about their socio-economic status. Total monthly household food expenditure was of keen interest for this study. Several statistical methods were used to analyze the data using SPSS. A multiple regression model was used to determine the socio-economic factors affecting household food expenditure. The selection of variables likely to influence household food expenditure relies on previous studies by Stewart et al. (2004), McCracken and Brandt (1987), and Redman (1980). The regression model was estimated as follows:

$$Y_t = \beta X_t + \varepsilon_t \quad (1)$$

Where  $Y_t$  is unobserved,  $X_t$  is vector of explanatory variables, and  $\beta$  is the vector of unknown parameters; and  $\varepsilon_t$  is the error term. The following socio-demographic characteristics are therefore hypothesized to influence the amount of money spent on food: (1) total monthly household income, (2) household size, (3) education attainment of the household head, (4) gender, (5) age (6), marital status, and (7) employment status of household head (Table 1).

Table 1: Description of explanatory variables in the regression model

Variable	Description
HH_Income	Total gross monthly household income (in Rands)
HH_Size	Total number of family members in the household
Educ_Head	Formal education of the household head (number of years)
G_Head	Gender of the household head (1 for female, 0 for male)
Age_Head	Age of household head (in years)
MS_Head	The marital status of the household head (1 for married, 0 for not married)
ES_Head	The employment status of the household head (1 for employed, 0 for not)

Household income is important as it determines how much can be spent on various needs of the household. The quantity and quality of a household's food consumption pattern are highly correlated with the purchasing power of the household. Household size is meant to account for the effects of household composition on expenditure. It was expected that household size would significantly impact food expenditure. The age of the household head (in years) is selected as an explanatory variable in the study as both younger and older people are assumed to have differences in tastes and preferences for food, eating habits, lifestyles and opportunities to socialize. The gender, employment and marital status of

the household head are important to consider as an explanatory variables as the head plays a primary role in food purchasing and can influence the consumption patterns of a household. Formal education of the household head (in number of years) is another explanatory variable selected in this study due to its effect on lifestyles and health-related behavior. Individuals with different levels of education may have different knowledge and perception about diet and health, and consequently may have a different consumption basket.

### 3. Findings and discussions

#### 3.1 The demographic characteristics of the respondents

The sample data was based on responses from the head of the household. The descriptive statistics for the sampled population is given in table 2. The results showed that the youngest head of household was 18 years, with the oldest at 90 years old. The number of persons per household varied from 1 to 13 members. The average household had 4 members. There were greater variations in household income, with the lowest household income recorded at R30 (\$3.75) per month and the highest household income recorded at R18 000 (\$2250). Household income is the total income earned/ received by the various household members.

The results also showed that 49.4% of households were headed by females (G\_Head). The average number of years of schooling of the respondents (Educ\_Head) was 6.21 years, which equate to primary schooling education. A small percentage (1.6%) of household heads had a post-school qualification, and 12.5% of the respondents had no formal education. An analysis of the marital status of the respondents shows that 47.2% were married. Regarding the employment status of the respondents; 58.1% were not employed. The lowest monthly food expenditure was R90 (\$11.25)(R1=\$8), and the highest at R3686 (\$460.75) per month. The average food expenditure was recorded at R748.93 (\$93.62).

Table 2: Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
Food_Ex	585	90	3686	748.93	517.89
HH_Income	585	30	18000	2441.56	2409.21
HH_Size	585	1	13	4.06	1.90
Educ_Head	585	0	66	6.21	4.14
G_Head	585	0	1	.49	.50
Age_Head	585	18	90	48.40	14.37
MS_Head	585	0	1	.47	.50
ES_Head	585	0	1	.42	.49

#### 3.2 Monthly food expenditure as a proportion of income

Table 3 shows the proportion of monthly income allocated to food by selected subgroups (variables under consideration). On average, surveyed households spend 29.8% of household income on food. Male-headed households were found to spend more of their income (32%) on food compared to female-headed households (27.8%). The proportion of household income spent on food increased with household size. The results of the study also show that married respondents spend a lower proportion of their income on food (32.6%) compared to those who are not married (26.6%).

Table 3: Monthly food expenditure as a proportion of monthly income

Grouping	Number of Households	Mean Monthly Income in Rands (R1=\$8)	Mean Monthly Food Expenditure	Percentage of Monthly Income Spent on Food
All households	585	2 506	746	29.8%
Gender				
Male	296	2 305	737	32.0%
Female	289	2 712	754	27.8%
HH_Size				
2 - 4 persons	352	2 307	698	30.3%
5 - 7 persons	173	3 068	885	28.9%
>7 persons	33	2 330	863	37.1%

Educ_Head					
	No schooling	73	2 502	690	27.6%
	1 - 5 years	92	1 910	531	27.8%
	6-10 years	406	2 635	804	30.5%
	> 10 years	14	2 717	745	27.4%
MS_Head					
	Married	276	2 522	671	26.6%
	Not married	309	2 492	812	32.6%
ES_Head					
	Employed	245	2 868	875	30.5%
	Not employed	340	2 246	654	29.1%
Age_Head					
	<30 years	56	2509	483	19.3%
	31 - 50 years	286	2479	735	29.6%
	>50 years	243	2 538	758	29.9%

### 3.3 Socio-economic factors affecting household food expenditure

The results of the regression model on the factors that affect household food expenditure are shown in table 4. The results of the survey show that household income (HH\_Income), household size (HH\_Size), age (Age\_Head), employment status (ES\_Head) and the educational attainment of the household head (Educ\_Head) significantly influence food expenditure. These variables were found to exert a positive impact on food expenditure. Of interest is that the marital status of the household head is negatively associated with spending on food. The coefficient for the variable (MS\_Head: -.211) was significant at 1%. Married household heads might benefit from an additional person to help with decision making, thus ensuring increased efficiency in food purchasing and consumption. For this model, the employment status (ES\_Head),  $t(585) = 5.73$ , marital status of the household head (MS\_Head)  $t(585) = -5.25$ , and household size (HH\_Size),  $t(585) = 4.44$ ,  $p < .01$ , are significant predictors of household food expenditure.

An increase in household income, household size and the educational attainment of the household head is associated with a positive increase in household food expenditure. Changes in the age of the household head lead to differences in nutritional requirements of a household. In this study, an increase in the age of the household head was positively associated with increased food expenditure. Moreover, larger household sizes require increased food expenditure. The gender of the household head (G\_Head) was not significant in explaining the variations in household food expenditure.

Table 4: The socio-economic factors affecting household food expenditure

	b	SE b	$\beta$	t
Constant	112.22	97.26		1.15
HH_Income	0.04	0.01	.170*	4.39
HH_Size	47.10	10.60	.173*	4.44
Educ_Head	13.48	4.88	.108*	2.76
G_Head	-15.01	41.67	-.015	-.36
Age_Head	5.79	1.53	.161*	3.78
MS_Head	-218.55	41.66	-.211*	-5.25
ES_Head	245.58	42.89	.234*	5.73

$R^2 = .166$ . \*significant at the 1% level

The model containing all explanatory variables was significant, indicating that the model was able to distinguish between the various explanatory variables used in the model. The regression model as a whole explained 16.6% ( $R^2 = .163$ ) of the variations in all cases. The Durbin-Watson test is another measure of model adequacy. This statistic informs us about whether the assumption of independent errors is tenable. The closer to 2 the value is, the better, and for these data the value is 1.782. The F-ratio for the model was calculated at 16.37, which is also highly significant ( $p < .001$ ).

## 4. Conclusion remarks

This study analyzed the socio-economic determinants of household food expenditure in a South African township of Bophelong. A multiple regression model was used to determine the factors influencing household food expenditure. Data

from a random sample of 585 households in Bophelong was analyzed, with the monthly household food expenditure as the dependent variable and a number of socio-economic characteristics as explanatory variables.

The results of this study may have important implications as it indicates that household income, household size, the age, employment, and marital status and the educational attainment of the household head significantly affect total monthly expenditure on food, *ceteris paribus*. Specifically, as household income increases, total monthly expenditure on food is expected to increase. Larger household sizes are also associated with increased spending on food. The age, employment status and the educational attainment of the household head were also associated with increased spending on food. This suggests that households where the head has more education, spend more on food than their less educated counterparts. The educational attainment might be a good proxy for the knowledge required to ensure efficiency in food purchasing. The marital status of the respondents was negatively associated with food expenditures. The negative parameter indicates that with other variables constant, married respondents spend relatively less on food than their unmarried counterparts. Married household heads might benefit from efficiencies in food purchasing brought by joint decision making. The household size, employment, and marital status of the household head were the most important predictors of food expenditure.

From a general perspective and in congruence with patterns in other developing countries, it is expected that food expenditure patterns will continue to be largely influenced by increased income and the socio-demographic characteristics of the population under study. An understanding of the impact of socio-economic and demographic factors on food purchasing decisions provides an opportunity for profiling these households to examine household food expenditure in a South African township. The results reported here contribute to a growing body of empirical evidence in South Africa, suggesting that socio-economic and demographic characteristics must be considered as important predictors of food expenditure.

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