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Food access and subjective welfare in a developing country☆

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ABSTRACT

Understanding the relationship between food access and welfare is critical in the design of social welfare policies, but the literature on this relationship is scarce. Employing the framework by Van Praag (1968) to a household survey data on Ghana, we investigate the monetary income required by households with inadequate food access to reach a given level of welfare. We observed that households with inadequate food access and those not receiving any support require a higher monetary income to reach the same level of verbal qualification of welfare as their counterparts with adequate food access and receiving support, respectively.

1. Introduction

Psychologists and economists have extensively studied happiness and wellbeing and their determinants (see Dolan et al., 2008 for critical review of the literature). From the neoclassical economic perspective, rational economic agents rank preferences according to certain utility weights. By observing an individual's choice profile, one has a definitive idea of how utilities from items in their choice set are ranked on either an ordinal or cardinal scale (Dolan et al., 2008). These are the notions of revealed and stated preferences. By contrast, psychologists have been enthusiastic about self-reported happiness or wellbeing, also known as subjective wellbeing (SWB) (Diener et al., 1999; Dolan and White, 2007; Dolan et al., 2008). Because utility connotes happiness or wellbeing, studies on SWB, which border on overall assessment of one's life, have gained traction among economists over the years (Clark and Oswald 1994; Easterlin, 1974, 2001; Di Tella et al., 2001; Dolan et al., 2008). Empirical findings have shown that self-reported happiness is an unambiguous indicator of SWB.

In a seminal work, Van Praag (1968) developed a framework based on cardinal utility theory to evaluate the subjective qualification of individual welfare. By eliciting income ranges that represent the subjective qualification of welfare or satisfaction from an individual, one can, in principle, construct the welfare function of that individual. It is important to note the distinction between welfare and wellbeing. The valuation that an individual assign to income or goods and services that can be bought with money defines individual welfare, which contributes to life satisfaction or wellbeing (i.e., SWB) (Van Praag and Frijters, 1999). Taking cues from Van Praag's works (Van Praag and Kapteyn,1973; Van Praag, 1968; Van Praag and Ferrer-i-Carbonell, 2008), this paper investigates the factors that influence an individual's verbal (subjective) qualification of welfare when faced with varying degrees of food accessibility by using data on three poor, urban communities in Ghana, a developing country, as a case study.

Food is a primary necessity for life and the lack of its sufficiency often correlates with poor health outcomes, environmental degradation, inadequate trade, and poor economic development (Page and Redclift, 2002; Cook et al., 2004). Food insecurity is, as a result, considered a threat to wellbeing. According to the Food and Agriculture Organization (FAO), approximately 1.2 million people (i.e., 5% of the population) are food insecure, and 2.07 million are vulnerable to becoming food insecure (Biederlack and Rivers, 2009). Although food insecurity, malnutrition, and poverty have often been viewed as a rural phenomenon, the rapid growth in urban centers accompanied by shifts in social dynamics require a discussion of these problems within the urban context as well (Levin et al., 1999).

Several studies in the late 1980s, including the seminal work of Amartya Sen, have shifted the global dialogue on food security from an overwhelming focus on supply to the dynamics of accessibility, vulnerability, and entitlements—particularly among the poor (Patel et al., 2015). Among the resource poor, their food situation influences their welfare. Moreover, Sen (1981) considers that food security is a demand-side problem and an entitlement concern. Food insecurity is, therefore,

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a function of the availability of the household resources required to make food accessible through production or purchase (Sen, 1981, 1989).

Despite food security being associated with health and behavioral outcomes, the overall impact of its constituents of food security—availability, accessibility, affordability, safety, and utilization—on subjective well-being, particularly among resource-poor communities, has received limited attention in the literature. Thus, the primary objective of this empirical work is to examine the relationship between the food accessibility of households in resource-poor urban coastal communities in Ghana and their welfare.

The contributions of this study are threefold. First, it examines the effect of the food situation (food accessibility) of resource-poor communities on their overall welfare. Second, Van Praag's (1968) model allows an investigation of the change in monetary income required to equalize welfare across households with a varying degree of food accessibility. Because policies aimed at improving food access for the poor have often included cash transfers, this research provides, among other things, a guide to the monetary amount households with inadequate access to food require—all else being equal—to attain a welfare measure, compared with their counterparts with adequate access to food, within a given reference period. Third, this study's focus on resource-poor urban communities highlights the unique plight of the urban poor, who are assumed to be food secure but are often more disadvantaged than their rural counterparts' because of high and volatile food prices in urban centers.

The remainder of the paper is as follows. Section 2 describes the theoretical model for measuring subjective welfare employed in this study, based on Van Praag (1968). Section 3 presents the data sources and a description of the data. Section 4 reviews the data analysis. Section 5 concludes.

2. The theoretical framework

2.1. Welfare parameters: want parameter, welfare sensitivity and welfare position

The study adopts an individual welfare evaluation framework proposed by Van Praag (1968), which is based on cardinal utility analysis. The basic assumption of this approach is that, based on an individual's own situation, they can evaluate the income ranges they consider to be "excellent," "good," "sufficient," "inadequate," etc. (Van Praag and Kapteyn, 1973; Van Praag, 1968; Van Praag and Ferrer-i-Carbonell, 2008). These individual evaluations are termed *verbal qualifiers*. A typical example of an income evaluation questionnaire (IEQ) is as follows:

> *Taking into account your own situation with respect to the characteristics of your family and job, you would call your net-income in Ghana new cedi (including gifts from family and friends, and tips) per year*

i *"More than what you need"* if it were above ……

ii *"Just what you need"* if it were between…… and ……

iii *"Barely what you need"* if were between…… and ……..

iv *"Less than what you need"* if it were between…… and ……

v *"Much less than what you need"* if it were less than……

The respondent is supposed to fill in the blank spaces of the IEQ. Suppose a typical respondent provided the following values to the preceding verbal qualifiers, respectively: (i) 7200, (ii) 4800 and 7200; (iii) 3600 and 4800; (iv) 2000 and 3600; (v) 2000. Let the "inserted" income levels in the left-hand column of the income evaluation question be defined as $z_{ik} = \{7200, 4800, 3600, 2000\}$; where $k = 1, 2, 3, 4$ is the number of levels in the IEQ, and $i = 1, 2, ...,n$ is an individual identifier. By asking the respondent to provide several levels of income, we can estimate the evaluation of actual income as well as the evaluation of other income levels and, hence, of an individual income utility function that differs across individuals. The following parameters can then be computed from the verbal qualifiers:

$$\mu_i = \frac{1}{4}\sum_{k=1}^{4} ln(z_{ik}) \tag{1}$$

$$\sigma_i^2 = \frac{1}{4-1}\sum_{k=1}^{4} (\ln(z_k) - \mu_i)^2 \tag{2}$$

$$\Lambda_{ik} = \frac{\ln(z_{ik}) - \mu_i}{\sigma_i} \tag{3}$$

The parameters μ_i and σ_i^2 are known as the "want parameter" and "welfare sensitivity parameter," respectively. The function Λ_{ik} signifies the welfare position (see e.g., Kijazi and Kant, 2011). The want parameter, if expressed in an exponential form (i.e., e^{μ_i}), is called the "natural unit of income." The natural unit of income level corresponds to a median value of welfare evaluation, which also implies that an individual's income level e^{μ_i} is halfway between the worst and best situations. Conversely, a high (low) e^{μ_i} implies the individual requires a relatively high (low) level of income to attain the median welfare evaluation (i.e., 0.5% or 50%). Thus, for any two individuals (A and B), B is more satisfied with their monetary income than counterpart A if B has a lower μ_i (or lower e^{μ_i}). Table 1 illustrates how these parameters are computed.

Next, an individual with a high welfare sensitivity parameter (i.e., σ) evaluates a broad income range below and above the median value. Thus, if an individual has a large σ, then they are sensitive to income change over a broad range of income levels. For example, two individuals, A and B, with welfare sensitivity values of 0.29 and 0.82, respectively, implies that B's income is more sensitive over a broader range of income levels than A's. If an individual has a σ value equal to 0, they are completely unsatisfied with any income below μ. The value of the welfare position function (Λ_{ik}) indicates an individual's own evaluation of their current welfare position, as based on their μ and σ given their current income evaluated on a cardinal scale.

Table 1
Descriptive statistics of variables used in the empirical model.

Variables	Mean	SD
Welfare indicators		
Want parameter (μ)	8.04	1.09
Welfare sensitivity (σ)	1.04	1.30
Household food access		
Inadequate (=1, 0 otherwise)	0.06	0.23
Moderate (=1, 0 otherwise)	0.22	0.42
Adequate (=1, 0 otherwise)	0.72	0.45
Social capital		
Receives no support (=1, 0 otherwise)	0.41	0.49
Receives support (=1, 0 otherwise)	0.14	0.35
Gives support (=1, 0 otherwise)	0.29	0.45
Receives and gives (=1, 0 otherwise)	0.16	0.36
Climate variability		
No flooding	0.90	0.30
Flooding ≥ once in a year	0.10	0.30
Location		
Abgogbloshie	0.16	0.37
James Town	0.28	0.44
Ussher Town	0.56	0.50
Household size	4.32	3.15
Formal education (years)	7.84	4.43
Income (Ghana Cedi)		
Abgogbloshie	2894.18	2501.84
James Town	3916.06	3655.67
Ussher Town	3192.63	2924.20

Furthermore, following Van Praag (1968) and Van Herwaarden et al. (1977), it is assumed that the utility function, also known as the "individual welfare function of income," defined over a closed set (i.e., $u(z_{ik}) \in [0, 1]$) is log-normally distributed,[1] i.e.,

$$u(z_{ik}) = N\left(\frac{\ln(z_{ik}) - \mu_i}{\sigma_i}; 0, 1\right) \tag{4}$$

Van Praag (1968) demonstrated that the informational value obtained from the verbal qualifiers is maximized if the following relationship holds:

$$u(z_k) = \frac{k}{3+1} \tag{5}$$

k, and the difference between two consecutive values k generates a utility difference or welfare mass of $\frac{1}{4}$. The implication is that the individual's income range is partitioned according to equal quintiles of the welfare function (Kijazi and Kant, 2011).

2.2. Welfare effect of food access, social capital and climate factors

To verify the welfare impact on food access (FA_i), social capital (SC_i), climate factors (CM_i) and formal education, (Ed_i) the following equation is estimated:

$$\mu_i = \alpha_0 + \alpha_1 \ln y_i + \alpha_2 Ed_i + \alpha_3 FA_i + \alpha_4 SC_i + \alpha_5 CM_i + \varepsilon_i \tag{6}$$

$$\sigma_i = \beta_0 + \beta_1 \ln y_i + \beta_2 Ed_i + \beta_3 FA_i + \beta_4 SC_i + \beta_5 CM_i + e_i \tag{7}$$

Following Frijters and Van Praag (1998), let the term $(\ln(y_i) - \mu_i)$ constitute an "ordinal welfare index" of an individual or household i; where y_i is income, Ed is education and FA_i is food accessibility (a proxy for food security). Furthermore, define $j(=FA, SC, CM)$ as an indicator for the three variables of interest and let a reference situation be denoted by subscript zero (e.g., $(\ln(y_{i0}) - \mu_{i0})$), so that the counterfactual situation is represented by the subscript j. An individual or household is indifferent between their reference and actual situations if the following condition holds:

$$\ln(y_{i0}) - \mu_{i0} = \ln(y_{ij}) - \mu_{ij} \Rightarrow \ln\left(\frac{y_{ij}}{y_{i0}}\right) = \mu_{ij} - \mu_{i0} \tag{8}$$

Using Eq. (6) in (8), we obtain the following:

$$\ln\left(\frac{y_{ij}}{y_{i0}}\right) = \frac{\alpha_2}{1-\alpha_1}(Ed_{ij} - Ed_{i0}) + \frac{\alpha_3}{1-\alpha_1}(FA_{ij} - FA_{i0}) + \frac{\alpha_4}{1-\alpha_1}(SC_{ij} - SC_{i0}) + \frac{\alpha_5}{1-\alpha_1}(CM_{ij} - CM_{i0}) \tag{9}$$

From Eq. (9), which is termed "equivalence scale," the change in income required to compensate an individual or household for a welfare loss (gain) due to a change in their food accessibility or social capital endowment, all else being equal, can be computed (e.g., $\Delta \ln\left(\frac{y_{ij}}{y_{i0}}\right) = \frac{\alpha_3}{1-\alpha_1}\Delta(FA_{ij} - FA_{i0})$).

3. Data description and analysis

The study was conducted in Accra, the administrative and commercial capital of Ghana. The city occupies an approximate area of 114 km^2 with a total population of approximately 2 million. Three communities (James Town, Ussher Town, and Agbogbloshie) were surveyed. These communities are commercially vibrant but densely populated, with the poor social amenities that typify a poor urban settlement. In addition, the communities are waterlogged and experience seasonal flooding. This situation results in occasional losses of property, which worsens household food insecurity situations (Codjoe et al., 2014). Additionally, the communities lack proper drainage systems, and studies have found a high incidence of climate-related diseases, such as malaria, diarrhea, cholera, and typhoid among the residents (Mumuni, 2013; Tutu et al., 2017).

This analysis is embedded in broader longitudinal "Urban Poverty and Health Survey" (UPHS) conducted by the Regional Institute for Population Studies. The overall aim of the UPHS is to examine health, food security, poverty, and development indicators in resource-scarce, climate-sensitive urban settings to provide vital data to various stakeholders for the development of those communities. The data used for the analysis was from the third round of data collection (October to November 2013), which included the IEQ. Based on the 2000 census data, enumeration areas were selected across the three (James Town, Ussher Town, and Agbogbloshie) study communities in proportion to their population size. Forty (40) households were then systematically selected from 20 enumeration areas, resulting a total sample size of 800 eligible households surveyed. A household was defined as "a person or a group of persons, related or unrelated, who live together in the same dwelling unit, who make common provisions for food and regularly take their food from the same pot" (GSS, 2015).

Detailed questionnaires were administered as face-to-face interviews to study the respondents using their local language. Eligible members interviewed in households were the household heads. Administered questionnaires covered sections ranging from socio-demographic and economic questions to climate events such as flooding, the household food security situation, and capitals (i.e., social, physical, financial, and human capital). In addition, a section was devoted to eliciting responses for the household's welfare function.

A key variable or component of food security was food accessibility. The respondents were asked to recall the household's food access over the month prior to the interview date. In sync with the Food and Nutrition Technical Assistance Project's operational definition of food security, household heads were asked to indicate whether there were day(s) in the thirty days prior to the interview when they or any member of their household did not have sufficient access food (Coates et al., 2007). Households with no affirmative responses were considered to have "*adequate food access*." Households that indicated they did not have sufficient food for one to ten days were considered to have "*moderate food access*," whereas those who did not have sufficient food for more than ten days were considered to have "*inadequate food access*."

The climatic variable of interest in this study is extreme precipitation, represented by the occurrence of floods in the study communities. Because of the topology of the regions and various exposure levels to extreme climate events, the frequency of the households' flooding experiences varies across and within communities. Households were categorized as either 1) having experienced no flooding during the rainy season, or 2) having experienced flooding at least once during the rainy season.

Furthermore, considering that the wellbeing of households has been linked to the existence of support systems, household heads were asked if their household had received or given (or both) any financial or in-kind support from family (children, siblings, or parents), relatives (other kin), and friends outside the household in the last twelve months. Four categories of social support systems were identified: 1) households that neither received nor gave any form of support; 2) those that only received support; 3) those that only gave support; and 4) those that received and gave support.

The study was approved by the Institutional Review Board of Noguchi Memorial Institute for Medical Research at the University of Ghana, Legon.

[1] As noted in Van Praag (1968), the choice of functional specification is independent of the random process.

4. Data analysis and discussion

4.1. Descriptive statistics and regression analysis

Table 1 contains the descriptive statistics of the variables used for the empirical analysis. After data cleansing, 469 interviewed households had complete data for this analysis. The average annual household income of the respondents in the three study communities is GHS3344.15.[2] Secondly, the mean value of the computed want parameter is 8.04, with a relatively low standard deviation of 1.09, implying that the computed values are clustered around the mean despite the high-income inequality. Thirdly, the welfare sensitivity parameter has a mean and standard deviation of 1.04 and 1.3, respectively. Fourthly, the food access variable reveals that approximately 22% of households had moderate access to food and 6% classified had inadequate food access. Approximately 41% of the households did not receive financial support from friends and relatives in times of need, and 29% gave support to others. Approximately 10% of the respondents experienced flooding at least once per year.

The regression results of the want parameter, welfare sensitivity, and income equations are presented in Tables 2–4, respectively. The *F*-statistic demonstrates that the want parameter regression line is a good fit at the 1% significance level ($P < .001$). Regarding the explanatory variables, it was observed that household monetary income, household size, food accessibility, flooding, social support, and years of formal education explain the verbal qualification of welfare position. The sign of the coefficient of monetary income is positive, meaning a household that is relatively well-off, all else being equal, requires a higher level of income to reach the same level of a subjective welfare evaluation as its counterpart with a lower monetary income. The coefficient of the income variable is significant at the 1% level. The positive sign associated with this variable is consistent with the findings in the literature, confirming that current levels of monetary income heighten people's aspirations (Brickman and Campbell, 1971; Frijters and van Praag, 1998). In addition, the estimated coefficient of 0.025, called the preference drift rate, is much higher than the figure obtained for Tanzania (Kijazi and Kant, 2011) but significantly lower than the estimates for the 9 European countries (van Praag and Frijters, 1999). The drift rate indicates that if income increases by 1%, approximately 0.03% is not reflected in an increase in individual welfare. Because Ghana is poorer than each of the European countries considered, we expect the estimate for the former to be lower than that of each of the latter.

The coefficient of the dummy variables for moderate and adequate food access are found to be statistically significant at the 5% and 1% levels, respectively. The reference category of these two variables is inadequate food access. The sign of the coefficients indicates that all other things being equal, a household classified as having low food access has the highest aspiration (i.e., want parameter) on average, compared with its counterpart who is categorized as having moderate access to food and a household where food is accessible. Conversely, having complete access to food corresponds with the lowest want parameter on average. This finding is both logical and intuitive. Indeed, there are no limits to aspirations, and a household that has inadequate access to food may have more needs than its counterparts with no issue with accessing food. As a result, the household with inadequate food access may require a relatively higher income to reach the same level of verbal qualification of welfare as its more secure counterparts. This finding has implications for public policy.

Households that experience flooding more than once per year have a relatively lower want parameter compared with households who experience floods once per year. Thus, households that experience frequent flooding require lower monetary income to reach the same level of happiness, compared with their counterparts that experience it at

Table 2
The effect of household food access, experience of flooding and selected socioeconomic characteristics on the welfare function-want parameter (Estimate of welfare parameters).

	Want parameter, μ		
	Coefficient	Robust std. error	Elasticity
Moderate food access (=1, 0 otherwise)	−0.539**	(0.221)	−0.015
Adequate food access (=1, 0 otherwise)	−0.679***	(0.210)	−0.061
Household experience flooding ≥ 1 times/year (=1, 0 otherwise)	−0.251	(0.168)	
Receives social support (=1, 0 otherwise)	−0.502**	(0.164)	−0.009
Gives social support (=1, 0 otherwise)	0.087	(0.107)	
Household size	0.125*	(0.015)	0.016
Formal education (years)	0.029**	(0.011)	0.028
Ln (Income)	0.025***	(0.058)	0.197
Constant	6.787	(0.058)	
N	466		
$R^2 = 0.10$; $F = 6.25$***			

*** Significant at 1% level.
** Significant at 5% level.

Table 3
The effect of household food access, experience of flooding and selected socioeconomic characteristics on the welfare function-welfare sensitivity.

	Welfare sensitivity, σ		
	Coefficient	Robust std. error	Elasticity
Moderate food access (=1, 0 otherwise)	−0.073	(0.280)	
Adequate food access (=1, 0 otherwise)	0.172	(0.277)	
Household experience flooding ≥ 1 time/year	0.294	(0.236)	
Receives social support (=1, 0 otherwise)	−0.601***	(0.157)	−0.080
Gives social support (=1, 0 otherwise)	−0.361**	(0.125)	−0.099
Household size	−0.011	(0.017)	
Formal education (years.)	0.001	(0.017)	
Ln (Income)	−0.178**	(0.069)	−1.381
Ussher Town (=1, 0 otherwise)	0.531***	(0.162)	0.141
James Town (=1, 0 otherwise)	0.492***	(0.130)	0.262
Constant	2.166	(0.556)	
N	466		
$R^2 = 0.06$; $F = 3.70$**			

*** Significant at 1% level.
** Significant at 5% level.

Table 4
The effect of household food access, climate variability and selected socioeconomic characteristics on income.

	Ln (Income)	
	Coefficient	Robust std. error
Moderate food access (=1, 0 otherwise)	0.116	0.168
Adequate food access (=1, 0 otherwise)	0.331**	0.154
Household experience flooding ≥ 1 time/year	0.180	0.139
Receives social support (=1, 0 otherwise)	−0.229	0.109
Gives social support (=1, 0 otherwise)	−0.041	0.098
Formal education (years)	0.032***	0.009
Constant	7.255	0.169
$R^2 = 0.064$; $F = 5.90$***		

*** Significant at 1% level.
** Significant at 5% level.

[2] At the time of data collection, the exchange rate was USD 1 = GHS 2.29.

Table 5
Change in income required to reach a level of verbal welfare qualification.

	Change in income (GHS)
Household food accessibility[a]	
Inadequate food access	2172.90
Moderate food access	434.65
Social capital[b]	
Receive social support	1463.28

At the time of data collection, the exchange rate was USD 1 = GHS 2.29.
[a] Households with inadequate food served as a reference.
[b] Households with no social support serves as a reference.

most once per year. This result, though surprising, is not unexpected because the households that experience flooding are frequently not those with inadequate food access. Furthermore, years of education is positively correlated with the want parameter. The implication is that educated households, compared to less-educated households, have greater exposure to opportunities and wealth and would, hence, require a higher monetary income to reach a given level of verbal qualification of welfare. The corresponding elasticity coefficient 0.03.

Furthermore, the sign of the coefficient of variable household size is positive, implying that the household does not receive (sufficient) social support or allowances (Frijters and Van Praag 1995). The coefficient of 0.159 is higher than the figure (i.e., 0.1) reported in Van Praag and Kapteyn (1973) and for 7 out of the 9 European countries reported in Frijters and Van Praag (1995).[3] Notably, the coefficient is likely to be higher in a poorer a country with social safety net based on a less liberal system.

As noted earlier, Table 3 contains the regression results of the welfare sensitivity. The *F*-statistic indicates the line is a good fit at the 5% significance level. Dummy variables for households that receive financial support and those who give support to others are significant at 1% and 5%, respectively. The sign of the coefficients of the two variables demonstrates that both variables lower welfare sensitivity by 0.4 and 0.6, respectively, relative to those who neither receive nor give social support, implying their income is less sensitive over a broader range of income levels. Secondly, the more educated a household is, all else being equal, the broader its evaluation of income around the median value. Furthermore, income levels are negatively related to welfare sensitivity, with a corresponding elasticity coefficient of 1.4. Thus, economically well-off households had a smaller range of evaluation of income around the median value. Conversely, both James Town and Ussher Town had higher mean annual incomes than Agbogbloshie. Hence, the two communities had a smaller range of evaluation of income around the median value compared to the reference community Agbogbloshie. Other studies on welfare sensitivity have found that regardless of the welfare level considered, the level of inequality (i.e., welfare sensitivity) positively correlates with a poverty line (Hagenaars and Van Praag, 1985; Hagenaars, 1986).

The income of the respondents was regressed on a number of variables, including food access, to determine which of the variables explains it. The regression results are reported in Table 4. The *F*-statistic demonstrates that the line is a good fit and the R-square value indicates that approximately 5% of the variability of the income is explained by the regression variables. The two variables with significant coefficients are the dummy for food access and years of education. Households with adequate access to food have higher incomes than their counterparts who are food insecure. Moreover, households that have more years of education are relatively well-off.

[3] To compare the size of the coefficient of household size (family size) with those in the literature cited, the figure in Table 3 was multiplied by the average household size (i.e., 0.029*4.32).

4.2. Welfare loss (gain) due to food access

The equation derived from the equivalent scale is employed to determine the income change needed to bring

a. households with *inadequate food access* to the same level of verbal welfare qualification as their counterparts with *moderate* or *adequate food access*; and
b. households receiving no social support to the same level of verbal welfare qualification as their counterparts that receive social support.

An annual mean income change of 2172.90 and 434.65 is required for households with *inadequate* and *moderate food access*, respectively, to attain the same level of verbal qualification of welfare as their counterparts with adequate food access. Furthermore, compared with those who do not receive social support, a household that receives support requires an additional amount of GHS 1463.28 to attain the same level of verbal qualification of welfare.

5. Conclusion

With one in every nine households in the world having insufficient food for an active and healthy life, food access remains a global problem (FAO and IFAD, 2014). This study has addressed a critical question of whether households that have low access to food require lower or higher amounts of income to reach a given level of verbal qualification of welfare, compared with their counterparts who are food secure. We observed that among the urban poor community dwellers in Ghana, households that are food insecure require more money than their counterparts who are food secure to reach a given level of subjective well-being. However, a very weak correlation is observed between food security and per capita household income, which is intriguing. This finding which suggests the notion that food is always ranked first on a household's scale of preference is not universally tenable. Social policies directed at reducing hunger should examine welfare implications of transfers and subsidies.

Furthermore, as expected, larger households require more money than smaller ones, and households with higher levels of formal education require larger amounts of money to reach a given level of subjective well-being than those with lower levels of education. The implications are that social support programs seeking to improve well-being must vary across households according to certain crucial attributes.

Finally, social networks are generally critical in providing support in times of need to people in developing countries. We found that those who depend on others for financial assistance require more support (i.e., they require more money to reach a given level of verbal qualification of welfare). This is not surprising because those who seek such supports are, obviously, in need.

This paper must be considered as a pilot study. The methods and results suggest that it should be followed and refined to investigate other problems, especially for developing countries and aspects that are simply unknown or deemed irrelevant for developed countries. We would also like to mention a pertinent publication from the Inter-American Development Bank (IDB) *The Quality of Life in Latin American Cities* (Lora et al., 2010), which may be of considerable inspiration for those conducting further research.

Supplementary materials

Supplementary material associated with this article can be found, in the online version, at doi:10.1016/j.socec.2018.01.002.

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