



# Residential Remittances and Food Security in the Upper West Region of Ghana

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## ABSTRACT

In recent years, out migration from the Upper West Region to the southern belt of Ghana for farming has become commonplace. The natural question that has arisen is: what is the potential impact of remittances from this migration pattern on food security in the region? Using multivariate ordered logistic regression this study assesses the linkage between remittances and household food security (derived using the HFIAS) among urban and rural households ( $n=1,438$ ) in the region. The findings show that urban remittance-receiving households and rural remittance and non-remittance receiving households were more likely ( $OR=2.44$ ,  $p<0.05$ ;  $OR=2.46$ ,  $p<0.001$ ; and  $OR=1.49$ ,  $p<0.1$ , respectively) to report being more severely food-insecure than urban non-remittance receiving households. The findings demonstrate that household strategies such as migration and remittances on their own are not sufficient to ameliorate the precarious food insecurity situation of the region. The study calls for development of alternative livelihoods in the region.

## INTRODUCTION

Food security discourse is moving from an overly rural focus to include urban contexts as a result of increasing urbanization which is occurring with increasing urban poverty (Crush and Frayne, 2011). In investigating household food security strategies, migration and remittances are highlighted as possible pathways out of household food insecurity (Crush, 2013; Luginaah et al., 2009). This article contributes to expanding the literature and theory around the complex linkages between remittances and food security among households in both rural and urban areas in the Upper West Region (UWR) of Ghana.

The 1996 World Food Summit conceptualized food security as existing when all people, at all times, have physical and economic access to sufficient, safe and nutritious food that meets their dietary needs and food preferences for an active and healthy life (FAO, 1997). This definition highlights food availability, access, stability and utilization as key pillars of food security (Renzaho and Mellor, 2010). While food availability is a description of stock of food physically available, food access includes not only food availability but also the ability of households and individuals to acquire it. Access hinges on the existence of effective market chains, and infrastructure to support food distribution and food pricing (Coates, et. al., 2007). According to Renzaho and Mellor (2010), availability and access alone do not guarantee food security; utilization and stability are equally

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important. Utilization centres on the intake of critical diets in the right quantities and combination while stability relates to the capacity of households and individuals to adjust to difficult times (Renzaho and Mellor, 2010). Even though the impacts of poverty and vulnerability on food security have been articulated in the literature, the discussion was more focused on rural settings because poverty and vulnerability have been disproportionately concentrated in such contexts.

In recent times, increasing research on urban food security is adding a new perspective to food security analysis, particularly in Sub-Saharan Africa (SSA), where the rural population is shrinking due to rapid urbanization. The spate of urbanization in developing countries is turning out to be one of the greatest threats to food security. Crush and Frayne (2011) suggest that urban populations may experience worse forms of food insecurity compared to rural populations in the near future as rural poverty is transferred through migration to urban centres amidst increasing pressure on resources in urban areas (Crush and Frayne, 2011). Struggling urban households tend to farm in nearby locations and rely on social links with rural dwellers (Tawodzera, 2012). Under extreme conditions, household members are sent to friends and relatives in rural areas or well-endowed households in urban centres (Frayne, 2004).

Remittances (international) have become an important contributor to the economies of developing countries. According to Ratha and colleagues (2016), remittances have exceeded US \$441 billion, which is more than three times the value of foreign aid to developing countries. International remittances form more than 10% of the GDP of some 25 developing countries and are mostly used for investment in education, health and small businesses in communities (Ratha, Eigen-Zucchi, and Plaza, 2016). At the household level, studies have suggested that remittances contribute to reducing poverty (Adaawen and Owusu, 2013; Fransen and Mazzucato, 2014). However, it has been argued that international and internal remittances have different impacts on poverty. For instance, Adams Jr. et al., (2008) observe that households receiving international remittance in Ghana experienced an 88.1 per cent fall in poverty level while those receiving internal remittances reported only a 69.4 per cent reduction in poverty. Although reduction in poverty could mean increases in household consumption, a recent study in Ghana suggests that remittances have a minimal impact on food consumption (Karamba, Quiñones, and Winters, 2011), indicating a more complex relationship between remittance receipt and household food security in different contexts. To understand this complex relationship, we examine the linkage between remittance receipt and food security among rural and urban households, using the new economic and labour migration discourse as a guide.

## THE NEW ECONOMIC AND LABOUR MIGRATION DISCOURSE

The New Economic and Labour Migration (NELM) literature provides a basis for examining remittances and food security, as it presents the combined interplay of agency and structural factors in migration analysis (Abreu, 2012). The NELM theoretical approach departs from the historical-structural perspective that migration is an outcome of structural shifts in an economy (Wood, 1982) such as development of new sectors. In Ghana, the development of the cocoa and mining sub-sectors encouraged north-south migration (Songsore, 2011). Recent expansion of the services sub-sector could be encouraging rural-urban migration in Ghana and elsewhere in other parts of the sub-region. Similarly, collapse of sectors has a potential effect on migration. The NELM also moves away from the neo-classical perspective that limits migration decision to agency. Among the most influential theorists in this school is Lee with the “push-pull” theory of migration (Lee, 1966). In general, this school of migration theory argues that individual and household agency are the main determinants of migrations. We have employed the NELM analysis of migration in order to understand how both structural and agency factors influence migration and household food security. Three explanations from the assumptions of NELM are particularly important in our

conceptualization of the link between remittances and food security: relative deprivation, investment, and insurance (Fransen and Mazzucato, 2014).

Relative deprivation creates conditions where migration becomes a means of diversifying household income sources for vulnerable households. Under such circumstances the key motivation for migration is the anticipated increase in household income through remittances (Stark and Taylor, 1989) and the possibility of reducing the number of mouths in the household (Frayne, 2004). Remittances from migration also have the tendency to increase the investment portfolio of households (Frayne, 2004). Although how households utilize remittances varies across different contexts and households, much of the literature indicates that households are likely to invest remittances in productive activities such as agriculture, after satisfying the consumption demands of household members. According to Taylor (1999) remittances form a significant portion of the investment capital for diverse projects in developing countries, particularly in SSA.

Moreover, remittances are sometimes used to stabilize household food consumption in times of financial risk. For instance, Combes et al. (2014) demonstrate the power of remittances in reducing food price shocks in low-income countries including SSA countries. In this regard, it is assumed that households which receive remittances are more likely to withstand the risk of food insecurity (Ahmed, Quisumbing, Hoddinott, Nasreen, and Bryan, 2007; Mango, Zamasiya, Makate, Nyikahadzoi, and Siziba, 2014; Nguyen and Winters, 2011).

Although climate related stressors (particularly unreliable rainfall patterns and drought) have contributed substantially to increasing out-migration from the UWR (Dietz, van der Geest, and Obeng, 2013), research examining how remittances may be associated with household food security in the region remains nascent. This study relies on a correlation design to investigate the relationship between remittances and food insecurity in the UWR. In so doing it contributes to the literature on household food security in the region and also departs from previous studies which employed qualitative techniques (Kuuire, Mkandawire, Arku, and Luginaah, 2013).

## REMITTANCES AND FOOD SECURITY IN THE UPPER WEST REGION

Food insecurity in Ghana has persisted for years, especially in the three northern regions (Luginaah et al., 2009; Rademacher-Schulz, et al., 2014). For instance, a study conducted by the World Food Programme and the Ministry of Food and Agriculture, using the Food Consumption Score (FCS) in both urban and rural areas, shows that 26 per cent of households in the three northern regions experience severe to mild food insecurity (WFP and MoFA, 2012). In the UWR, where our study was conducted, 16 per cent of households were found to be moderately to severely food insecure.

The region is the most deprived with nine out of ten people being poor (defined as living on less than US \$1.25 per day, see Ghana Statistical Service, 2014). The deep-seated poverty in the UWR has been attributed to a combination of factors. Most common explanations provided in the literature touch on agro-climatic disadvantage (Armah et al., 2011) and the effect of colonial and post-colonial development strategies (Seini, 2002; Songsore, 2011). The region is located in the guinea savannah, which has one season of rainfall a year spanning four months. Changing climate has negatively impacted on the quality of farmlands and rainfall pattern, resulting in decreasing agricultural output, the main economic activity in the region.

Given the region's relatively high poverty and persistent food insecurity, young men and women migrate in search of better economic opportunities and fertile farmlands in the southern part of the country (Kuuire et al., 2013; Van der Geest, et al., 2010). A recent study by WFP and MoFA (2012) indicates that 34 per cent of households in the UWR had at least one member as a migrant worker residing in another part of the country. These migrants send food and cash back home to sustain their families (Kuuire et al., 2013; Luginaah et al., 2009; Van der Geest

et al., 2010). In recent decades, migration patterns from the UWR have shifted from temporary seasonal migration to permanent migration. This new trend is typified by the establishment of farms by migrants in certain parts of southern Ghana (Kuure, Mkandawire, Luginaah, and Arku, 2016). Considering the changing dynamics in relation to migration, climate change and food security, we ask 1) how is household food insecurity in the UWR of Ghana spatially distributed (i.e. in the geo-political districts and between urban and rural areas)? and 2) how differently do remittances receipt influence food insecurity among rural and urban households in the UWR of Ghana?

## METHODS

### Data and sample

The UWR has a population of 702,110 people and 110,175 households (Ghana Statistical Service, 2013). A survey of households was carried out in all eleven districts in 2014. The study employed a two-stage stratified random sampling with probability proportional to size to select households based on the 2010 population and housing census enumeration clusters. In the first stage, enumeration areas were clustered into rural and urban to prevent biased representation of population characteristics and subsequent bias in study findings. The second stage used random sampling to select households from the two clusters in each of the districts proportional to the 2010 census figures.

Our survey instrument was tested prior to the start of the data collection to ensure content rationality and clarity. Interviews were carried out in the main local languages (i.e. mainly Dagaare, Brifo and Sissali) by trained enumerators, who were supervised by the lead researcher. We collected quantitative data on household assets, socioeconomic and socio-demographic characteristics, and livelihood strategies including remittances. The questionnaire also included the Household Food Insecurity Access Scale (HFIAS) module to examine household heads' perceptions of their own food security status (Coates et al., 2007; Swindale and Bilinsky, 2006). HFIAS is easy to use in food security data collection relative to other food security measures such as dietary recalls or anthropometric indicators (Coates et al., 2007). A total of 1,438 households were interviewed and their responses formed the analytical basis of this study.

### Measures

Food insecurity status, our dependent variable, was obtained using the Household Food Insecurity Access Scale (HFIAS). Coates et al. (2007) developed this scale to measure the perception of food insecurity of households within a four-week recall period. Although the scale can be created as a continuous variable, it is mostly an ordered variable with four categories – food secure, moderately food insecure, mildly food insecure, and severely food insecure – to ease comparison. In this study, we combined mildly and moderately food insecure into a new category we labelled moderately food insecure. This re-categorization was necessary due to the small number of cases in the mildly food insecure category. The dependent variable used in this study was coded as food secure = 1, moderately food insecure = 2, and severely food insecure = 3.

In order to understand the complex relationship between remittances and food security among rural and urban households we constructed the focal independent variable – residential remittance – by cross-referencing place of residence (rural and urban) with household receipt of remittances. Our main motivation was to avoid the analytical simplification often associated with the contrast between remittance and non-remittance receivers and also rural verse urban analysis. This variable

was coded '0' Urban non-remittance receivers '1' rural remittance receivers, '2' rural non-remit-tance receivers, '3' Urban remittance receivers.

We included socioeconomic and socio-demographic variables as controls to test the relationship between our dependent and focal independent variable. Socioeconomic variables included were occupation of the household head (farming=0; trading=1; civil service=2; Other self-employed=3), Education (Tertiary=0; Secondary=1; Primary=2; No education=3) and Wealth Status. Wealth status was a composite index based on the household's ownership of a number of consumer items including a television set, a car, flooring materials in the house, drinking water, toilet facilities, livestock, and categorized based on quintile and coded as first quintile (Poorest)=4; second quintile (Poor)=3; third quintile (Middle)=2; fourth quintile (Rich)=1; firth quintile (Rich)=0. The following socio-demographic variables were included in the analysis: household size (5 or less=0; 6 to 10=1; more than 10=3), age of the household head, gender of household head (Male=0; Female=1), marital status (never married=0; currently married=1; widowed=2), religion of household head (Christianity=0; Muslim=1; Traditionalist=2; no religion=3), and Ethnicity (Dagaaba=0; Sissala=1; Waala=2; Brifor=3; other ethnicities of northern Ghana descent=4; other ethnicities of southern Ghana descent=5). We also controlled for the district of residence of the respondents.

## Data Analysis

Ordered logistic regression was employed to examine the association between residential remittance receipt and household food insecurity status. The primary reason for the choice of this analytic method was that the dependent variable – food insecurity – is an ordered variable. As such, lower categories of food insecurity are preferred. Ordinal logistic model is denoted by:

$$\log \left[ \frac{P(Y_{ij} \leq 1)}{(1 - P(Y_{ij} \leq 1))} \right] = \alpha_0 + \sum_{k=1}^{p-1} \alpha_{jk} X_{ijk} + V_{ij}, C = 1, \dots, \Omega - 1$$

Where  $\alpha_0$  and  $\Omega - 1$  are the intercept terms that help model the marginal frequencies in the ordered categories,  $\alpha_{jk}$  is the coefficient term,  $X_{ijk}$  are the explanatory variables,  $V_{ij}$  is the error term in the model,  $P(Y_{ij} \leq 1)$  is the probability given that the event will happen,  $(1 - P(Y_{ij} \leq 1))$  is the probability given that the event will not occur,  $k=1$  is the first explanatory variable, and  $p - 1$  is the last explanatory variable in the logistic model (Hedeker et al., 2000). A positive value for the regression coefficient  $\alpha$  in the equation indicates a positive relationship between the outcome variable and the covariate. In the context of this research, the outcome variable is coded as 1=food secure, 2=moderately food insecure, and 3=severely food insecure. Thus, a covariate with a positive coefficient would suggest transiting into a higher order category – higher levels of food insecurity and the exponentiation of which would mean households are more likely to be food insecure. Similarly, a covariate with a negative coefficient would mean transiting into lower order categories – more likely to be food secure and the exponentiation of the coefficient would imply households are less likely to be severely food insecure. Odds ratios are estimated using the maximum likelihood estimation procedure (Akaike, 1998). Thus, an odds ratio greater than one, in this research context, is interpreted as households being 'more likely to be severely food insecure', while an odds ratio less than one indicates 'a less likelihood of being severely food insecure'. Three models are estimated to examine the link between residential remittances and household food security. The first Model controlled for the impact of socio-economic variables (occupation, education and wealth). The second added socio-demographic factors, and the third included locational variables. We present univariate distribution of selected independent variables in Table 1, bivariate results in Table 2, and multivariate results in Table 3.

TABLE 1  
DESCRIPTIVE STATISTICS OF SELECTED VARIABLES

	Freq./Mean	Percent. /Std. Dev.
<b>Food Insecurity</b>		
Food secure	26	1.8
Moderate	497	34.6
Severe	915	63.6
<b>Household Residential Remittance Receipt</b>		
Urban non-remittance receiving households	209	14.5
Urban remittance receiving households	35	2.4
Rural remittance receiving households	221	15.4
Rural non-remittance receiving households	973	67.7
<b>Occupation</b>		
Farming	957	66.6
Trading	183	12.7
Civil Service	191	13.3
Other self-employed	107	7.4
<b>Wealth Quintile</b>		
Richest	295	20.5
Rich	343	23.9
Middle	270	18.8
Poor	262	18.2
Poorest	268	18.6
<b>Educational level</b>		
Tertiary	217	15.1
Secondary	274	19.1
Primary	353	24.6
No education	594	41.3
<b>Household Size</b>		
5 or less	298	20.7
6 to 10	603	41.9
More than 10	537	37.3
<b>Age</b>	44.63978	10.42237 (min. 20, Max. 70)
<b>Gender</b>		
Male	918	63.8
Female	520	36.2
<b>Marital status</b>		
Currently married	1,242	86.4
Currently single	68	4.7
Widowed	128	8.9
<b>Ethnicity</b>		
Dagaaba	778	54.1
Sissala	354	24.6
Waala	199	13.8
Brifo	71	4.9
Other (Outside Upper West Region)	36	2.5
<b>Religion</b>		
Christian	786	54.7
Muslim	419	29.1
Traditionalist	206	14.3
Others/No religion	27	1.9
<b>Districts of residence</b>		
Wa Municipal	212	14.7
Wa East	144	10.0
Wa West	164	11.4
Nadowli/Kaleo	99	6.9
Jirapa	176	12.2
Lawra	106	7.4

TABLE 1  
(CONTINUED)

	Freq./Mean	Percent. /Std. Dev.
Nandom	91	6.3
Lambussie/Karni	102	7.1
Sissala East	144	10.0
Sissala West	101	7.0
Daffiama/Bussie/Issah	99	6.9
<b>Observations</b>	1,438	100

## RESULTS

The majority of the households in our study (63.6%) were found to be severely food insecure, and those categorized as moderately food insecure and food secure were 34.6 per cent and 1.8 per cent, respectively. There is spatial variation in household food security across the eleven districts in the UWR. As indicated in Figure 1, 4.0-8.8 per cent of the households in the Nandom District reported being food secure, while none in Nadowli/Kaleo, Sissala West, and Lambussie/Karni Districts reported being food secure.

There was also uneven distribution in the proportion of households in the three food insecurity categories. Apart from the Nandom District where eleven per cent of households reported being mildly food insecure, none of the districts had households in this category, and all households in Wa West, Sissala West and Nadowli/Kaleo, reported being moderately or severely food insecure. In contrast, Daffiama/Bussie/Issah, Lawra, Nandom and Wa Municipal show small disparities in the two food insecurity categories, as indicated in Figure 2.

Remittance receipt varied between rural and urban households. Whereas only 2.4 per cent of urban households reported receipt of remittances, 15.4 per cent of rural households reported receipt of remittances of any kind in the twelve months preceding the study. As expected, there were disparities in the socio-economic characteristics of the sample. While the majority (66.6%) of participants in our study were farmers, those who reported being self-employed were in the minority (7.4%). Those in the civil services (13.3%) and those in trading were almost the same (12.7%). In contrast, wealth quintiles were almost evenly distributed. Nonetheless, the majority (23.9%) were in the richer wealth quintile. In addition, about two-fifth (41.3%) of household heads did not have any form of formal education, were males (63.8%), married at the time of the study (86.4%) and from Dagaaba ethnicity (54.1%). The majority in the sample resided in Wa Municipal (14.7%) and were Christians (54.7%). The study sample characteristics are presented in Table 1.

Results from our bivariate analysis of the dependent (food insecurity) and selected independent variables are presented in Table 2. Generally, remittance receiving households in both urban and rural as well as rural non-remittance receiving households were all more likely to be in a higher category of food insecurity than urban non-remittance receiving households ( $OR=2.18$ ,  $p<0.05$ ;  $OR=4.09$ ,  $p<0.001$  and  $OR=2.48$ ,  $p<0.001$ , respectively). Our bivariate analysis also found significant associations between socio-economic factors and food security. Households headed by traders, civil servants, and self-employed were all significantly less likely to report being severely food insecure than farmers ( $OR=0.51$ ,  $p<0.001$ ;  $OR=0.25$ ,  $p<0.001$  and  $OR=0.40$ ,  $p<0.001$ , respectively). Compared with the richest, households in any of the other wealth categories were more likely to be in a higher category of food insecurity at 99.99% confidence level of prediction. In terms of education, household heads with no formal education, primary and secondary education were more likely to report being in the severely food insecure category than those with tertiary education ( $OR=3.52$ ,  $p<0.001$ ;  $OR=2.69$ ,  $p<0.001$  and  $OR=2.19$ ,  $p<0.001$  respectively).

TABLE 2

## BIVARIATE RESULTS FROM ORDERED LOGISTIC REGRESSION PREDICTING FOOD INSECURITY

Food insecurity	Odd Ratios
<b>Urban/rural and remittance</b> (ref: Urban non-remittance receiving households)	
Urban remittance receiving households	2.18(0.82)*
Rural remittance receiving households	4.09(0.85)***
Rural non-remittance receiving households	2.48(0.38)***
<b>Occupation</b> (ref: farmer)	
Trading	0.51(0.083)***
Civil Service	0.25(0.040)***
Other self employed	0.40(0.080)***
<b>Wealth quintile</b> (ref: richest)	
Rich	2.97(0.49)***
Middle	3.59(0.64)***
Poor	2.83(0.50)***
Poorest	3.28(0.58)***
<b>Education</b> (ref: tertiary)	
Secondary	2.19(0.40)***
Primary	2.69(0.47)***
No education	3.52(0.57)***
<b>Household size</b> (ref: 5 or less)	
6 to 10	1.53(0.22)**
More than 10	2.34(0.35)***
<b>Age</b>	
<b>Gender</b> (ref: male)	
Females	1.041(0.12)
<b>Marital status</b> (ref: currently married)	
Currently single	1.10(0.29)
Widowed	1.79(0.38)**
<b>Ethnicity</b> (ref: Dagaaba)	
Sissala	1.35(0.18)*
Waala	1.22(0.20)
Brifor	0.75(0.20)
Other	0.86(0.30)
<b>Religion</b> (ref: Christians)	
Muslim	1.64(0.21)***
Traditionalists	1.59(0.26)**
No religion	1.71(0.73)
<b>District</b> (ref: Wa Municipal)	
Wa East	4.54(1.17)***
Wa West	1.79(0.38)**
Nadowli/Kaleo	3.62(1.01)***
Jirapa	1.99(0.42)***
Lawra	1.13(0.27)
Nandom	0.77(0.19)
Lambussie/Karni	2.59(0.67)***
Sissala East	1.65(0.36)*
Sissala West	2.12(0.53)**
Daffiama/Busie/Issah	1.08(0.26)
<b>Observations</b>	1,438

\*\*\*p&lt;0.001, \*\*p&lt;0.01, \*p&lt;0.05, †p&lt;0.1

Note: Robust Standard Errors are reported in parenthesis.

Moreover, households with more than six members were more likely to report being severely food insecure than those with five or less. Also, households with older heads were shown to be 2 per cent more likely to report being severely food insecure (OR=1.02, p<0.001). Similarly, those

TABLE 3

MULTIVARIATE ORDERED LOGISTIC MODELS PREDICTING FOOD INSECURITY

	Model 1	Model 2	Model 3
	Socio-economic	Bio-socio-cultural	Locational
	Odd Ratios	Odd Ratios	Odd Ratios
<b>Urban/rural and remittance</b> (ref: Urban non-remittance receiving households)			
Urban remittance receiving households	2.40(0.93)*	2.38(0.93)*	2.44(0.96)*
Rural remittance receiving households	2.09(0.49)**	2.19(0.52)***	2.46(0.68)***
Rural non-remittance receiving remittance	1.36(0.25) <sup>†</sup>	1.36(0.25) <sup>†</sup>	1.49(0.34) <sup>†</sup>
<b>Occupation</b> (ref: farmer)			
Trading	0.63(0.11)**	0.67(0.12)*	0.64(0.12)*
Civil Service	0.49(0.11)**	0.46(0.11)***	0.42(0.97)***
Other self employed	0.56(0.13)**	0.61(0.14)*	0.61(0.14)*
<b>Wealth quintile</b> (ref: richest)			
Rich	2.12(0.39)***	1.93(0.36)***	1.85(0.36)***
Middle	2.28(0.45)***	2.04(0.43)***	2.08(0.45)***
Poor	1.81(0.36)**	1.68(0.35)**	1.82(0.40)**
Poorest	1.72(0.36)**	1.62(0.35)*	1.79(0.40)**
<b>Education</b> (ref: tertiary)			
Secondary	1.36(0.30)	1.30(0.29)	1.27(0.29)
Primary	1.66(0.36)*	1.53(0.34) <sup>†</sup>	1.42(0.32)
No education	1.71(0.37)**	1.49(0.34) <sup>†</sup>	1.25(0.29)
<b>Household size</b> (ref: 5 or less)			
6 to 10		1.10(0.18)	1.13(0.19)
More than 10		1.41(0.25)*	1.31(0.24)
<b>Age</b>		1.01(0.00636)	1.007(0.00658)
<b>Gender</b> (ref: male)			
Females		0.90(0.11)	0.91(0.12)
<b>Marital status</b> (ref: currently married)			
Currently single		1.20(0.34)	1.31(0.38)
Widowed		1.87(0.44)**	2.10(0.51)**
<b>Ethnicity</b> (ref: Dagaaba)			
Sissala		1.13(0.19)	1.15(0.22)
Waala		0.87(0.18)	0.75(0.17)
Brifor		0.80(0.22)	0.71(0.20)
Other		0.89(0.33)	0.88(0.34)
<b>Religion</b> (ref: Christians)			
Muslim		1.46(0.25)*	1.53(0.27)*
Traditionalists		1.00(0.17)	1.00(0.20)
No religion		1.98(0.888)	1.93(0.88)
<b>District</b> (ref: Wa Municipal)			1.75(0.57) <sup>†</sup>
Wa East			0.90(0.26)
Wa West			1.50(0.53)
Nadowli/Kaleo			1.02(0.27)
Jirapa			0.65(0.18)
Lawra			

TABLE 3  
(CONTINUED)

	Model 1	Model 2	Model 3
	Socio-economic	Bio-socio-cultural	Locational
	Odd Ratios	Odd Ratios	Odd Ratios
Nandom			0.31(0.10)***
Lambussie/Karni			1.11(0.39)
Sissala East			0.72(0.20)
Sissala West			0.76(0.25)
Daffiama/Busie/Issah			0.49(0.14)**
Constant cut1	0.0426(0.0135)***	0.0702(0.0290)***	0.0520(0.0225)***
Constant cut2	1.638(0.434)*	2.826(1.068)***	2.217(0.880)**
Log likelihood	-973.44665	-958.36766	-933.25047
Observation	1,438	1,438	1,438

\*\*\*p<0.001, \*\*p<0.01, \*p<0.05, †p<0.1

Note: Robust Standard Errors are reported in parenthesis.

headed by widows were more likely to be severely food insecure than those headed by a married couple (OR=1.79, p<0.01).

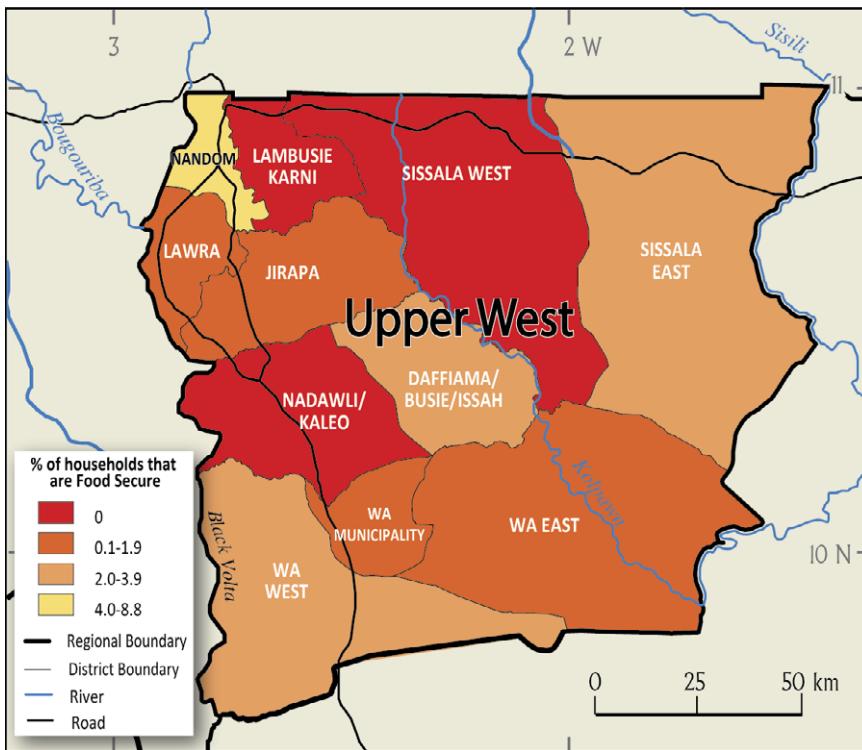
Furthermore, respondents of Sissala ethnicity were more likely to report being severely food insecure than being moderately food insecure and food secure than Dagaaba (OR=1.35, p<0.05), and households with Muslim and Traditional religious believers as heads were more likely to report being in a higher category of food insecurity than Christians (OR=1.64, p<0.001 and OR=1.59, p<0.01, respectively). District of residence was significant in our bivariate analysis. Households located in Wa East, Wa West, Nadowli/Kaleo, Jirapa, Lambussie/Karni, Sissala East, and Sissala West were all more likely to be in higher levels of food insecurity than households resident in Wa Municipal.

In Model 1 of our multivariate analysis (see Table 3), we found similar results as in our bivariate analysis. Urban and rural remittance receiving households, and rural non-remittance receiving households were more likely to report being in a higher category of food insecurity than urban non-remittance receiving households (OR=2.40, p<0.05; OR=2.09, p<0.01 and OR=1.36, p<0.1, respectively). However, we found changes in the prediction power of other socio-economic variables in Model 1. Although still more likely to report being severely food insecure when compared with the richest, the strength of the association for those in the poorest and poorer wealth quintile reduced food insecurity slightly.

Similarly, occupation was significantly associated with food insecurity in Model 1. Household heads who were traders, civil servants and those engaged in other self-employment were 47 per cent, 51 per cent and 44 per cent, respectively, less likely to report being severely food insecure than being moderately food insecure and food secure compared to their colleagues engaged in farming.

Even after controlling for socio-demographic variables in Model 2, residential remittance remained robust with a slight increase in the effect size. Also, the occupation of household head and the wealth of households remained significant determinants of food insecurity. However, the relationship between household food insecurity and the educational attainment of the household head was attenuated. Households with more than six members were 41 per cent more likely to report being severely food insecure than households with five or fewer members. Similarly, households headed by widows compared with those currently married, and those with Muslim religious affiliation compared with their Christian counterparts, were significantly more likely to report being

FIGURE 1  
FOOD SECURITY MAP OF UPPER WEST REGION OF GHANA



severely food insecure than being moderately food insecure or food secure ( $OR=1.87$ ,  $p<0.01$ ; and  $OR=1.46$ ,  $p<0.05$ , respectively).

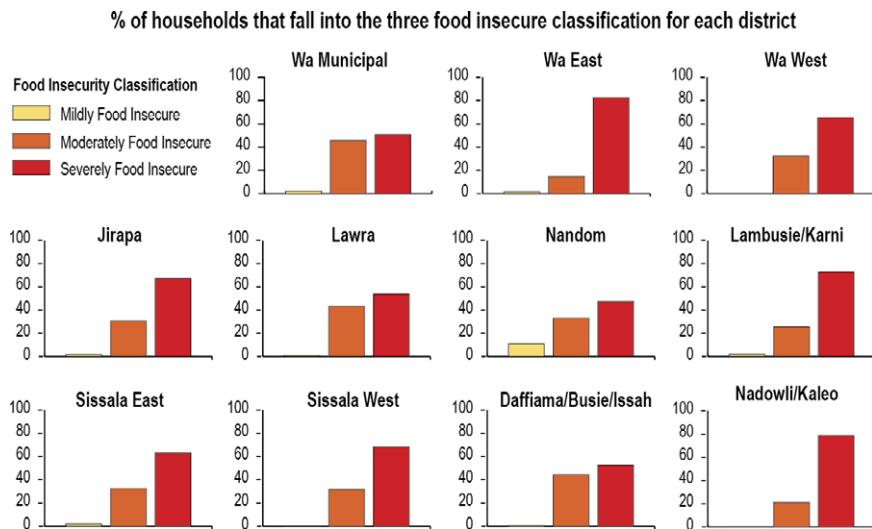
After the introduction of location into our multivariate analysis in Model 3, residential remittance remained robust, following the same pattern observed in Model 2 but with an increase in effect size. Also, the relationship between household food insecurity and respondents' occupation, wealth status, marital status and religion remained statistically significant in the final model. We found that compared with Wa Municipal, only Wa East and Daffiama/Busie/Issah had a significant relationship with household food insecurity ( $OR=0.31$ ,  $p<0.001$ ; and  $OR=0.49$ ,  $p<0.01$ , respectively).

## DISCUSSION

In this study, we examined the distribution of household food insecurity across geo-political districts and explored the extent to which remittances may have an impact on household food insecurity amongst rural and urban dwellers in the UWR of Ghana. Despite increasing evidence that the region is the most deprived and one of the most food insecure in the country (WFP and MoFA, 2012), there is limited knowledge on variations in household food insecurity. Thus, the finding that there are differences in the proportion of households reporting food insecurity both across and within districts in the region is insightful.

Differences in food security in UWR may occur due to a combination of factors including migration and remittance receipt. The Nandom District, probably the driest landscape in the region is

**FIGURE 2**  
FOOD INSECURITY BY DISTRICTS IN UPPER WEST REGION



characterized by stony and gravel soils, and stands out as the most food secure in our study. It is also the district with the highest volume of out-migration in the region. Most of the migrants from this district are middle to high-level technical labourers such as carpenters, masons, and public servants in towns and cities, mostly in Southern Ghana. Distinctively, migrants from this district keep in constant contact with those at home, through remittances and visits. We suggest that this distinctive feature could be contributing to a more positive effect of migration and remittances on food security than found in the other districts. This conclusion is consistent with Zizza et al. (2011), that remittances would have a positive effect on household food security when the negative effects of migration, such as loss of labour, are adequately addressed. Also, our findings are consistent with that of Karamba et al. (2011) who found in a study using the 2005/2006 Ghana Living Standards Survey that the impact of remittances on food insecurity may not be significant in places of relatively low out-migration.

Although remittances have the effect of reducing the likelihood of households becoming severely food insecure, our finding that it does not seem to be sufficient in making remittance receiving households food secure in both urban and rural areas is insightful. This finding is an important addition to Karamba et al.'s (2011) study, which reported similar findings. The general notion, in Northern Ghana at least, has been that remittance flows are from migrants in urban centres sending home monetary and other items for the collective well-being of relations back home. The finding of food insecurity among urban remittance recipients potentially signifies a reverse of fortunes with significant implication for other determinants of health.

Despite our finding that remittance receipt was associated with households experiencing food insecurity, we acknowledge findings from other studies that have found that receipt of remittances reduce household poverty. In particular, Adam et al. (2008) found that receipt of remittances from outside Ghana could reduce poverty by 88.1 per cent while internal remittances could reduce poverty by 69.4 per cent. Three main explanations could be advanced for the findings in this study. First, receipt of remittances that is considered a survival strategy as we have in the Upper West Region could be associated with poor households. Such households prioritize immediate consumption, such as purchasing of food, over investment in, e.g., children's education, agriculture and

small businesses. We argue that, unlike in high migration regions such as Eastern and Southern Africa and in less poorer contexts in Ghana where remittances may be an investment tool, it is mainly for satisfying immediate consumption needs and for escaping from ‘killer’ food insecurity in the Upper West region (Kuuire et al., 2013). This explanation is corroborated in Karamba et al. (2011) and Quartey (2006), who found that although remittances in Ghana may contribute to improving household welfare they are unable to completely remove economic shock and insecurity.

Secondly, remittances to the Upper West Region has been less frequent compared with other parts of the country. For instance, Adaawen (2013) explained that migrants from the Upper West region in the southern part of the country were less likely to send remittances back home frequently than migrants from other parts of northern Ghana. Although the reason for such an occurrence was not obvious in Addawen (2013), Luginaah and colleagues in an earlier study (2009) found that poor transportation and communication networks were affecting the frequency of remitting to the region. Thus, poor households have to complement remittance receipt with livelihood strategies for subsistence in the region. Several studies have observed the reliance of households on a combination of remittances and other strategies by poor households to meet their food needs. For example, Ratha (2007) indicates that reliance on other strategies is because of the fluctuating nature of remittance flows. Therefore, remittances as a diversification strategy may only minimize the negative impacts of shocks on poor households by smoothing consumption in the short run (Tsegai, 2007). Under such circumstances remittances may not result in the attainment of food security as observed in this study. Given the high poverty levels in the UWR, it is understandable that remittances may only help to manage the symptoms of food insecurity but not achieve food security entirely.

Finally, remittances may not be adequate to compensate for the overall effect of losing household labour through migration in rural areas. Regassa and Stoecker (2012) indicate that migration of household members tends to follow food shortages. However, participation in migration itself should not be viewed as a cause of food insecurity. Research shows that the incidence of climatic stressors, poverty and food insecurity has the effect of pushing adult members of households to migrate in search of income and livelihoods to support their families (Luginaah et al., 2009; Warner and Afifi, 2014). Therefore, migration can create farm labour shortages in the household, resulting in over-dependence on remittances transferred to the family. However, urban-poor households who may be relying on family capital or family members in rural food-producing areas would be affected when labour for food production is lost to migration. Research has articulated this point as part of the motivation for urban agriculture (Zezza and Tasciotti, 2010). Urban areas in the UWR rely on food produced from rural parts of the region and from the Brong-Ahafo Region (Kuuire et al., 2013; Luginaah et al., 2009) and reduction in food production may have worsening food security implications for urban areas.

Our analyses also show a relationship between wealth status and food insecurity. Poor households were more likely to report being severely food insecure than rich households. Interestingly, we find that households in poorer and poor wealth quintiles formed 22 per cent and 21 per cent of remittance receiving households, respectively, compared with 16 per cent for those in the richest wealth category. This supports our earlier argument that poor households are relying on remittances, which does not seem to be leading to food security. It is important to state that categorization of households into wealth quintiles only depicts relative wealth and in the UWR, where nine out of every ten people are poor, this categorization can be described as showing relative poverty in the region. However, our finding corroborates a study in Ethiopia which shows that respondents in the lowest wealth quintile were more likely to be food insecure regardless of remittance receipt (Regassa and Stoecker, 2012).

The finding that individuals engaged in trading activities and civil service are relatively food secure when compared with farmers can be viewed in the context of the main driving force of migration in UWR. Agriculture employs over a third of the labour force in the UWR. However, drastic changes in the agro-ecological environment over at least the last three decades have had dire consequences on agricultural livelihoods (Van der Geest et al., 2010). This has created a situation where migration is heavily relied upon by peasant farmers who are fleeing hardships associated

with reduction in food outputs due to low quality lands for agriculture and the changing climate. It is not surprising, therefore, that people who rely on agriculture as a means of livelihood consider outmigration important for youth from the region (Van der Geest et al., 2010) regardless of the challenges which exist in their destination areas (Kuuiire et al., 2013).

Meanwhile, the findings show an interesting relationship between religion and food insecurity. Muslims who are predominantly urban in context are more likely to be food insecure. A possible explanation could be that Muslim-headed households are mostly polygamous, with a large family, and consequently have a higher likelihood of insufficient food. Second, until recently Muslims in this context did not participate in formal education and hence are less likely to enter the civil services. Similar to our findings, other studies have established links between household size and food security status. Available evidence shows that large households tend to be more food insecure than smaller households (Aidoo et. al., 2013; Garrett and Ruel, 1999; Mango et al., 2014). According to Garrett and Ruel (1999), in poor locations, additional members in a household create difficulties in improving the household income and food availability, due to limited opportunities. This is pertinent in a region such as UWR, where poverty levels are generally high, and tends to be compounded by a paucity of resources and a general lack of economic opportunities (Hesselberg and Yaro, 2006). The unique situation in the region is that most rural areas are largely under-served with transport. Migrants who have food cannot quickly and cheaply send it to their families in rural areas in the region.

## CONCLUSION

The study interrogates disparities in the impact of remittance receipt on food security among urban and rural households in the UWR of Ghana. It found disparities in the incidence of household food insecurity across geographic districts. A high out-migration and high remittance-receiving district (Nandom) reported a relatively low incidence of food insecurity. Remittance-receiving households in both rural and urban areas reported a higher incidence of food insecurity. Although these results are associations, because of the cross-sectional nature of the data, they could be an important indication of the high poverty levels and food insecurity in the region. Based on the findings, we make three main policy recommendations to contribute to food security in the Upper West region. First, there is the need to develop the local economy of the region to promote development of alternative livelihoods such as small and cottage industries and other self-employment activities. These activities should provide the local population with alternative sources of income apart from farming which has been adversely affected by changing agro-ecological conditions. Secondly, farming has been rain-fed and soil fertility is fast depleting (Luginaah et al., 2009; Nyantakyi-Frimpong and Bezner-Kerr, 2015). In part, there is the need for investment in irrigation to sustain a supply of water for crop farming all year round. Also ecological farming should be promoted. Earlier studies on food security in the region and elsewhere have suggested promotion of ecological farming (see Bezner-Kerr, et al., 2016; Nyantakyi-Frimpong and Bezner-Kerr, 2014). Finally, beyond these micro level policies there is the need to develop and vigorously implement a national food security policy in Ghana. We argue that implementation of food security and development of the local economy as proposed here would leverage the impact of remittances on household food security in the region.

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