

Factors Influencing Food Security in Less Popular Tourist Sites in Jordan's Northern Badia

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Abstract

Food security or insecurity may be associated with factors outside of the direct control of household members, such as military conflicts. Refugees from neighboring conflicts represent a significant challenge for Jordan, and concern regarding the impact of the Syrian conflict on household food security outside of Syria has been voiced in the popular press. This study examined the household food security of Jordanians residing in Jordan's Northern Badia region. The research used in-home, in-depth interviews with over 200 Jordanian families living in 26 villages of the Northern Badia. More than three-quarters (83.7%) of respondents reported incomes below 411 JD (USD 580), which is the Mafraq governorate's poverty line. Almost half (43%) of surveyed Northern Badia households were classified as food insecure, either moderately or severely. Furthermore, a sizeable proportion of respondents (30.5%) indicated that they were assisting refugees and of these, nearly one-quarter indicated that they were experiencing difficulties as a result. However, there is a statistically significant relationship ($p < 0.05$) between the proportion of respondents in each food security category (food secure, moderately insecure, and severely food insecure) and refugee host status was not found. Additional data is necessary to determine whether a lack of relationship between food insecurity status and hosting of refugees is due to a true lack of correlation, or whether this was influenced by the relatively small sample size and low income levels seen in the Northern Badia.

Keywords: Food security, Northern Badia, Jordan, Economic Development.

1. Introduction

The Hashemite Kingdom of Jordan is bordered by Iraq, Israel, Saudi Arabia, Syria, and the West Bank. While considered an “oasis of stability” in the Middle East (Choucair 2006, p. 3), Jordan is surrounded by complex political environments and faces its own socioeconomic challenges. For example, annual growth in the country’s Gross Domestic Product (GDP) has fallen from 10% in the 1970s to 3% in 2010 (Knowles 2005; CBJ 2010). Unemployment is a serious problem, with disproportionately higher rates for young men (22%) and young women (45%) (DoS 2012; Abuqudairi 2013). Additionally, Jordan faces continued concerns over food security. At a national level, the 2014 Global Food Security Index ranked Jordan 59 out of 109 indexed countries, citing challenges associated with low per capita gross domestic product and political stability risks as reasons for its ranking (Economist Intelligence Unit Limited 2014).

Food security is a critical world issue. Defined as the “access to sufficient, safe, nutritious food to maintain a healthy and active life” (World Food Program 2013 online), household food security generally requires that food be available to household members on a consistent basis, that members have access to available food via acceptable methods, e.g., home production, purchase, barter, and gifts, and that members have means to utilize available food, e.g., ability to cook and store food (World Food Program 2013). Research has found that various factors can influence household food security. Food security or the lack thereof (food insecurity) has been correlated with cultural and demographic characteristics such as race (Coleman-Jensen et al. 2011), place of residence, e.g., rural or rural (FAO 1997), household structure, e.g., number of children and the presence of both parents (Rahim et al. 2011; FAO 1997; Babatunde, Omotesho, and Sholotan 2007), income (Coleman-Jensen et al. 2011; Rahim et al. 2011; Babatunde, Omotesho, and Sholotan 2007), the prevalence of smoking in the household (Armour, Pitts, and Lee 2008), and access to food production, e.g., home gardens (Ibnouf 2009; Babatunde, Omotesho, and Sholotan 2007; Kuwornu, Suleyman, Amegashie 2013).

In addition to the cultural and demographic factors identified above, food security may be associated with factors outside of the direct control of household members, such as climate change and military conflicts. For example, concern over food security impacts from the Syrian war on households outside of Syria have been voiced in the popular press. The Lebanese newspaper *The Daily Star* reported that impacts of the Syrian war on food security in Lebanon included lower wages, buying power, higher prices, and “challenges in making food available for refugees amid the influx” (Shaheen 2013 online). Similar concerns exist in Jordan. A recent World Food Program (WFP): KLJ report suggests that “the arrival of Syrian refugees comes at a time when Jordan may be least able to assist new arrivals along with the thousands of Iraqi and Palestinian refugees in its borders” (Stephens 2013 p. 34).

As previously mentioned, this study examines the household food security of Jordanians¹ residing in Jordan’s Northern Badia.² The research uses in-home, in-depth interviews with over 200 Jordanian families living in the Northern Badia. A modified version of the U.S. Household Food Security Module developed by the U.S. Department of Agriculture was included in the interview instrument to provide quantitative measures of food security.

¹ The vast majority of individuals or families participating in the food security interview were Jordanian.

² The term Badia or badiya is Arabic for ‘desert.’

2. Background

2.1 Jordan's Northern Badia

The Badia region comprises the geographic majority of Jordan, accounting for more than 80% of the country's land mass, yet the region is scarcely populated. Approximately 380,000 people (approximately 6.5% of Jordan's total population) reside in 319 villages, towns, and small cities scattered through the region.³ Women make up approximately 37% of the Badia population, while youth under 15 years of age comprise 41% of the Badia population. Household size in the Badia averages seven members, larger than the 5.7 member average for the country as a whole (Badia fund 2010).



Figure 1: Study Region⁴

The Badia has a high unemployment rate – estimated to equal 32% – with employment heavily centered in the public sector (Badia fund 2010). Many Bedouin households rely on production agriculture, much of which might be considered subsistence in nature. The Jordanian government has traditionally provided subsidies to farmers and households in the region, but many of these subsidies have been eliminated (Abuamoud 2011). Limited employment opportunities have contributed to poverty in the region. The Northern Badia contains 22 of Jordan's 23 "poverty pockets," with estimates of poverty rates ranging from 26% in the Umelrasas region of the Amman governorate to over 70% in the Ruweished region of the Al-Mafraq governorate (Badiafund 2010).

The Northern Badia faces a challenging food security situation. In a recent survey of women residing in the Northern Badia, one-third (33%) indicated that they could not afford to eat balanced meals, and 26% indicated that they limited food consumption because they lacked the money. Almost half of these women (47%) came from families with monthly incomes below the poverty line (Bawadi et. al. 2012).

The Northern Badia of Jordan has attractive features because of its historical, environmental, and cultural assets. A substantial number of cultural heritage sites are spread all over Jordan. Most of the sites in the Badia are in a worsening state of decline due to negligence, lack of

³This population estimate does not represent the total number of Bedouins within Jordan, as it does not include Bedouins who have migrated to other cities and villages outside the Badia.

⁴Map source: <http://www.badiafund.gov.jo/en/node/319>

protection, and lack of marketing activity for these sites to be added onto tourists' maps. Tourism needs good, strong infrastructure such as streets, hotels, restaurants, toilet facilities, souvenir shops, and many other services. In the Badia, these facilities are not available. As we mentioned earlier, there is an urgent need for restoration and construction, yet these sites are often ignored by many relevant government bodies in the country. As such, there is currently no economic impact from these sites on the Badia economy and local people. Improving these sites would attract increasing numbers of tourists to the region which will generate additional sources of income for local communities (Abuamoud, 2011).

3. Jordan and Refugees

Refugees from neighboring conflicts represent a significant challenge for Jordan. Since 1948, Jordan has received refugees from Palestine, Iraq, and Syria. In March of 2011, civil wars violently detonated between loyalists to the Syrian regime under the control of Bashar Assad and their opposition, which eventually became the Syrian Free Army. The Syrian war has resulted in over a million and half Syrians fleeing the country and taking refuge in the surrounding countries (Care 2013). Many of these refugees have fled to Jordan. The U.N. Refugee Agency (2014) reports that as of July 12, 2014, there were more than 600,000 registered Syrian refugees living in Jordan, more than half of which are children under the age of 18 years.⁵

While refugees pose challenges for the people of the Northern Badia, it is unlikely that they will be turned away. Service and hospitality are entrenched in the culture of the Badia people. Additionally, anecdotal evidence suggests Jordanians of the Northern Badia have strong ties to the Syrian people, with many Syrian families migrating to Jordan to live with their relatives. Although Jordan has accepted a large number of Syrian refugees, the Jordanian government continues to keep its borders open to anyone from Syria seeking shelter from the war.

The massive influx of refugees into Jordan has put enormous pressure on the country's already limited resources. The additional bodies are straining local community resources and may be pushing their Jordanian hosts further into poverty. This study answers the call of previous research indicating the need for additional work exploring challenges facing local Jordanian communities (i.e., WFP 2013).

4. Materials and Methods

This study focuses on the Northern Badia region (**Figure 1**). Primary data was collected for the study via in-home interviews with Northern Badia residents living in 26 small towns and villages⁶ surrounding Mafrq between March 14 and May 15, 2013. All towns were located within 8 to 30 km (5 to 20 miles) of the Syrian border. Families within many of these villages host Syrian refugees.

A modified version of the U.S. Household Food Security Module, created by the U.S. Department of Agriculture for use in the United States (USDA, 2012), was used to collect data. This Household Security Module, or modifications of the module, has been used to assess food security internationally, including Iran (Rafiei et al. 2009), the Caribbean (Gulliford et al. 2006), Colombia (Isanaka et al. 2007), and Brazil (Perez-Escamilla et al.

⁵ This might be considered a conservative estimate of the total number of Syrian refugees residing in Jordan, as not all refugees are officially registered.

⁶ Surveys were conducted in Abu Alfarth, Al Bishryah, Al Hamedyah, Al Jbayah, Al Kom , Al Manarah, Al Mansorah, Al mkeftah, Al Rfaiyat, Al Rwaished, Al Saada, Al Safawi, Al Salhyah, Al Swylmyah, Al Zubaidyah Alhamra, Amrah, Der Alkaf, HamraS'haim, Hosha, Naifeh, Qasim, Sabha, Tal Al Rimah, Um Al Qittayan, and Umassrab.

2004). Following Ghattas et al. (2013), the module was adapted by researchers to be sensitive to cultural norms in Jordan and translated into Arabic. In addition to questions used to ascertain food security status, the interview guide/instrument requested data relative to household monthly income, consumption levels for staple foods, and participants' perceptions of the effect of the Syrian crisis on family food consumption.

Researchers trained three undergraduate students from the Hashemite University in Jordan to collect data. Students visited each village, traveled door-to-door to village homes, and asked to speak with the head of the household. After explaining the purpose of their visit, household heads were invited to participate in the survey, which takes between 20 and 30 minutes to complete. Information from 207 households was obtained via this process.

Data were analyzed using simple descriptive statistics (e.g., frequency tables, means) and tests of proportions. Following Cody and Smith (1997), a Fisher's exact test was used to test differences in proportions due to the relatively small number of households that fell into each of the food security status categories. Statistically significant differences in the mean security scores (0 to 7 scale based on responses to food security section of the survey instrument) between groups of respondents were also explored using pooled t-tests.

5. Results and Discussion⁷

5.1 Sample

Surveyed household heads were, on average, 40 years of age. Men provided 56.5% of the responses, women provided 25.1%, and couples provided the remaining 17.4%. The majority of households represented in the survey contained between 3 and 5 children under 21 years of age. Nearly one-fifth (19.6%) of participating households contained more than three additional adult individuals, not including the head(s) of household. The vast majority (99.5%) of respondents were of Jordanian nationality. Demographic characteristics of surveyed households and household heads are reported in **Table 1**.

Table 1: Demographic characteristics of interviewed heads of household

	<i>n</i> *	%
Adults in Household, not including household head(s)		
0	132	63.8
1 or 2	36	17.4
3 to 5	25	12.1
6 or more	14	6.8
Total	207	100.0
Age of Household Head		
Under 30 years of age	49	23.7
30 to 44 years of age	93	44.9
45 to 59 years of age	44	21.3
60 years of age or older	21	10.1
Total	207	100.0
Children Under 21 in Household		
0	51	24.6

⁷As not all respondents answered all survey questions, *n* vary across survey data. Unless otherwise reported, *n* = 207.

1 or 2	44	21.3
3 to 5	72	34.8
6 or more	40	19.3
Total	207	100.0
Education of Household Head		
No formal school	16	8.5
Primary	49	26.1
Secondary	72	38.3
College	37	19.7
Post BS/BA degree	14	7.5
Total	188	100.0
Employer of Household Head		
Public sector	68	33.2
Private sector	18	8.8
Self-employed	17	8.3
Someone else	19	9.3
Retired	42	20.5
Other	41	20.0
Total	205	100.0
Gender of Household Head		
Male	117	56.5
Female	52	25.1
Both	38	18.4
Total	207	100.0
Income		
Under 30	56	28.6
30 – 44	108	55.1
45 – 59	21	10.7
60 or older	11	5.6
Total	196	100.0
Marital Status of Household Head		
Married, no children	42	20.3
Married, with children	123	59.4
Single	42	20.3
Total	207	100.0
Nationality of Household Head		
Jordanian	196	99.5
Non-Jordanian	1	0.5
Total	207	100.0
Reside Within 50 km of City of Mafraq		
No	117	56.5
Yes	90	43.5
Total	207	100.0

*n varies as not all respondents answered all demographic questions.

5.2 Food Expenditures

On average, household heads earned 337.97 JDs (USD 476) monthly⁸ ($n = 196$). More than three-quarters (83.7%) of respondents reported incomes below 411 JD (USD 580), Mafraq governorate’s poverty line (Figure 2). Respondents indicated that income was spent on a variety of items. With an average monthly expenditure of 90.05 JDs, food expenditures were 63% higher than the next highest expenditure category, transportation (Figure 3). Approximately one-third (31.5%) of the average household’s budget was spent on food. This finding is similar to that of previous research, e.g., 37.5% (USDA ERS 2013) and 36.2% (Food and Agriculture Organization of the United Nations, 2002 Household Survey Database, as cited in Economist Intelligence Unit 2013).

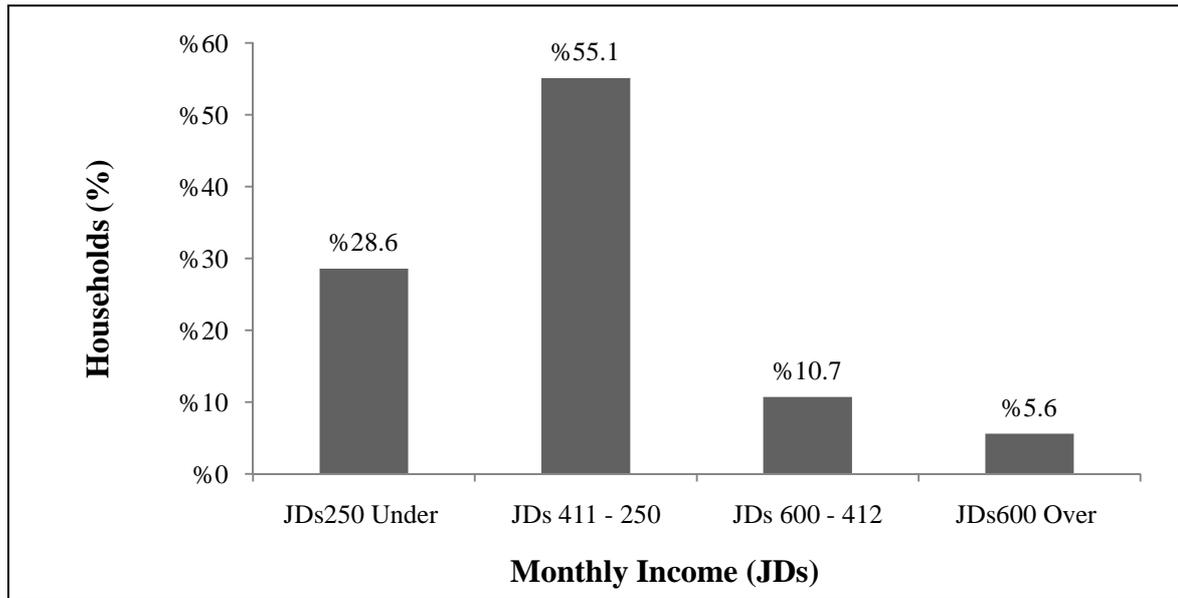


Figure 2: Income distribution of interviewed Northern Badia heads of household ($n = 196$)

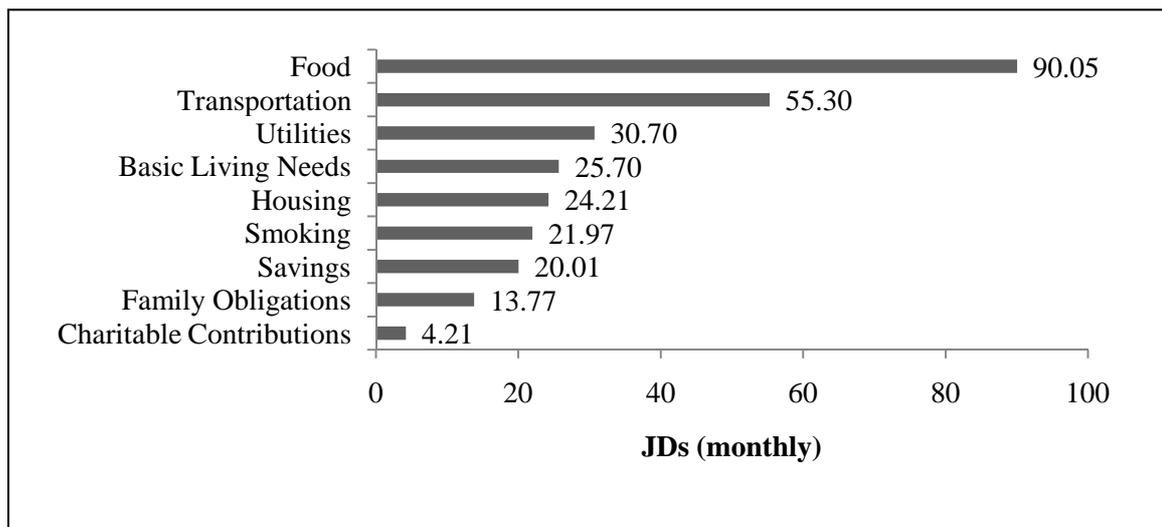


Figure 3: Average monthly expenditures of interviewed Northern Badia households ($n = 202$)

⁸ 1.00 USD = 0.705 JD (OANDA, March 14, 2013).

5.3 Food Consumption

On average, respondents consumed bread, pasta, or rice six days a week (Figure 4). In general, animal proteins (e.g., beef or lamb, chicken, seafood) were eaten less frequently, while plant-based foods (e.g., grains or lentils, vegetables) were consumed more frequently during the week. Due to the arid nature of the Northern Badia and agrarian roots of many of its Bedouin inhabitants, this appears to be a realistic and convenient diet for its residents. Small farm animals such as chickens require fewer resources and may be more cost effective to produce, resulting in an increased frequency of chicken consumption relative to animal proteins from larger livestock such as cattle or sheep. Moreover, longstanding cultural preferences within Jordan tend toward white meat and lamb consumption rather than beef and seafood (FAO 2013; Figure 5).

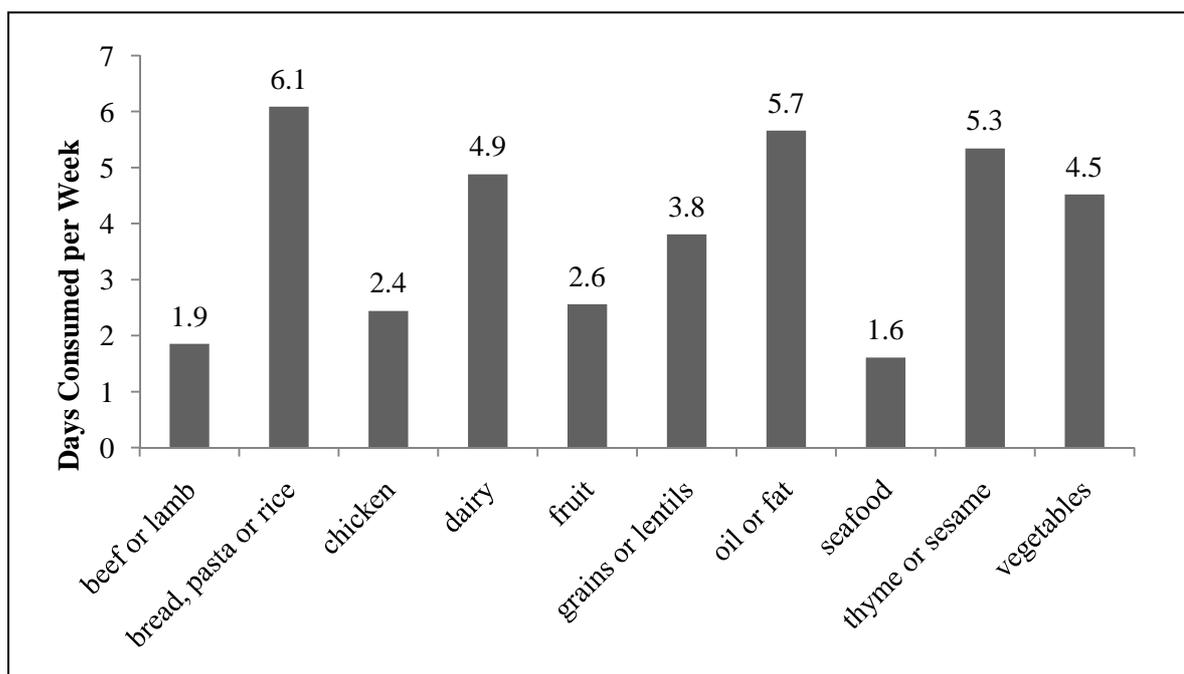


Figure 4: Foods consumed by interview respondents (*n* varies by food item)

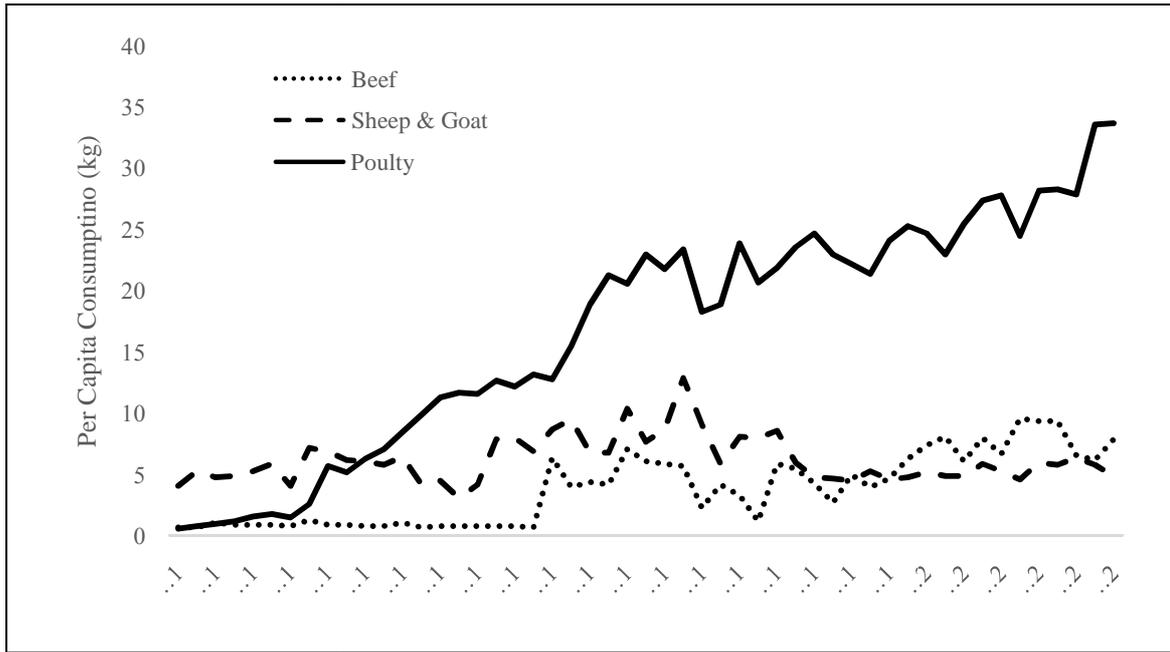


Figure 5: Per capita consumption of various animal protein sources within Jordan, 1961-2009 (FAO 2013)

Almost half of respondents (43%) supplemented their food purchases with food produced at home, e.g., grown in a garden (Figure 6). Store credit was used by almost one-quarter (24%) of respondents. Within these villages, it is common for residents to purchase food frequently from their local store: those who are known by the store owner pay their bill monthly.

Almost one-quarter (22.2%) of households reported they were financially responsible for other individuals not living in the household, e.g., extended family ($n = 203$). The average monthly expense for support of family members outside of the household was 93.56 JD ($n = 45$; Figure 7).

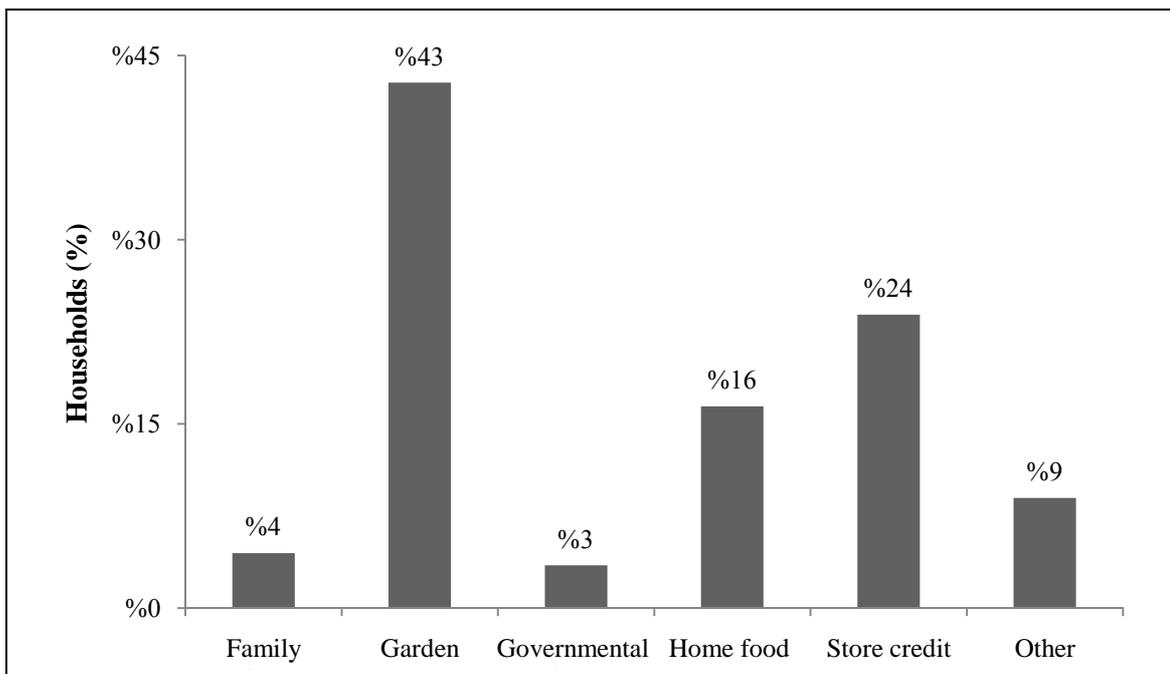


Figure 6: Sources of supplemental food reported by interviewed households ($n = 201$)

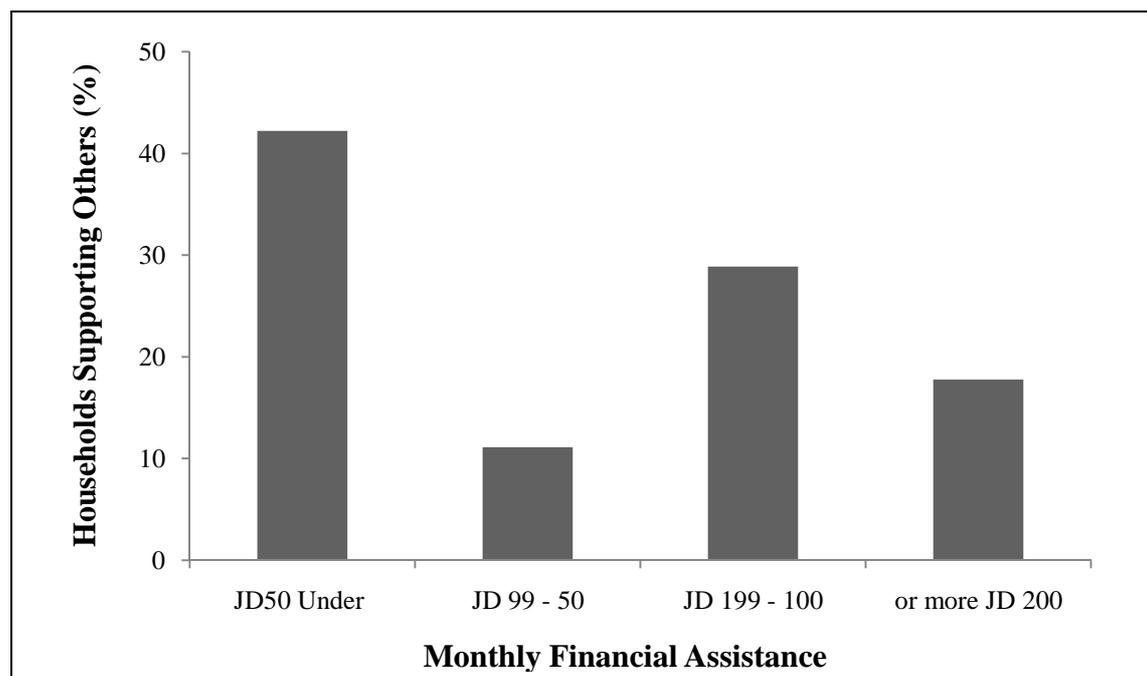


Figure 7: Expenditures supporting individuals outside of household reported by interviewed households ($n = 45$)

5.4 Food Sufficiency

Seven indicator questions concerning food sufficiency within the past year were used to gauge respondents' food security status (**Table 2**). A rating system similar to the Arab Family Food Security Scale developed by Ghattas et al. (2013) was used to quantify food security levels. Respondents who answered affirmatively to fewer than three of the seven food security questions were considered food secure. Respondents who answered affirmatively to at least three of the seven questions but fewer than six of the questions were considered moderately food insecure. Respondents who answered affirmatively to six or seven of the seven questions were considered severely food insecure. Almost half (43%) of surveyed Northern Badia households were classified as food insecure, either moderately or severely (**Figure 8**).

Table 2: Food sufficiency questions posed to Northern Badia households and potential responses

Sufficiency Question	Potential Answers
<i>In the past 12 months, did you or any other adult in your household not eat for a whole day or go to bed hungry because there was not enough food?</i>	<input type="checkbox"/> Yes, almost every month <input type="checkbox"/> Yes, in some months but not every month <input type="checkbox"/> Yes, in only one or two months <input type="checkbox"/> Never <input type="checkbox"/> Don't know/Refused to answer
<i>In the past 12 months, did you or any other adult in your household ever skip a meal because there was not enough food?</i>	<input type="checkbox"/> Yes, almost every month <input type="checkbox"/> Yes, in some months but not every month <input type="checkbox"/> Yes, in only one or two months <input type="checkbox"/> Never <input type="checkbox"/> Don't know/Refused to answer
<i>In the past 12 months, did you or any other adult in your household ever cut the size of your meal because there was not enough food?</i>	<input type="checkbox"/> Yes, almost every month <input type="checkbox"/> Yes, in some months but not every month <input type="checkbox"/> Yes, in only one or two months <input type="checkbox"/> Never

	<input type="checkbox"/> Don't know/Refused to answer
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<i>Did the following statement apply to your household in the last 12 months? "The food that we bought was not enough and we didn't have money to get more."</i>	<input type="checkbox"/> Yes, almost every month <input type="checkbox"/> Yes, in some months but not every month <input type="checkbox"/> Yes, in only one or two months <input type="checkbox"/> Never <input type="checkbox"/> Don't know/Refused to answer
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<i>In the last 12 months, was there a time when you were concerned that you would run out of food for your household for the next month?</i>	<input type="checkbox"/> Yes, almost every month <input type="checkbox"/> Yes, in some months but not every month <input type="checkbox"/> Yes, in only one or two months <input type="checkbox"/> Never <input type="checkbox"/> Don't know/Refused to answer
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<i>Are there any foods you feel your family does not eat enough of?</i>	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Don't know/Refused to answer
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<i>Which of these sentences applies the most to the food eaten by your household during the past 12 months?</i>	<input type="checkbox"/> We had enough to eat of the kinds of food we wanted (quantity and quality) <input type="checkbox"/> We had enough to eat but not always the kinds of food we wanted (only quality) <input type="checkbox"/> Sometimes we did not have enough to eat (quantity) <input type="checkbox"/> Often we did not have enough to eat <input type="checkbox"/> Don't Know/Refused to answer
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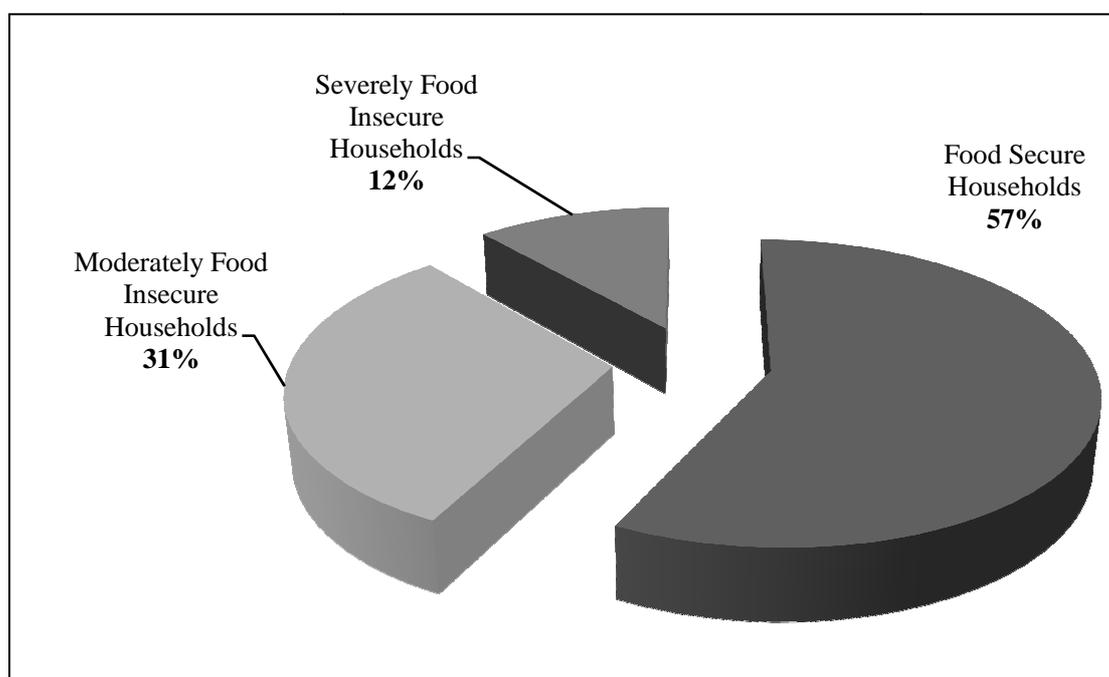


Figure 8: Food security status of interviewed Northern Badia households ($n = 202$)

More than one-half of families interviewed ($n = 123$) denoted that the food they bought was not enough and they did not have money to get more. Moreover, 52% of respondents felt their family did not eat enough of some foods (Figure9). Many respondents (41%) worried their food would not last through the month. Almost one-third of respondents reported that adults

in the household had cut meal frequency or size within the past year. Almost one-quarter (24%) of respondents did not eat during the day or went to bed hungry during the past year.

5.5 Potential Factors Related to Food Insecurity

Food insecurity within Jordan may be influenced by a number of factors. In addition to exploring the level of food insecurity observed within the Northern Badia of Jordan, researchers studied the relationship between additional elements that may relate to food insecurity. Specifically, three factors that may impact food security or insecurity were examined in detail: home food production, tobacco use, and Syrian refugee impact.

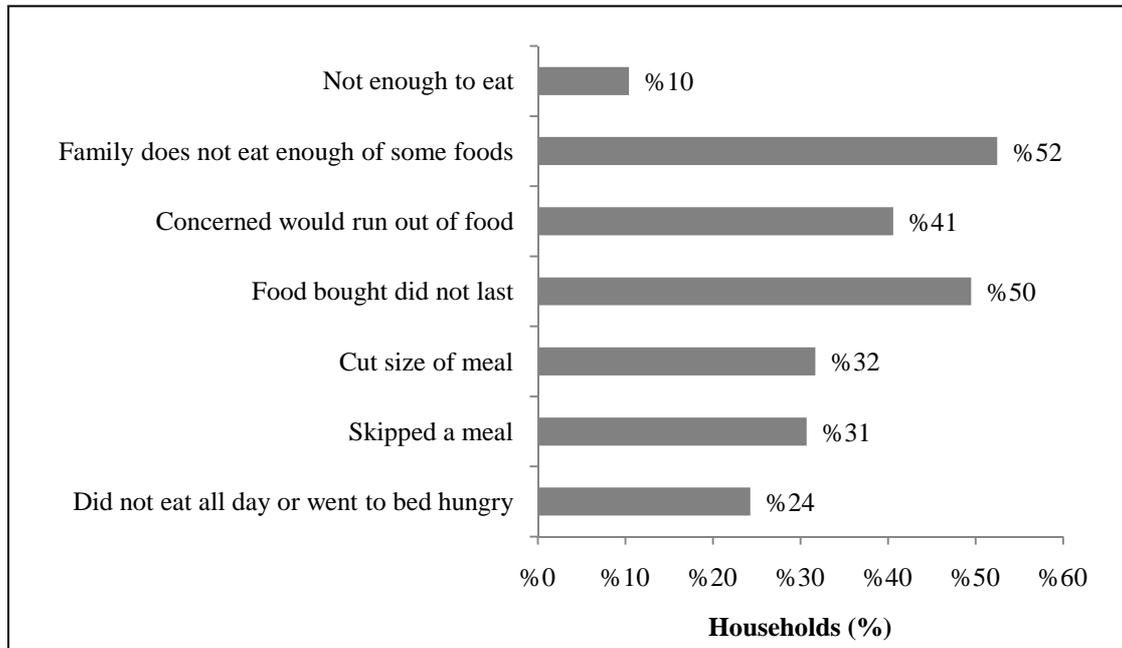


Figure 9: Percent of Northern Badia households reporting each indicator of food insecurity

5.6 Food Security and Home Food Production

One potential mechanism for coping with food insecurity is home food production. For example, home gardens may be an effective way to improve the livelihoods of poor families (Mitchell and Handstad 2004). Previous research also suggests that women with adequate access to food production sources (such as home gardens) may be more able to improve their household's food security (Ibnouf 2009). There was no statistical difference ($p < 0.05$), however, among the proportion of Northern Badia respondents who were food secure, moderately insecure, and severely food insecure who supplemented their food purchases with home-produced food from a garden. There was also no significant difference ($p < 0.05$) in the mean food security score of those households who supplemented their food with home production and those households who did not (Table 3).⁹ Backyard gardens in the Badia are typically not very productive due to the arid environment and lack of alternate water sources. As such, it is often difficult for Badia families to produce enough food from a garden for an entire family given current production methods and levels.

⁹ Statistical significance measured via chi-squared tests using FREQ procedure and analysis of variance using GLM procedure, respectively, in SAS 9.2.

5.7 Food Security and Household Tobacco Use

Smoking is common in many developing countries, and Jordan is no exception (e.g., Hadaway 2012; Kattab, Javaid, and Alzaabi 2012; Shadid and Hossain 2013). Approximately 61% of Jordanian households have at least one member who smokes regularly (DoS 2012), and Jordanians spend between 1.40 and 2.80 JD per day on cigarettes and other smoking materials such as agreeelah or shishah (DoS 2012). Previous research in the U.S. suggests that low income, food insecure families have a higher prevalence of smoking than low income, food secure families (Armour *et al.* 2008).

A statistically significant difference ($p < 0.05$) was found between the proportion of respondents in each household food security status (food secure, moderately insecure, and severely food insecure) who spent money on tobacco products and those who did not (**Table 3**). Moreover, households that purchased tobacco products were significantly more food insecure than those households who did not ($p < 0.05$). This is logical, as in lower income households, budget constraints may force a tradeoff between expenditures on cigarettes and expenditures on food. This could have important implications for policymakers: if there is a causal relationship between smoking and food insecurity, the Jordanian government could enact anti-smoking policies in an effort to improve the food security status within the country. However, according to Haddad (2002), most smokers among college students in Jordan come from families in the middle and high income ranges. Additional research is needed to explore the nature of the relationships among income, food insecurity, and tobacco expenditures within the country.

Table 3: Influence of gardening and tobacco purchases on food security

Variable		Food Secure (n)	Moderately Food Insecure (n)	Severely Food Insecure (n)	Pr ≤ P	Mean Food Security Score	t-value	Pr > t
Household Supplements with Garden	Yes	52	41	13	0.1173	2.41	0.01	0.9955
	No	63	42	10				
Household Purchases Tobacco Products	Yes	55	34	20	0.0015	2.84	-3.29	0.0012
	No	61	29	3				

5.8 Food Security and Syrian Host Status

Almost one-third of respondents (30.5%) reported they hosted or assisted Syrian refugees ($n = 154$). Over one-quarter of these respondents (27.7%) indicated that their efforts to assist refugees made it difficult to cover the household's expenses ($n = 47$). Furthermore, a sizeable proportion of respondents indicated that they were assisting refugees (30.5%), and of these, nearly one-quarter expressed difficulties created as a result. That being said, a statistically significant relationship ($p < 0.05$) between the proportion of respondents in each food security category (food secure, moderately insecure, and severely food insecure) and refugee host status was not found. There was also no significant difference ($p < 0.05$) in the mean food security score of those households who host Syrian refugees and the mean food security score of those households who do not host refugees. Insignificant differences in food security between those hosting refugees and those not hosting refugees might be attributed to a number of factors. For example, assistance programs that provide food vouchers for refugees living outside refugee camps similar to those programs conducted by the U.S. government (Embassy of the United States: London 2013) may lessen the food security impact of refugees

on host families. Other potential explanations, associated with the study methodology, are provided below.

Table 4: Influence of Syrian refugee hosting on food security

	Food Secure (n)	Moderately Food Insecure (n)	Severely Food Insecure (n)	Pr ≤ P	Mean Food Security Score	t-value	Pr > t
Hosts Refugees	28	17	2	0.1433	2.28	-0.58	0.5595
Does not Host Refugees	60	31	16		2.50		

6. Study Limitations and Further Research

Several research factors potentially contributing to results described above were out of the researchers' control. First, while surveyed households came from a variety of backgrounds, households were not selected via a randomized design; rather interviewers went door-to-door, requesting time with families to discuss their food situation. Second, a relatively small number of surveys were conducted in each village, which may not be representative of the village's food security status as a whole. Third, family members frequently asked researchers about the reason for the research and where it would lead. Some of the questions that were asked by family members may indicate concern about answering questions. Of course, this concern could be due to a variety of reasons. After explaining that their individual responses would be kept anonymous, most prospective respondents completed the survey. However, potential participant reluctance to participate and its potential for bias should be noted. Cultural influences may also have impacted the data collection process. For example, Jordanians are in general relatively unfamiliar with surveys and survey question strategies.

Additional data is necessary to determine whether a lack of relationship between food insecurity status and hosting of refugees is due to a true lack of correlation, or whether this was influenced by the relatively small sample size and low income levels seen in the Northern Badia. That is, Northern Badia residents may have been food insecure prior to the influx of Syrian refugees, and this influx has perhaps only marginally exacerbated their (already potentially high) food insecurity status. This likely would have had an impact on the way that participants answered the researchers' questions.

7. Conclusions

This study provided an assessment of the food security status of residents of the Northern Badia of Jordan. A modified version of the U.S. Household Food Security Module was used to collect data from 207 households across 26 villages in the Northern Badia. Results suggest almost half (43%) of surveyed Northern Badia households were food insecure.

The data gathered from those we interviewed indicate that Northern Badia households with a garden were no less likely to be food insecure, suggesting current production efficiency and production levels are insufficient to offset food security issues. This might be at least partially offset by educating households about more productive gardening techniques, although lack of access to appropriate plants, lack of water, and lack of capital could also impede increased home production efforts (Mitchell and Hanstad 2004).

There was a significant difference ($p < 0.05$) among the proportion of respondents who were food secure, moderately insecure, and severely food insecure who spent money each month on tobacco products. Of those respondents who host Syrian refugees, almost one-third (27.7%) reported that it was hard to cover the expenses for their household because of the Syrian refugees ($n = 47$). Although a number of Northern Badia households reported economic difficulties associated with hosting Syrian refugees, statistically significant differences between food security ratings and host status was not found.

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