

Food Security Outcome Monitoring: a comparative analysis of PIN interventions' effects on food security in Northern Syria

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Table of Contents

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| | |
|---|-------|
| List of Acronyms..... | p. 3 |
| 1. Introduction..... | p. 4 |
| 2. Context..... | p. 5 |
| 3. Methodology..... | p. 6 |
| 3.1. Measurement..... | p. 7 |
| 3.2. Limitations..... | p. 9 |
| 4. Findings..... | p. 9 |
| Part 1: Background Correlation Analysis..... | p. 10 |
| Part 2: The Food Consumption Score..... | p. 12 |
| Part 3: The Reduced Coping Strategies Index..... | p. 18 |
| Part 4: The Livelihood Coping Strategies Indicator..... | p. 21 |
| 5. Conclusion..... | p. 24 |
| 5.1 Recommendations..... | p. 27 |

List of Acronyms

BHA – Bureau of Humanitarian Assistance

FCS – Food Consumption Score

FHH – Female Headed Household(s)

FCS – Food Consumption Score

FS – Food Security

HH – Household(s)

HNO- Humanitarian Needs Overview

IDP – Internally Displaced Person(s)

LCSI – Livelihood Coping Strategies Indicator

MHH – Male Headed Household(s)

NES – North East Syria

NWS – North West Syria

PIN – People in Need

rCSI – reduced Coping Strategies Index

USD – U.S. Dollar

WFP – World Food Programme

1 Introduction

Improving food security in Northern Syria is a core priority of PIN and other international NGOs who are working in this region. Different interventions can be useful to improve food security, sometimes directly like providing food vouchers to beneficiaries, and sometimes indirectly like improving livelihood opportunities, that will lead to increased income and therefore better food security. However, we typically assess the effects of interventions with baseline-endline comparisons. For food security, we observe, for example, the situation of beneficiaries before and after receiving food assistance. Although this approach serves the main goal of understanding how an intervention improves the food security of beneficiaries, it does not measure how different interventions relatively affect food security in a comparative manner. What is the food security of beneficiaries receiving food assistance compared with those receiving agriculture assistance? What is the food security of beneficiaries receiving cash-for-work compared with those receiving a small business grant? Although it would be possible to look across multiple baseline-endline studies to have an idea of the answer, there are a number of problem with this informal methodology. The main one is seasonality: endline data collected in different seasons can have lower or higher food security scores because of the weather and associated factors (temporary seasonal work, availability of food), not because of the intervention itself. Second, datasets collected for different purposes often include different variables. One dataset may include the livelihood coping strategies indicator or the proportion of adults in the HH who are working, while the next dataset will not, making comparisons difficult.

The current comparative study aims to address these issues. (1) It includes data for many types of interventions, (2) it has a large sample size (3940 HH), (3) seasonality is controlled by design, as all the data were collected in the summer of 2022, (4) the same variables needed for the analysis were collected in all the datasets. In this study, the main indicators of food security are:

- The food consumption score
- The FCS categories
- The reduced coping strategies index
- The livelihood coping strategies indicator

This study has three main purposes:

Purpose 1: Understanding the effects of different interventions on the food security of beneficiaries. The main purpose of this study is to assess, in a comparative manner, the effects of different interventions, by region, on the food security of beneficiaries. The interventions targeted in this study are:

1. Agriculture Assistance in NWS
2. Apprenticeship in NES
3. Business Grants in NES
4. Cash-for-Work in NWS
5. Incentives for Education Staff in NWS
6. Food Assistance in NWS
7. Food Assistance in NES
8. Multi-Purpose Cash Transfer in NWS
9. Nutrition Top-Up in NES

The results will be presented both with visualization (Figures) and with regression analyses. The regression analyses improve on the simple visualization by controlling for other factors that may affect food security. For example, what are the differences in the average food consumption scores between the interventions, controlling for the gender of the head of HH, the size of the HH, the

presence of persons with disability or chronic illness in the HH, the average monthly income of the HH, etc.

Purpose 2: Understanding the effects of HH characteristics on the food security of beneficiaries.

Related to the regression analyses mentioned above, this study will also measure the effects of different HH characteristics on the food security of beneficiaries, controlling for the types of interventions. The HH characteristics included in this study are:

| |
|---|
| <p>Gender of head of HH</p> <p>HH size</p> <p>Proportion of HH members working</p> <p>Proportion HH members with disabilities</p> <p>Proportion HH members with chronic illnesses</p> <p>Residency status</p> <p>Adequate/inadequate housing</p> <p>Average monthly income (quintiles)</p> <p>Total debts (quintiles)</p> <p>Received other form of assistance in the last 6 months</p> |
|---|

Purpose 3: Understanding whether the effects of the interventions on food security vary by locations (districts).

It is likely that the location of the different interventions will have an impact on the food security of beneficiaries. Some locations may face different challenges, and the availability and price of food may vary by locations, for example. Thus, the study will also present the result disaggregated by locations. However, the location analysis must be understood as more exploratory in nature, because the data were sampled to be representative at the hub level (NES and NWS), not necessarily to be representative of specific locations. Thus, some locations have small samples that may not be statistically representative and the results should be interpreted accordingly (see Methodology section for more details).

2 Context

According to the Humanitarian Needs Overview (HNO) for the Syrian Arab Republic 2023, the food insecurity situation in Syria remains a core humanitarian concern, with an estimated 12.1 million people in need of food assistance (and up to 15 million people if agriculture needs are included), representing around 57-70% of the total population, and including 6.5 million children. The majority of people (59%) facing food insecurity are facing “extreme” circumstances. The HNO also considers that the 2 million displaced people living in camps are all experiencing food insecurity. A cluster of negative factors are linked to the food crisis in Syria. As stated on p. 95, *“The impact of Syria’s crisis continues to hinder people’s ability to meet their immediate food needs and livelihoods, in a context marked by very complex drivers and contributing factors. This includes economic worsening and weakened local currency, soaring food and non-food prices, as well as droughtlike conditions and severe agro-climatic fluctuations, water scarcity, and limited energy supply. In addition, food and agriculture commodities prices increase, inflation, lack of purchasing power due to limited livelihood and lack of income sources, population movements that shows no sign of abating, and the Ukraine crisis have had an important economic impact on markets and commodities cost.”*

Food insecure households rely on many negative coping strategies. For example, according to recent data presented in the HNO, 52% of households make the difficult decisions of restricting food consumption for adults in favor of children, while 63% of households reported reducing the number of meals they eat in a day. 58% of households mentioned that they are borrowing money to buy food. A direct effect of food insecurity is malnutrition, including the high prevalence of stunting and emergency levels of anemia among children and women of reproductive age.

3 Methodology

The data for this study were all collected in the summer of 2022 (June-August), either during the intervention or at endline. The sample size for each intervention is presented in Table 1. The average sample size per intervention is 438 HH, with food assistance in NWS having the largest sample (1205 HH) and apprenticeship in NES having the smallest sample (209 HH). 36% of the sample are female-headed HH.

Table 1. Sample size by interventions/donors (N = 3940 HH)

| Interventions | Donors | FHH | MHH | Total |
|---------------------------------|-------------------|-----|-----|-------|
| Agriculture assistance NWS | BHA | 137 | 176 | 313 |
| Apprenticeship NES | ENI | 130 | 79 | 209 |
| Business grants NES | ENI | 81 | 135 | 216 |
| Cash-for-work NWS | ENI/SDC | 83 | 407 | 490 |
| Incentives education staff NWS | ECHO/ENI/SDC/SCHF | 177 | 152 | 329 |
| Food assistance NWS | BHA | 461 | 744 | 1205 |
| Food assistance NES | BHA | 142 | 330 | 472 |
| Multi-purpose cash transfer NWS | ECHO | 174 | 154 | 328 |
| Nutrition top-up NES | BHA | 41 | 337 | 378 |

Table 2 shows the sample size by locations (districts). The average sample size per location is 328 HH, with the Menbij in NES having the largest sample size (752 HH), and Jisr-Ash-Shugur in NWS having the smallest sample size (37 HH).

Table 2. Sample size by locations (N = 3940 HH)

| | Locations | FHH | MHH | Total |
|------------|-----------|-----|-----|-------|
| NES | Raqqa | 69 | 253 | 322 |
| | Kobani | 43 | 38 | 81 |
| | Menbij | 191 | 561 | 752 |
| | Derik | 91 | 29 | 120 |
| NWS | Ahira | 172 | 74 | 246 |
| | Akhtrein | 17 | 74 | 91 |
| | Azaz | 59 | 231 | 290 |

| | | | | |
|--|-----------------|-----|-----|-----|
| | Harim | 225 | 449 | 674 |
| | Idleb | 339 | 311 | 650 |
| | Jebel Saman | 146 | 371 | 517 |
| | Jisr-Ash-Shugur | 6 | 31 | 37 |
| | Camps | 68 | 92 | 160 |

3.1 Measurement

There are three main food security indicators used in this study: the food consumption score, the reduced coping strategies index, and the livelihood coping strategies indicator. The food consumption score is measured both as an average and as three categories, as explained below. For the regression analysis, the 4 categories of the livelihood coping strategies indicator are recoded as two groups: “None or stressed” vs. “Crisis or emergency”.

The **Food Consumption Score (FCS)** is based on the frequency of consumption during the last 7 days of different food groups by the households, weighted by coefficients that reflect how nutritious the food group are. The coefficients are presented in the following Table.

Table 3. Food Group Weighting Coefficients for the Food Consumption Score

| Food groups | Weight |
|---|--------|
| Cereals, grains, roots & tubers: rice, pasta, bread, bulgur, potato, white sweet potato | 2 |
| Vegetables & leaves: spinach, cucumber, eggplant, tomato | 1 |
| Fruit: citrus, apple, banana, dates | 1 |
| Egg, fish and meat: eggs, fish including canned tuna, beef, lamb, chicken, liver and kidney | 4 |
| Pulses, nuts & seeds: beans, chickpeas, lentils | 3 |
| Milk and dairy products: yoghurt, cheese | 4 |
| Oil / fat: vegetable oil, palm oil, butter, ghee | 0.5 |
| Sugar / sweets: honey, cakes, sugary drinks | 0.5 |
| Condiments / spices: tea, garlic, tomato sauce | 0 |

Although the FCS can be used as a numerical variable (to calculate averages and medians, for example), it is also commonly divided in three groups representing different levels of food security. Based on the World Food Program’s methodology and guidelines, the thresholds presented in the following Table:

Table 4. Food Consumption Categories and Thresholds

| Food Consumption Status | Score |
|-------------------------|-----------------------|
| Poor | 28 or Less |
| Borderline | Greater than 28 to 42 |
| Acceptable | Greater than 42 |

The **reduced Coping Strategies Index (rCSI)** is a standardized measure of food consumption related behaviors which may be adopted by households when they have difficulty meeting their food needs. It considers five standard coping mechanisms. The rCSI are based on the frequency of usage during the last 7 days of different coping strategies by the households, weighted by coefficients that reflect how severe or detrimental they are. There are no universal thresholds for the rCSI, rather the score is used to monitor changes over time and between groups in specific contexts. The weighting coefficients are presented in the following Table:

Table 5. rCSI Coping Strategies – Severity Weights

| | Severity Weight |
|--|-----------------|
| 1. Rely on less preferred and less expensive foods | 1 |
| 2. Borrow food or rely on help from friends or relatives | 2 |
| 3. Limit portion size at mealtime | 1 |
| 4. Restrict consumption by adults in order for small children to eat | 3 |
| 5. Reduce number of meals eaten in a day | 1 |

The **Livelihood Coping Strategies indicator (LCSI)** measures the sustainability of livelihoods. The indicator is derived from a series of questions regarding the household’s experience with livelihood stress and asset depletion during the 30 days prior to survey (WFP, 2015).

The LCSI provides a measure for different types of detrimental livelihood related activities that households may need to engage in order to obtain food or income to buy food. It ranks these coping mechanisms by how costly they may be to the wellbeing and livelihoods of households and their ability to cope in the future.

The WFP offers ‘coping strategies master list’ (WFP, 2015, page 47), and a combination comprised of 4 stress strategies, 3 crisis strategies, and 3 emergency strategies (10 strategies in total) were selected by PIN considering local context. PIN Syria uses strategies that are used in WoS FS Cluster Outcome Monitoring Initiative (OMI) surveys. The selected coping strategies are presented in the following table:

Table 6. Categorisation of coping strategies by severity

| Stress | Crisis | Emergency |
|---|--|--|
| Sale of Household Assets (non-productive) | Sale of Productive assets | Children working (less than 16 years old) |
| Purchase food on credit or borrow or share food | Reduce expenditure on non-food essential items (eg water, education, health) | Marriage of young girls (less than 16 years old) (in order to ease the financial stress on family) |
| Family members have taken up alternative or socially degrading jobs | Reduce expenditure on productive assets | Undertake high risk or exploitative work |
| Sale of other humanitarian assistance (eg NFIs) | | |

As per OMI guidance, households are categorized by the worst level of coping that they have experienced during the reference period. For example, a household who experienced any amount of stress coping strategies only (and no crisis or emergency) is be categorized as ‘stress’; a household who experienced none or any stress plus at least one crisis coping strategies (and no emergency) is categorized as ‘crisis’, and households who experienced any or no stress or crisis plus at least one

emergency coping strategy is categorized as 'emergency'. In short, the most severe form of coping strategies used by households determines their category.

Most households characteristics used in the analysis are standard and self-explanatory. However, the average monthly income and the total amount of debts are measured as quintiles (1= lowest quintile, 5 = highest quintile). This measurement has two advantages over measuring income and debts in monetary units. First, it standardizes the measurement between NES (Syrian pounds) and NWS (Turkish Liras). Second, it controls outlier values by design. If respondents, intentionally or by mistake, report very high/unrealistic amount of income or debts, they will be classified in the highest quintile, but not as outlier values that can cause biases in the regression analyses.

3.2 Limitations

The results presented in this study may have been affected by different issues, as it is often the case with empirical research in emergency contexts with vulnerable populations.

1. Social desirability and recollection biases can affect the results of this study. For example, some respondents may not be willing to disclose that their households regularly skip meals or that they do not buy fruits and vegetables for their family to eat. It is also possible that some respondents misreport information not because of social desirability, but because they do not recall the details of their food consumption or usage of coping strategies.
2. Predictors of food security. The regression analyses rely on 10 household characteristics as predictors of the food security indicators. It is always possible to argue that some other predictors could have been used. However, given that the purpose of the regression analyses in this study is to see the larger trends of how HH characteristics are related to food security, it is not possible to measure every imaginable variable in this study. Also, regression analysis is vulnerable to multicollinearity (predictors highly correlated with each others), so it is better to have a smaller number of relevant predictors with low multicollinearity than a long list of multicollinear predictors.
3. Even if regression analysis is a powerful tool, statistically significant relationships do not necessarily imply causality. For example, if female-headed HH have higher average coping strategies index scores than male-headed households, it does not prove that 'gender is the cause of using more or less coping strategies', but it shows that there is a statistical relationship.

4 Findings

The Findings section is divided in 4 parts. In the first part, we examine correlations between the food security indicators and between the HH characteristic, in order to have a background understanding of how the variables relate to each others. In the second part, the effects of different interventions on the food consumption score are analyzed: (1) with a visualization, (2) with regression analyses, and (3) by locations. Parts 3 and 4 follow the same approach as part 2, but provide analyses of the reduced coping strategies index and the livelihood coping strategies indicator.

Part 1: Background Correlation Analysis

As seen in Table 7, the food security indicators are correlated in a logical manner. The food consumption score is negatively correlated with both the reduced coping strategies index (-.23**) and the more severe categories of the livelihood coping strategies indicator (-.15**). Thus, households that have access to more nutritious and caloric diets tend to also use less negative coping strategies. This suggests that these HH are overall having better food security. The correlations are not very strong, however, thus some HH with a high food consumption score are also using more negative coping strategies and vice versa. The reduced coping strategies index is positively correlated with the more severe categories of the livelihood coping strategies indicator (.33**). This suggests that the two types of coping strategies go ‘hand-in-hand’, and HH who are more likely to engage in some types of coping strategies are also more likely to engage in others (e.g. HH that skip meals and borrow food from friends and relatives regularly are also more likely to sell their productive assets).

Table 7. Correlations between the Food Security Indicators (N = 3940 HH)

| | Food Consumption Score | Reduced Coping Strategies Index | Livelihood Coping Strategies Indicator (HH using Crisis or Emergency LCS) |
|---|------------------------|---------------------------------|---|
| Food Consumption Score | 1 | -.23** | -.15** |
| Reduced Coping Strategies Index | | 1 | .33** |
| Livelihood Coping Strategies Indicator (HH using Crisis or Emergency LCS) | | | 1 |

* p < .05; ** p < .01

Results of the correlations between households characteristics are presented in Table 8. In order to organize the results, they will be divided between stronger correlations (.25 or above) and statistically significant but weaker correlations (less than .25, p < .05). Non-significant correlations are not discussed.

Among the stronger correlations, we observe that larger HH tend to have a smaller proportion of HH members with chronic illness (-.30**). The proportions of HH members with a disability and with chronic illness are positively correlated (.34**). This relationship may in part be due to co-morbidity, when some people have both a disability and a chronic illness. IDPs tend to have less adequate housing than local residents (-.41**), but are more likely to have received other forms of assistance (than their current assistance) during the last 6 months than local residents (.25**).

Among the weaker but statistically significant correlations, female-headed HH tend to have smaller HH size (-.24**) than male-headed HH, which is not surprising in the context since they typically are female-headed HH because of the absence of a male partner. There is a very small correlation between female-headed HH and the proportion of HH members with a disability (.03*), but a somewhat stronger correlation with the proportion of HH members with a chronic illness (.11**). Female-headed HH tend to have lower average monthly income (-.15**) but also fewer total debts (-.12**) than male-headed HH. There is a small correlation between female-headed HH and receiving other forms of assistance (than their current assistance) during the last 6 months (.06**). Larger HH tend to have a smaller proportion of HH members that are working (-.11**), possibly because they have more dependents. Larger HH also tend to have a smaller proportion of HH members with a disability (-.17**).

Larger HH tend to have higher average monthly income (.24**), but also more total debts (.21**). There is a small correlation between the size of the HH and receiving other forms of assistance (than their current assistance) during the last 6 months (.03*). The proportion of HH members that are working is negatively correlated with both the proportion of HH members with a disability (-.12**) or a chronic illness (-.08**). There is a small correlation between proportion of HH members that are working and having adequate housing (.04*). HH with a greater proportion of HH members that are working tend to have higher average monthly income (.16**), and a little less debts (-.03*). IDPs tend to have a smaller proportion of HH members with a disability (-.09**) or a chronic illness (-.10**) than local residents. IDP also tend to have higher average monthly income (.15**) and less debts (-.13**) than local residents (keeping in mind this is during the interventions, not pre-intervention). There are small correlations between the proportion of HH members with a disability (.04**) or a chronic illness (.06**) and having adequate housing. On the other hand, there are negative correlations between the proportion of HH members with a disability (-.11**) or a chronic illness (-.14**) and the average monthly income. There is a small negative correlation between the proportion of HH members with a chronic illness and receiving other forms of assistance (than their current assistance) during the last 6 months (-.04*). There are small positive correlations between adequate housing and the average monthly income (.05**) and also the total amount of debts (.08**). HH with adequate housing are less likely to have received other forms of assistance (than their current assistance) during the last 6 months (-.22**). HH with higher average monthly income tend to also have more total debts (.20**). Finally, HH that have received other forms of assistance (than their current assistance) during the last 6 months tend to have higher average monthly income (.16**).

Table 8. Correlations between the Households' Characteristics (N = 3940 HH)

| | FHH | HH size | Prop. HH memb. working | Prop. HH memb. with disability | Prop. HH memb. with chronic illness | IDP | Adeq. Housing | Monthly Income | Total Debts | Received other assistance during last 6 months |
|--------------------------------------|-----|---------|------------------------|--------------------------------|-------------------------------------|--------|---------------|----------------|-------------|--|
| FHH | 1 | -.24** | -.02 | .03* | .11** | -.01 | 0 | -.15** | -.12** | .06** |
| HH size | | 1 | -.11** | -.17** | -.30** | -.02 | .02 | .24** | .21** | .03* |
| Prop. HH member working | | | 1 | -.12** | -.08** | .01 | .04* | .16** | -.03* | -.01 |
| Prop. HH member with disability | | | | 1 | .34** | -.09** | .04** | -.11** | 0 | -.02 |
| Prop. HH member with chronic illness | | | | | 1 | -.10** | .06** | -.14** | 0 | -.04* |
| IDP | | | | | | 1 | -.41** | .15** | -.13** | .25** |
| Adequate Housing | | | | | | | 1 | .05** | .08** | -.22** |
| Monthly Income | | | | | | | | 1 | .20** | .16** |
| Total Debts | | | | | | | | | 1 | -.01 |

| | | | | | | | | | | |
|--|--|--|--|--|--|--|--|--|--|---|
| Received other assistance during last 6 months | | | | | | | | | | 1 |
|--|--|--|--|--|--|--|--|--|--|---|

Part 2: The Food Consumption Score

As seen in Figure 1, the average FCS across interventions is 42.2. The interventions with stronger results are the apprenticeships and small business grants in NES, and the food assistance (food vouchers/baskets) in both NES and NWS. The interventions with lower results are the incentives for education staff, the agriculture assistance, and the cash-for-work in NWS.

Figure 1. Average food consumption score by interventions (N = 3940 HH)

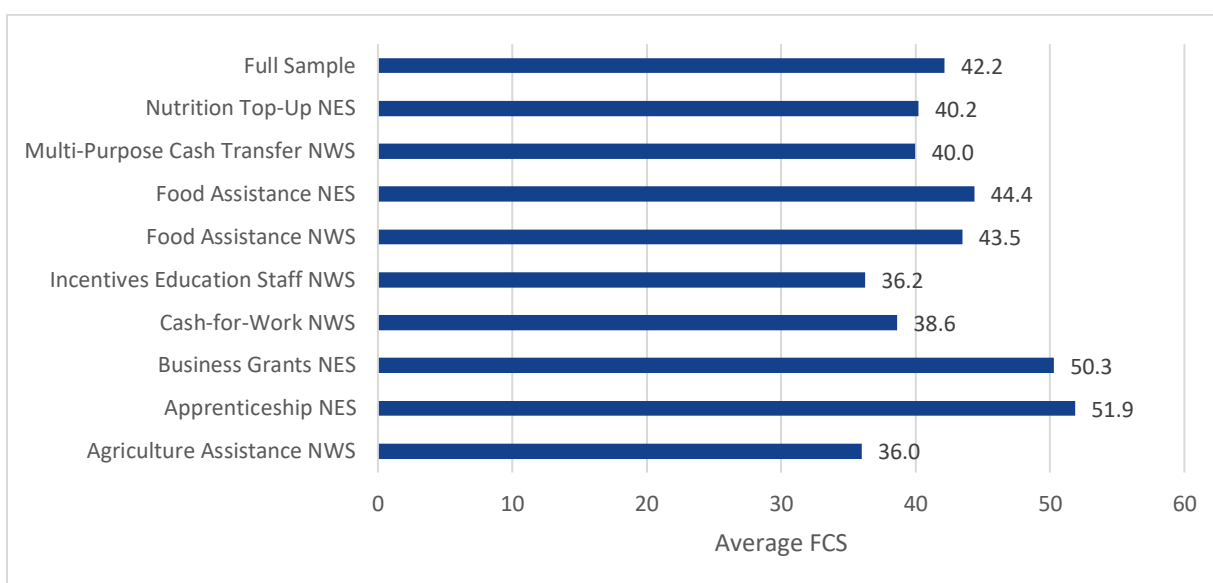


Table 9 presents the OLS regression results predicting the food consumption score for the full sample, and for NES and NWS separately. In comparison with food assistance in NWS (the reference group), apprenticeships and business grants in NES have better FCS, and agriculture assistance, cash-for-work, incentives for education staff in NWS and nutrition top-up in NES have lower FCS. The effects of food assistance in NWS and NES on the FCS are not statistically different.

Female-headed HH have lower FCS than male-headed HH, but this pattern is driven by the NWS data and is not statistically significant in NES. Larger HH tend to have better FCS (controlling for all other factors in the model), but again this pattern is driven by the NWS data and is not statistically significant in NES. The proportion of HH members that are working is associated with better FCS, and this is observable in both NES and NWS. The proportion of HH members with a disability is associated with lower FCS, both in NES and NWS. The proportion of HH members with a chronic illness is associated with lower FCS, but only in NWS. IDPs tend to have higher FCS than local residents (controlling for all other factors in the model), but this pattern is driven by the NWS data and is not statistically significant in NES. In addition, this is likely a selection effect. IDP status is a vulnerability criterion to be eligible for assistance, while local residents would only be eligible for assistance if they face other vulnerabilities. HH living in adequate housing tend to have better FCS, but this pattern is

driven by the NES data and is not statistically significant in NWS. This suggests that, at least in NES, having stable housing helps to have more resources for food.

Interestingly, there is a negative effect of monthly income on the FCS, but this pattern is driven by the NWS data and is not statistically significant in NES. Beneficiaries with better income in NWS (relatively, beneficiaries typically do not have high income in absolute standard) have somewhat less nutritious diet. Perhaps beneficiaries in NWS with a little more money have other expenses and are still careful with food spending. For example, as seen in the correlation analyses before, there is a .20 correlation between income and debts, so HH with higher income also tend to have more debts. HH with larger total debts have lower FCS, but this pattern is driven by the NWS data and is not statistically significant in NES. There is an interesting effect reversal in NES and NWS regarding HH that have received other forms of assistance in the last 6 months: in NES, these HH tend to have better FCS, while in NWS, they tend to have lower FCS.

Table 9. OLS regression predicting the Food Consumption Score (N = 3940 HH)

| Variables | Full Sample | NES | NWS |
|---|-------------|---------|---------|
| Agriculture assistance NWS | -7.75** | -- | -6.91** |
| Apprenticeship NES | 6.99** | 7.06** | -- |
| Business grants NES | 4.31** | 5.71** | -- |
| Cash-for-work NWS | -6.21** | -- | -5.70** |
| Incentives education staff NWS | -8.20** | -- | -6.81** |
| Food assistance NWS (reference group) | -- | -- | -- |
| Food assistance NES (reference group for NES analysis) | -1.39 | -- | -- |
| Multi-purpose cash transfer NWS | -2.70** | -- | -2.95** |
| Nutrition top-up NES | -5.29** | -4.10** | -- |
| Female-headed HH (Male-headed HH reference group) | -3.37** | -1.63 | -4.06** |
| HH size | .35** | .29 | .38** |
| Proportion of HH members working | 11.41** | 13.0** | 9.73** |
| Proportion HH members with disabilities | -3.26** | -7.30** | -2.99** |
| Proportion HH members with chronic illnesses | -1.37 | 5.25 | -2.53* |

| | | | |
|--|---------|--------|---------|
| Residency status: IDP (local residents reference group)^a | 2.04** | -1.15 | 3.28** |
| Adequate housing (inadequate housing reference group) | 1.47** | 3.90** | .78 |
| Average monthly income (quintiles) | -.43* | .53 | -.89** |
| Total debts (quintiles) | -1.15** | -.15 | -1.53** |
| Received other form of assistance in the last 6 months | -.29 | 2.88** | -1.19* |
| R² | .16 | .12 | .19 |

* p < .05; ** p < .01

a: There are only 41 returnees in the sample. They are currently counted as local residents as they may cause biases in the regression analysis if counted as a separate group.

Table 10 below shows the results for the average food consumption score by locations for the different interventions. In Raqqa, the FCS are high in general, and particularly for the small business grants (54.9). In Kobani, the FCS are low, for both food assistance and nutrition top-up. In Menbij, the FCS are relatively high for all interventions. In Derik, there is only one intervention (apprenticeship), and the FCS is very good (58.6). In Ahira, the multi-purpose cash assistance leads to higher FCS (41.1) than cash-for-work and food assistance. In Akhtrein and Azaz, there is only one intervention (food assistance), and the FCS are very good in both districts. In Harim, the food assistance intervention leads to the highest FCS (40.6), compared with the other three interventions. In Idleb, however, it is multi-purpose cash assistance that leads to the highest FCS (40.2), compared with four other interventions. In Jebel Saman, the agriculture assistance is performing particularly well (FCS of 43.1), compared with four other interventions. In Jisr-Ash-Shugur, cash-for-work leads to particularly good FCS (52.1), higher than food assistance. Finally, across different camps in NWS, cash-for-work (the only intervention) leads to moderate FCS (40.2).

Table 10. Average Food Consumption Score by Locations (N = 3940 HH)

| | | Nutrition Top-Up | Food Assist. | SBG | Apprent. | CfW | Inc. Edu. Staff | MPCT | Agri. Assist. |
|------------|-----------------|------------------|--------------|------|----------|------|-----------------|------|---------------|
| NES | Raqqa | 45.5 | 45.2 | 54.9 | | | | | |
| | Kobani | 26.1 | 27.5 | | | | | | |
| | Menbij | 40.9 | 44.8 | 46.6 | 42.7 | | | | |
| | Derik | | | | 58.6 | | | | |
| NWS | Ahira | | 33.9 | | | 31 | | 41.1 | |
| | Akhtrein | | 53 | | | | | | |
| | Azaz | | 59.8 | | | | | | |
| | Harim | | 40.6 | | | 38.5 | 35.3 | | 35 |
| | Idleb | | 34.2 | | | 37.6 | 37.2 | 40.2 | 32.2 |

| | | | | | | | | | |
|--|------------------------|--|------|--|--|------|------|------|------|
| | Jebel Saman | | 41.3 | | | 35.1 | 37.9 | 38.9 | 43.1 |
| | Jisr-Ash-Shugur | | 36 | | | 52.1 | | | |
| | Camps | | | | | 40.2 | | | |

The food consumption score is often analyzed as three categories: acceptable, borderline, and poor. As seen in Figure 2, there are important variations in the three categories of the FCS across interventions. On average (the full sample), 42.8% of HH have acceptable FCS, 44.7% have borderline FCS, and 12.4% have poor FCS. The interventions with higher than average percentages of HH with acceptable FCS are the business grants in NES (71.8%), the apprenticeship in NES (62.7%), the food assistance in both NWS (52.8%) and NES (47.8%), and the nutrition top-up in NES (54.8%). The interventions with lower than average percentages of HH with acceptable FCS are the incentives for education staff in NWS (20.7%), the agriculture assistance in NWS (21.7%), cash-for-work in NWS (31.2%), and multi-purpose cash transfers in NWS (35.1%).

Figure 2. Percentage in FCS Categories by Interventions (N = 3940 HH)

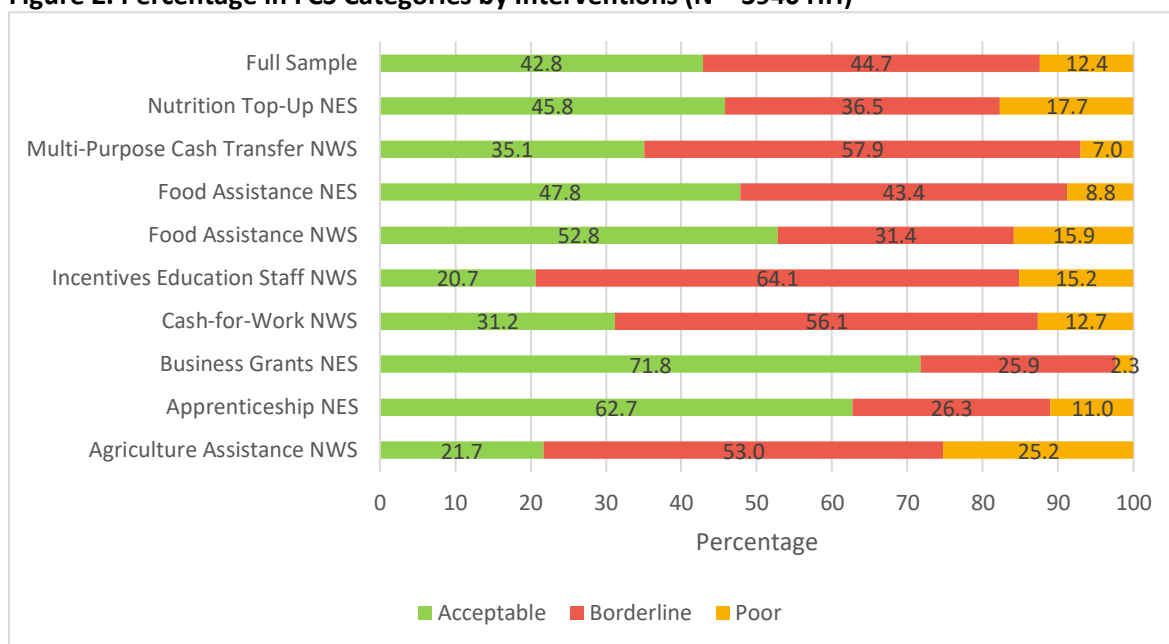


Table 11 shows the results of a binary logistic regression predicting the likelihood that HH have acceptable FCS (vs. borderline or poor). In comparison with food assistance in NWS (the reference category), the apprenticeship in NES and the business grants in NES are more likely to have acceptable FCS, and the agriculture assistance in NWS, cash-for-work in NWS, and the incentives for education staff in NWS are less likely to have acceptable FCS. There is no statistically significant difference between food assistance in NWS vs. food assistance in NES, multi-purpose cash transfer in NWS, or nutritional top-up in NES, when other HH characteristics are taken into account.

Female-headed HH are less likely to have acceptable FCS than male-headed HH, both in NES and NWS. Larger HH are more likely to have acceptable FCS than smaller HH (controlling for other factors in the model), but this pattern is driven by the NWS data. In NES there is no significant effect of HH size. The proportion of HH members that are working is associated with a greater likelihood of having acceptable FCS, but this pattern is driven by the NWS data. It is important to note, however, that the

effect in NES is very close to statistical significance (.97, $p = .076$), so it is likely that there is also a real association between the proportion of HH members that are working and the likelihood of having acceptable FCS in NES. HH with a greater proportion of HH members with a disability are less likely to have acceptable FCS, but the pattern is driven by the NES data (the effect is not significant in NWS). There is no statistical association between the proportion of HH members with a chronic illness and the likelihood of having acceptable FCS overall, but in NES specifically, there is a positive association, which is surprising. IDP HH are more likely to have acceptable FCS than resident HH, but this pattern is driven by the NWS data (no significant effect in NES). In both NES and NWS, HH with adequate housing situation are more likely to have acceptable FCS. There is an interesting reversed effect for the average monthly income: in NES, HH with higher average monthly income are more likely to have acceptable FCS, but in NWS, the opposite is observed. In both NES and NWS, HH with more total debts are less likely to have acceptable FCS. Finally, there is no statistical relationship between HH that received other forms of assistance in the last 6 months and the likelihood of having acceptable FCS.

Table 11. Binary logistic regression predicting the likelihood that HH have Acceptable FCS (N = 3940 HH; 1 = Acceptable, 0 = Borderline or Poor)

| Variables | Full Sample | NES | NWS |
|---|-------------|--------|---------|
| Agriculture assistance NWS | -1.05** | -- | -1.14** |
| Apprenticeship NES | .67** | .45* | -- |
| Business grants NES | .92** | .81** | -- |
| Cash-for-work NWS | -.74** | -- | -.71** |
| Incentives education staff NWS | -1.26** | -- | -1.08** |
| Food assistance NWS (reference group) | -- | -- | -- |
| Food assistance NES (reference group for NES analysis) | .20 | -- | -- |
| Multi-purpose cash transfer NWS | -.26 | -- | -.38* |
| Nutrition top-up NES | -.19 | -.44** | -- |
| Female-headed HH (Male-headed HH reference group) | -.53** | -.42** | -.57** |
| HH size | .04** | .00 | .08** |
| Proportion of HH members working | 1.53** | .97 | 1.68** |
| Proportion HH members with disabilities | -.45** | -.87* | -.35 |
| Proportion HH members with chronic illnesses | .11 | 1.14* | -.03 |

| | | | |
|--|--------|-------|--------|
| Residency status: IDP (local residents reference group)^a | .39** | -.06 | .58** |
| Adequate housing (inadequate housing reference group) | .28** | .31* | .30** |
| Average monthly income (quintiles) | -.04 | .17** | -.18** |
| Total debts (quintiles) | -.21** | -.10* | -.25** |
| Received other form of assistance in the last 6 months | -.08 | -.02 | -.01 |
| Pseudo-R² | .10 | .06 | .10 |

* p < .05; ** p < .01

a: There are only 41 returnees in the sample. They are currently counted as local residents as they may cause biases in the regression analysis if counted as a separate group.

Table 12 below shows the results for the percentage of HH with acceptable FCS by locations for the different interventions. In Raqqa, the percentages are high, particularly for the small business grants (79%). In contrast, the percentages are very low in Kobani (2% for nutrition top-up and 0 for food assistance). In Menbij, the percentages are also high, particularly for the small business grants (66%). In Derik, the apprenticeship (the only intervention) has a very high percentage of HH with acceptable FCS (76%). In Ahira, multi-purpose cash assistance has the highest percentage (39%), which is much higher than the other two interventions. In both Akhtrein and Azaz, food assistance (the only intervention) has very high percentages of HH with acceptable FCS (78% and 93%). In Harim, food assistance has the highest percentage (40%), compared with three other interventions. In Idleb, multi-purpose cash assistance has the highest percentage (35%), compared with four other interventions. In Jebel Saman, the agriculture assistance has the highest percentage (49%), compared with four other interventions. In Jisr-Ash-Shugur, the cash-for-work intervention has a higher percentage (53%) than food assistance (14%). Finally, across different camps in NWS, the cash-for-work intervention leads to 41% of HH with acceptable FCS.

Table 12. Percentage of HH with Acceptable FCS by Locations (N = 3940 HH)

| | | Nutrition Top-Up | Food Assist. | SBG | Apprent. | CfW | Inc. Edu. Staff | MPCT | Agri. Assist. |
|------------|-----------------|------------------|--------------|-----|----------|-----|-----------------|------|---------------|
| NES | Raqqa | 55% | 59% | 79% | | | | | |
| | Kobani | 2% | 0 | | | | | | |
| | Menbij | 50% | 57% | 66% | 45% | | | | |
| | Derik | | | | 76% | | | | |
| NWS | Ahira | | 12% | | | 0 | | 39% | |
| | Akhtrein | | 78% | | | | | | |
| | Azaz | | 93% | | | | | | |

| | | | | | | | | | |
|--|------------------------|--|-----|--|--|-----|-----|-----|-----|
| | Harim | | 40% | | | 27% | 18% | | 19% |
| | Idleb | | 13% | | | 28% | 23% | 35% | 6% |
| | Jebel Saman | | 42% | | | 22% | 33% | 32% | 49% |
| | Jisr-Ash-Shugur | | 14% | | | 53% | | | |
| | Camps | | | | | 41% | | | |

Part 3: The Reduced Coping Strategies Index

The average reduced coping strategies index scores by interventions are presented in Figure 3. For the full sample, the average rCSI is 7.3. The interventions with better than average rCSI are the small business grants in NES (5.4), the food assistance in NES (5.7), the apprenticeship in NES (6.4), the food assistance in NWS (7.1), and the multi-purpose cash transfers in NWS (7.2). The interventions with higher than average rCSI are the agriculture assistance in NWS (10), cash-for-work in NWS (9.8), the incentives for education staff in NWS (8.5), and the nutrition top-ups in NES (7.4).

Figure 3. Average Reduced Coping Strategies Index Scores by Interventions (N = 3940 HH)

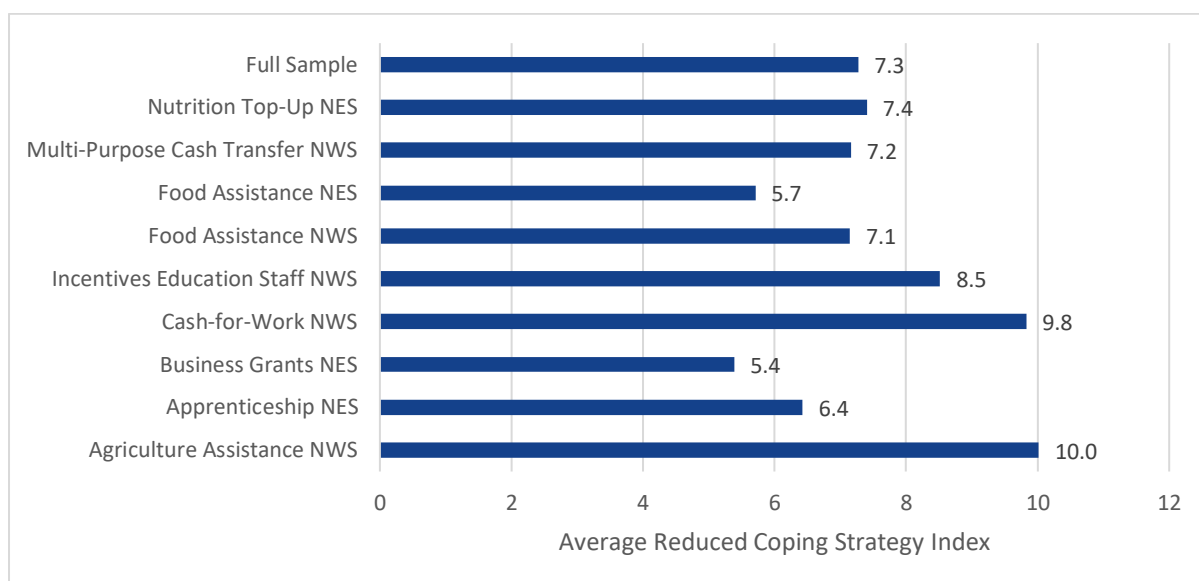


Table 13 shows the results of OLS regressions predicting the rCSI for the full sample, and in NES and NWS. In comparison with food assistance in NWS (the reference category), when controlling for HH characteristics, there is no statistical differences in rCSI for apprenticeship in NES, small business grants in NES, and multi-purpose cash transfers in NWS. On the other hand, in comparison with food assistance in NWS, we observe higher levels of the rCSI for agriculture assistance in NWS, cash-for-work in NWS, incentives for education staff in NWS, food assistance in NES, and nutrition top-ups in NES.

Female-headed HH have higher rCSI than male-headed HH, and the pattern is observed in both NES and NWS. Larger HH have higher rCSI scores, and the pattern is also observed in both NES and NWS. The proportion of HH members who are working is associated with lower rCSI, but the effect is specific to NWS (no statistical relationship for NES). The proportion of HH members with a disability is associated with higher rCSI, and the pattern is observed in both NES and NWS. IDP HH have lower rCSI than local resident HH, but the pattern is driven by NWS data (the relationship is not statistically significant in NES). HH with adequate housing situation have lower rCSI, and the pattern is observed in both NES and NWS. HH with more total debts have higher rCSI, and the effect is observed in both NES and NWS. In NES only, HH that received other forms of assistance in the last 6 months have lower rCSI (there is no significant effect in NWS).

Table 13. OLS regression predicting the Reduced Coping Strategies Index (N = 3940 HH)

| Variables | Full Sample | NES | NWS |
|--|-------------|---------|---------|
| Agriculture assistance NWS | 3.60** | -- | 3.76** |
| Apprenticeship NES | .08 | -.97 | -- |
| Business grants NES | -.45 | -1.61** | -- |
| Cash-for-work NWS | 4.01** | -- | 4.02** |
| Incentives education staff NWS | 2.81** | -- | 2.88** |
| Food assistance NWS (reference group) | -- | -- | -- |
| Food assistance NES (reference group for NES analysis) | 1.03** | -- | -- |
| Multi-purpose cash transfer NWS | .47 | -- | .55 |
| Nutrition top-up NES | 1.47** | .52 | -- |
| Female-headed HH (Male-headed HH reference group) | 1.46** | 1.20** | 1.40** |
| HH size | .16** | .23** | .12* |
| Proportion of HH members working | -3.65** | -.11 | -4.84** |
| Proportion HH members with disabilities | 1.29** | 2.73* | 1.00* |
| Proportion HH members with chronic illnesses | .25 | 2.13 | -.32 |
| Residency status: IDP (local residents reference group)^a | -.75** | -.71 | -.70** |
| | -1.76** | -2.70** | -1.41** |

| | | | |
|---|-------|--------|-------|
| Adequate housing (inadequate housing reference group) | | | |
| | -0.14 | -0.16 | -0.08 |
| Average monthly income (quintiles) | | | |
| | .81** | .90** | .72** |
| Total debts (quintiles) | | | |
| | -0.42 | -0.98* | -0.14 |
| Received other form of assistance in the last 6 months | | | |
| | .14 | .11 | .16 |
| R² | | | |

Table 14 shows the results for the average rCSI by locations for the different interventions. In Raqqa, the small business grants have the lowest rCSI (3.7), compared with food assistance and nutrition top-up. In Kobani, the rCSI is relatively high, for both food assistance and nutrition top-up. In Menbij, the apprenticeship intervention has the lowest rCSI (4.2), compared to the other three interventions. In Derik, the apprenticeship (the only intervention) has relatively high rCSI (8.1). In Ahira, both food assistance and multi-purpose cash assistance have lower rCSI than cash-for-work. In both Akhtrein and Azaz, the food assistance (the only intervention) leads to low rCSI (3.2 and 3.4). In Harim, food assistance leads to the lowest rCSI (5.4), compared with the other three interventions. Similarly, in Idleb, food assistance has the lowest rCSI (9.1), compared with the other three interventions. In Jebel Saman, the food assistance intervention also has the lowest rCSI (5), in comparison with four other interventions. In Jisr-Ash-Shugur, food assistance also leads to lower rCSI (6.8) than cash-for-work (15.9). Finally, in different camps across NWS, the average rCSI is at a moderate level (8.9) for cash-for-work (the only intervention).

Table 14. Average Reduced Coping Strategies Index by Locations (N = 3940 HH)

| | | Nutrition Top-Up | Food Assist. | SBG | Apprent. | CfW | Inc. Edu. Staff | MPCT | Agri. Assist. |
|------------|------------------------|------------------|--------------|-----|----------|------|-----------------|------|---------------|
| NES | Raqqa | 5.9 | 7.8 | 3.7 | | | | | |
| | Kobani | 11.2 | 10.2 | | | | | | |
| | Menbij | 7.2 | 6.3 | 6.7 | 4.2 | | | | |
| | Derik | | | | 8.1 | | | | |
| NWS | Ahira | | 8.5 | | | 14.2 | | 8.0 | |
| | Akhtrein | | 3.2 | | | | | | |
| | Azaz | | 3.4 | | | | | | |
| | Harim | | 5.4 | | | 7.8 | 7.7 | | 11.4 |
| | Idleb | | 9.1 | | | 12.0 | 9.3 | 9.4 | 10.3 |
| | Jebel Saman | | 5.0 | | | 9.6 | 11.8 | 5.9 | 7.6 |
| | Jisr-Ash-Shugur | | 6.8 | | | 15.9 | | | |

| | | | | | | | | | |
|--|--------------|--|--|--|--|-----|--|--|--|
| | Camps | | | | | 8.9 | | | |
|--|--------------|--|--|--|--|-----|--|--|--|

Part 4: The Livelihood Coping Strategies Indicator

The livelihood coping strategies indicator is divided in four categories: none, stress, crisis, and emergency. Figure 4 shows the results for the LCSI by interventions. In the full sample, 39.9% of HH (16.6 + 23.3) are either in the 'none' or 'stress' categories, and 60.1% of HH (50.6 + 9.5) are either in the 'crisis' or 'emergency' categories. Interventions that are less likely than average to be in the crisis or emergency categories are small business grants in NES (48.2%; 43.1 + 5.1), apprenticeship in NES (51.2%; 41.6 + 9.6), and food assistance in NES (52%; 45 + 7) and NWS (56.8%; 44.5 + 12.3). Interventions that are more likely than average to be in the crisis or emergency categories are the agriculture assistance in NWS (78.6%; 62 + 16.6), the cash-for-work in NWS (73.9%; 61 + 12.9), and the nutrition top-up in NES (67%; 57.7 + 9.3). The incentives for education staff in NWS and the multi-purpose cash transfer in NWS have very similar proportions of HH in the 'crisis or emergency categories' than the full sample average.

Figure 4. Livelihood Coping Strategies Indicator Results by Interventions (N = 3940 HH)

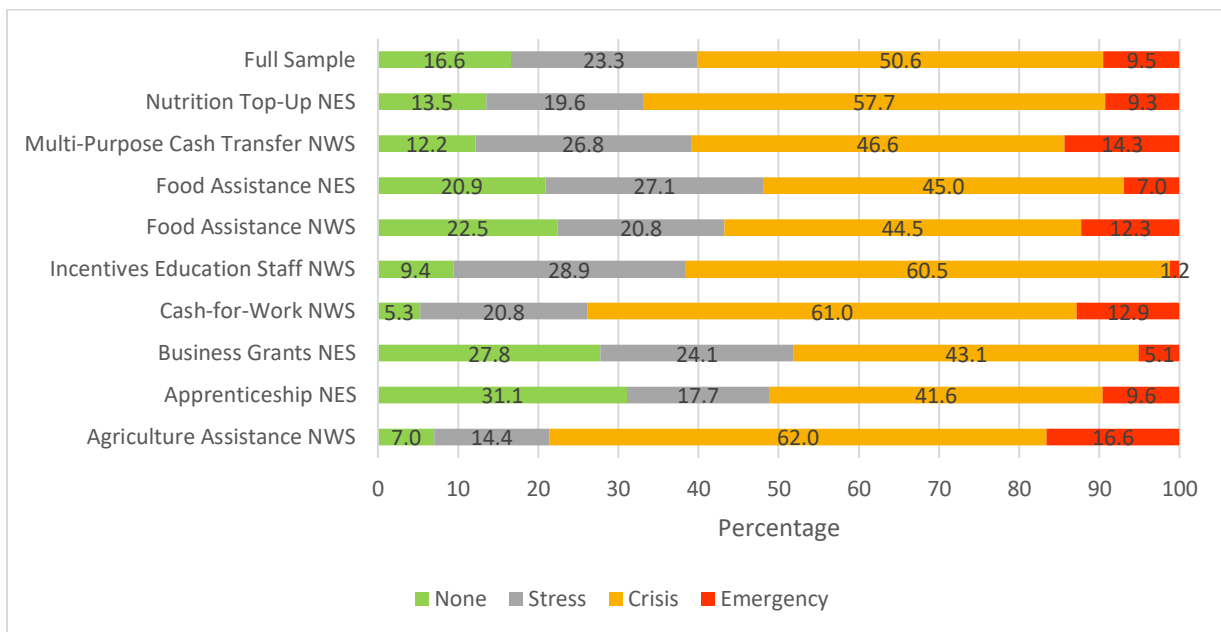


Table 15 presents the results of binary regressions predicting the likelihood that HH are using crisis or emergency coping strategies (vs. none or stress). In comparison with food assistance in NWS (the reference category), there is no statistical difference in the likelihood of using crisis or emergency coping strategies for apprenticeship in NES, small business grants in NES, incentives for education staff in NWS, and food assistance in NES (controlling for HH characteristics). On the other hand, in comparison with food assistance in NWS, the following interventions are more likely to use crisis or emergency coping strategies: agriculture assistance in NWS, cash-for-work in NWS, multi-purpose cash transfer in NWS, and nutrition top-up in NES.

Female-headed HH are more likely than male-headed HH to use crisis or emergency coping strategies, but the pattern is driven by the NWS data. There is a reversed effect for the HH size: in NES, larger HH are less likely to use crisis or emergency coping strategies, but in NWS the opposite effect is observed. In NES only, the proportion of HH members that are working is associated with

higher likelihood of using crisis or emergency coping strategies (importantly, one emergency coping strategy is to work in risky or exploitative jobs, which may contribute to this pattern). In NWS only, the proportion of HH members with a disability is associated with a higher likelihood of using crisis or emergency coping strategies. The proportion of HH members with a chronic illness is associated with a higher likelihood of using crisis or emergency coping strategies, but the pattern is driven by the NES data. IDP HH are more likely to use crisis or emergency coping strategies, but the pattern is driven by the NWS data. There is a reversed effect regarding adequate housing situation: in NES, HH with adequate housing are less likely to use crisis or emergency coping strategies, but in NWS the opposite effect is observed. In NES only, HH with higher average monthly income are more likely to use crisis or emergency coping strategies. The total amount of debts is associated with a greater likelihood of using crisis or emergency coping strategies, in both NES and NWS. HH that have received other forms of assistance in the last 6 months are less likely to use crisis or emergency coping strategies, but the pattern is driven by the NWS data.

Table 15. Binary logistic regression predicting the likelihood that HH are using Crisis or Emergency Coping Strategies (N = 3940 HH; 1 = Crisis or Emergency, 0 = None or Stress)

| Variables | Full Sample | NES | NWS |
|---|-------------|--------|--------|
| Agriculture assistance NWS | 1.19** | -- | 1.17** |
| Apprenticeship NES | -.24 | -.35 | -- |
| Business grants NES | -.22 | -.39* | -- |
| Cash-for-work NWS | .90** | -- | .95** |
| Incentives education staff NWS | .01 | -- | .14 |
| Food assistance NWS (reference group) | -- | -- | -- |
| Food assistance NES (reference group for NES analysis) | .15 | -- | -- |
| Multi-purpose cash transfer NWS | .46** | -- | .35* |
| Nutrition top-up NES | .53** | .36* | -- |
| Female-headed HH (Male-headed HH reference group) | .22** | .25 | .22* |
| HH size | .06** | -.05* | .09** |
| Proportion of HH members working | .45 | 1.48** | .21 |
| Proportion HH members with disabilities | .30 | .18 | .35* |
| Proportion HH members with chronic illnesses | .45* | 1.27* | .29 |

| | | | |
|--|-------|--------|--------|
| Residency status: IDP (local residents reference group)^a | .17* | -.15 | .23* |
| Adequate housing (inadequate housing reference group) | -.08 | -.77** | .20* |
| Average monthly income (quintiles) | .05 | .13** | -.01 |
| Total debts (quintiles) | .30** | .30** | .29** |
| Received other form of assistance in the last 6 months | -.18* | -.06 | -.34** |
| Pseudo-R² | .07 | .08 | .07 |

* p < .05; ** p < .01

a: There are only 41 returnees in the sample. They are currently counted as local residents as they may cause biases in the regression analysis if counted as a separate group.

Table 16 shows the percentage of HH using crisis or emergency coping strategies by locations. In Raqqa, the nutrition top-up intervention has the lowest percentage (29%), in comparison with food assistance and small business grants. In Kobani, the percentage is high for both nutrition top-up (78%) and food assistance (75%). In Menbij, the percentage is the lowest for apprenticeship (30%), in comparison with three other intervention. In Derik, the percentage for apprenticeship (the only intervention) is fairly high (67%). In Ahira, food assistance has the lowest percentage (50%). Noticeably, cash-for-work has 100% of HH using crisis or emergency coping strategies. In Akhtrein, the food assistance (the only intervention) has 51%, while in Azaz it is lower at 29%. In Harim, the two interventions with the lowest percentages (both 61%) are food assistance and incentives for education staff, when compared with cash-for-work and agriculture assistance. In Idleb, multi-purpose cash transfer has the lowest percentage (42%), compared with four other interventions. In Jebel Saman, food assistance has the lowest percentage (60%), compared with four other interventions. In Jisr-Ash-Shugur, food assistance has somewhat lower percentage (68%) than cash-for-work (73%), but both are fairly high. Finally, across different camps in NWS, the average percentage of HH using crisis or emergency coping strategies is 64% for cash-for-work (the only intervention).

Table 16. Percentage of HH using Crisis or Emergency Livelihood Coping Strategies by Locations (N = 3940 HH)

| | | Nutrition Top-Up | Food Assist. | SBG | Apprent. | CfW | Inc. Edu. Staff | MPCT | Agri. Assist. |
|------------|---------------|------------------|--------------|-----|----------|------|-----------------|------|---------------|
| NES | Raqqa | 29% | 62% | 34% | | | | | |
| | Kobani | 78% | 75% | | | | | | |
| | Menbij | 76% | 51% | 60% | 30% | | | | |
| | Derik | | | | 67% | | | | |
| NWS | Ahira | | 50% | | | 100% | | 59% | |

| | | | | | | | | | |
|--|------------------------|--|-----|--|--|-----|-----|-----|-----|
| | Akhtrein | | 51% | | | | | | |
| | Azaz | | 29% | | | | | | |
| | Harim | | 61% | | | 72% | 61% | | 90% |
| | Idleb | | 63% | | | 86% | 62% | 42% | 73% |
| | Jebel Saman | | 60% | | | 75% | 78% | 66% | 70% |
| | Jisr-Ash-Shugur | | 68% | | | 73% | | | |
| | Camps | | | | | 64% | | | |

5 Conclusion

This study had three main purposes: (1) Understanding the effects of different interventions on the food security of beneficiaries; (2) Understanding the effects of HH characteristics on the food security of beneficiaries; and (3) Understanding whether the effects of the interventions on food security vary by locations (districts).

Regarding the first purpose, the study presented figures for the different interventions and food security indicators, followed by regression analyses. The large number of results can be difficult to understand or remember all at once. Therefore, Table 17 provides a visual summary of the regression results comparing the effects of interventions on food security. Table 17 shows that the interventions with the better results are the apprenticeship in NES, the small business grants in NES, and the food assistance in both NWS and NES. The interventions with moderate/mixed results are the multi-purpose cash transfers in NWS and the incentives for education staff in NWS. The interventions with the lower results are the agriculture assistance in NWS, cash-for-work in NWS, and the nutrition top-up in NES.

Importantly, these comparative results do not mean that the interventions in the “moderate/mixed” and “lower” categories are not working at improving food security vs. no intervention at all, the results mean that some interventions, particularly the ones in the “better” category, have stronger positive results on food security, comparatively speaking.

Table 17. Visual Summary of Regression Results from Tables 9, 13, 15 comparing the effects of interventions on food security

| | Food Consumption Score | Reduced Coping Strategies Index | Likelihood of using crisis or emergency coping strategies (Livelihood Coping Strategies Indicator) |
|-----------------------------------|-------------------------------|--|---|
| Food Assistance NWS | Reference | Reference | Reference |
| Agriculture assistance NWS | Lower | Higher | Higher |
| Apprenticeship NES | Higher | Medium | Medium |

| | | | |
|--|--------|--------|--------|
| Business grants NES | Higher | Medium | Medium |
| Cash-for-work NWS | Lower | Higher | Higher |
| Incentives education staff NWS | Lower | Higher | Medium |
| Food assistance NES | Medium | Higher | Medium |
| Multi-purpose cash transfer NWS | Lower | Medium | Higher |
| Nutrition top-up NES | Lower | Higher | Higher |

Green = Better food security than the reference. Grey = Similar food security as the reference. Yellow = Lower food security than the reference.

Regarding the second purpose, the HH characteristics often have complex effects on food security, as summarized in Table 18. Some HH characteristics, like female-headed HH and total debts, have a clear effect, in this case a negative effect on the food consumption score, the reduced coping strategies index, and the livelihood coping strategies indicator. But for many HH characteristics, the patterns are more specific. For example, HH size is associated with higher food consumption scores in NWS, but also higher reduced coping strategies index scores, and lower likelihood of using crisis or emergency coping strategies in NES but higher likelihood in NWS. Thus, HH size can both have a positive or a negative effect on food security depending on the indicator and the region. Similarly, IDP HH in NWS have higher food consumption scores and lower reduced coping strategies scores than local residents, but they are more likely to use crisis or emergency coping strategies. Thus, IDPs and local residents in NWS are facing different challenges to their food security.

Table 18. Visual Summary of Regression Results from Tables 9, 13, 15 measuring the effects of HH characteristics on food security

| | Food Consumption Score | Reduced Coping Strategies Index | Likelihood of using crisis or emergency coping strategies (Livelihood Coping Strategies Indicator) |
|---|-------------------------------|--|---|
| Female-headed HH (Ref. Male-headed HH) | Lower in NWS | Higher | Higher in NWS |
| HH size | Higher in NWS | Higher | Lower in NES Higher in NWS |
| Proportion of HH members working | Higher | Lower in NWS | Higher in NES |
| Proportion of HH members with disabilities | Lower | Higher | Higher in NWS |
| Proportion of HH members with chronic illnesses | Lower in NWS | No significant effect | Higher in NES |

| | | | |
|--|-------------------------------|-----------------------|-------------------------------|
| IDP status (Ref. local residents) | Higher in NWS | Lower in NWS | Higher in NWS |
| Adequate housing (Ref. Inadequate housing) | Higher in NES | Lower | Lower in NES Higher in NWS |
| Average monthly income | Lower in NWS | No significant effect | Higher in NES |
| Total debts | Lower in NWS | Higher | Higher |
| Received other form of assistance in the last 6 months | Higher in NES Lower in NWS | Lower in NES | Lower in NWS |

Green = Better food security. Grey = No significant effect. Yellow = Lower food security

Regarding the third purpose, there is clear evidence that locations influence the effects of interventions on food security, as seen previously in Tables 10, 14, and 16. Table 19 provides a summary of these variations by showing the range of results for the interventions across the different locations. For example, as mentioned above, apprenticeship in NES is one of the interventions with better results on food security. However, when we look at the range of results across locations, we observe that the average food consumption score varies between 42.7 and 58.6, the average reduced coping strategies index score varies between 4.2 and 8.1, and the percentage of HH using crisis or emergency coping strategies varies between 30% and 67%. Similarly, cash-for-work in NWS is one of the interventions with lower results on food security. Yet, across different locations, the average food consumption score varies between 31 and 52.1, the average reduced coping strategies index score varies between 7.8 and 15.9, and the percentage of HH using crisis or emergency coping strategies varies between 64% and 100%. Therefore, interventions with better results on average do not necessarily have better results in every location, and interventions with lower results on average do not necessarily have lower results in every location. The context of every location affects the results of interventions.

Table 19. Range of Results by Locations for Different Interventions (based on Tables 10, 14, 16)

| | Food Consumption Score | Reduced Coping Strategies Index | Percentage of HH using crisis or emergency coping strategies (Livelihood Coping Strategies Indicator) |
|---------------------------------------|------------------------|---------------------------------|---|
| Food Assistance NWS | 34.2 – 59.8 | 3.2 – 9.1 | 29% - 68% |
| Agriculture assistance NWS | 32.2 – 43.1 | 7.6 – 11.4 | 70% - 90% |
| Apprenticeship NES | 42.7 – 58.6 | 4.2 – 8.1 | 30% - 67% |
| Business grants NES | 46.6 – 54.9 | 3.7 – 6.7 | 34% - 60% |
| Cash-for-work NWS | 31 – 52.1 | 7.8 – 15.9 | 64% - 100% |
| Incentives education staff NWS | 35.3 – 37.9 | 7.7 – 11.8 | 61% - 78% |

| | | | |
|--|-------------|------------|-----------|
| Food assistance NES | 27.5 – 45.2 | 6.3 -10.2 | 51% - 75% |
| Multi-purpose cash transfer NWS | 38.9 – 41.1 | 5.9 – 9.4 | 42% - 66% |
| Nutrition top-up NES | 26.1 – 45.5 | 5.9 – 11.2 | 29% - 78% |

5.1 Recommendations

Given the large number of results in this study and their relative complexity, it is challenging to provide ‘clear-cut’ programmatic recommendations. However, there are some highlights that can be useful as recommendations:

- If the purpose of a project is to maximize the food security of beneficiaries, the results indicate that livelihood interventions like apprenticeship and small business grants, and direct food assistance (food vouchers) have the most positive effects.
- Some interventions with lower effects on food security, such as cash-for-work and agriculture assistance, may be because of the amount of support. If the amount of support for these interventions is increased, it is likely that the effect on food security would also increase.
- There is a surprising results that the nutrition top-up intervention has lower results than expected, given that the beneficiaries received additional cash to purchase fresh food above their regular food vouchers. One might expect that nutrition top-up would be the best of all the interventions, which is not the case. As suggested in the final evaluation for the prior BHA project, some beneficiaries used the extra cash for other purposes than buying food. Thus, the effect of the nutrition top-up intervention on food security could probably be improved by providing a ‘top-up’ food voucher instead of cash.
- There is a clear pattern that the amount of debts is detrimental to the food security of beneficiaries. Presumably, beneficiaries use part of their assistance for debt repayment, directly if the assistance provides money, or indirectly if the assistance is a food voucher (e.g. giving away their food to repay their debts). In the same way that some HH characteristics such as female-headed HH or IDP status are used for programming purposes (beneficiary selection, tailored interventions), beneficiaries with high levels of debts could also be considered as a vulnerable group. However, this would need to be executed carefully, as it would be easy for people to purposefully accumulate more debts to be perceived as more vulnerable.

