

Notes on methodology and data cleaning – mVAM surveys in Iraq

The household data presented in the Iraq mVAM bulletin from March 2015 to present has been collected through live telephone interviews conducted through Korek, mVAM's mobile network partner in Iraq. As per standard survey procedures, respondents' consent was obtained prior to the interviews, and an airtime credit incentive of 1200 IQD was provided to respondents following completion of the survey. Providing a modest airtime credit incentive is in line with best practices for this form of data collection. For security and safety measures all respondents were identified with an anonymous ID.

The questionnaire asked questions on demographics, households' food consumption, coping strategies used and the public distribution system (PDS).

Market prices and trade information are also collected through phone interviews on a weekly basis in partnership with local NGOs from six governorates located in conflict-affected zones of Iraq.

Market Monitoring

WFP is monitoring household food access and market information in six conflict-affected governorates in Iraq. Market data is remotely collected in collaboration with Islamic Relief and Muslim Aid through telephone interviews. The questionnaire asks questions on food prices and shortage, labour wage rate and road access. The mVAM team calculates and analyzes the price of a standard food basket providing 2,100 Kcal/day, wage to food terms of trade, commodity price differentials with Baghdad and trend analysis by food commodity in Anbar, Diyala, Kikuk, Ninewa, and Salah Al-Din. Overall, the information obtained allows WFP to track weekly changes in food prices induced by conflict and supply line disruption.

Food Consumption Score (FCS)

The food consumption score (FCS) is a proxy indicator for food security that measures the diversity of household diets, and how frequently food is consumed. The FCS is calculated using the frequency of consumption of eight food groups by a household during the 7 days before the survey using standardized weights for each of the food groups reflecting its respective nutrient density, and then classifies households as having 'poor', 'borderline' or 'acceptable' food consumption. Data on individual food items included under the overall 'starches' and 'proteins' food groups (e.g. tubers, cereals, meats, fish, eggs) is also collected and analyzed separately, and used to describe the average diet of households at various levels of the FCS (i.e. 'poor', 'borderline' and 'acceptable'). The FCS results in Iraq are calculated using a universal adjusted set of thresholds taking into consideration the high consumption of oil and sugar in the region (poor \leq 28, 28<borderline \leq 42, acceptable $>$ 42). For more details on the food group composition, weighted values and FCS thresholds, please see the [Food consumption Analysis Technical Guidance Sheet](#).

Adaptation of the FCS for mVAM surveys in Iraq

In the first round of the mVAM survey in Iraq of March 2015, FCS data was collected and analyzed using 11 questions (Table 1a) – this included six 'overall' questions for individual food groups (pulses, vegetables, fruits, dairy, sugars, and fats), two questions for the 'starches' food group (cereal and tubers), and three questions for the 'proteins' food group (meats, fish and eggs). Consumption

frequencies of individual food items within the ‘proteins’ and the ‘starches’ groups were truncated (i.e. summed and recoded to 7 when the value of each group was above 7) in order to obtain an overall value for each of those food groups.

While from the second to the fourth round (April – June), an ‘overall’ question was introduced for the ‘starches’ and ‘proteins’ groups, for a total of 13 questions (Table 1b). The purpose of adding the overall questions in R2 is to avoid the truncating approach applied in R1. Instead of summing and recoding to 7 when the value of each group was above 7 for the ‘starches’ and ‘proteins’ food groups – as applied in R1, the reported food consumption frequencies were directly obtained from the ‘overall’ questions in R2.

Starting in the fifth data collection round (July), we decided to omit the ‘fats’ and ‘sugars’ food groups from the survey. This is because in Iraq, these two food groups are consumed by people on a daily basis. To account for this in our calculation of the FCS, we directly assign a value of 7 for these two food groups for all surveyed respondents.

Table 1a Round 1 – 11 FCS Questions

	Questions on categories of food items	Food groups (definitive)
1	Cereals and grains (including rice, pasta, bread, wheat flour, bulgur wheat, Khudiz, Samoun, oatmeal and muesli)	Starches
2	Tubers and roots (potatoes and sweet potatoes)	
3	Pulses, nuts and seeds (including beans, fava beans, chickpeas, peanuts, lentils, and others)	Pulses
4	Vegetables and leaves (including carrots, tomatoes, cucumbers, red peppers, kale, jarjir, onions, broccoli, spinach, and others)	Vegetables
5	Fruits (including citrus fruits such as oranges and limes, apricots, apples, dates, and others)	Fruit
6	Meats (organ and flesh meat including goat, beef, chicken, sheep, lam, and others)	Proteins
7	Fish and other seafood (including canned tuna)	
8	Eggs	
9	Dairy products (including fresh and powdered milk, yogurt/Kefir, cheese, curd, condensed milk, sour cream, and others – but excluding butter)	Dairy
10	Sugar and sweets (including honey, jam, cakes, candy, cookies, sugary drinks, and others)	Sugars
11	Oil, fat and butter (including vegetable oil, palm oil, margarine, and other fats / oil)	Fats

Table 1b Round 2 – 13 FCS Questions

	Questions on categories of food items	Food groups (definitive)
1	Overall question on consumption of all types of starches (including cereals, grains, tubers and roots)	Starches
2	Cereals and grains (including rice, pasta, bread, wheat flour, bulgur wheat, Khudiz, Samoun, oatmeal and muesli)	
3	Tubers and roots (potatoes and sweet potatoes)	
4	Pulses, nuts and seeds (including beans, fava beans, chickpeas, peanuts, lentils, and others)	Pulses
5	Vegetables and leaves (including carrots, tomatoes, cucumbers, red peppers, kale, jarjir, onions, broccoli, spinach, and others)	Vegetables
6	Fruits (including citrus fruits such as oranges and limes, apricots, apples, dates, and others)	Fruit
7	Overall question on consumption of all types of proteins (including eggs, meats, fish and other seafood)	Proteins
8	Meats (organ and flesh meat including goat, beef, chicken, sheep, lam, and others)	
9	Fish and other seafood (including canned tuna)	
10	Eggs	
11	Dairy products (including fresh and powdered milk, yogurt/Kefir, cheese, curd, condensed milk, sour cream, and others – but excluding butter)	Dairy
12	Sugar and sweets (including honey, jam, cakes, candy, cookies, sugary drinks, and others)	Sugars
13	Oil, fat and butter (including vegetable oil, palm oil, margarine, and other fats / oil)	Fats

For round 2, FCS results were calculated and compared using two approaches – the methodology used in the first round (truncating) and by using only value obtained from the eight ‘overall’ questions collected in the second round.

Comparing the above two methodologies, the results demonstrated that the overlap effect of adding and truncating the subcategories artificially inflated the ‘protein’ and ‘staples’ categories. To correct for this inflation in Round 1 the following approach was applied:

- 1) Using the full 11-question profile, map the closest pattern in Round 2 to each record in Round 1 based on the minimum Euclidean distance between the two patterns.
- 2) If the corresponding overall ‘protein’ and/or ‘staples’ scores from the best match in Round 2 are both (1): less than the sum of the Round 1 subcategory scores and (2): greater than or equal to the maximum value observed in any Round 1 subcategory, then the aggregate score is replaced by the FG score from the matching Round 2 profile.

This resulted in the reduction of ‘protein’ scores and ‘staples’ scores, and these recalculated FCS values for round 1 using the adjusted values were designated “FCS.8.est.”

Comparisons were made at the national and governorate levels based on the proportion of households meeting poor and borderline FCS thresholds (with weighted scores less than or equal to

42). In no cases were statistically significant differences observed between the two rounds (either overall or at the governorate level).

Starting from R2 onwards, the FCS is calculated, analyzed and reported on using the eight ‘overall’ food group questions.

Reduced Coping Strategies Index (rCSI)

The reduced Coping Strategies Index (rCSI) measures the frequency and severity of the behaviors households engage in when faced with shortages of food or financial resources to buy food. It assesses whether there has been a change in the consumption patterns of a given household. The rCSI is calculated using standard food consumption-based strategies and severity weighting. A higher score indicates that households are employing more frequent and/or extreme negative coping strategies. For the purpose of this bulletin, mVAM calculates the percentage of respondent households using coping strategies; the prevalence of the use of each coping strategy is analyzed rather than the composite score. For more details on the types of coping strategies considered and their respective severity weighting, please see the [Coping Strategies Index Field Methods Manual](#).

Public Distribution System (PDS)

Iraq's food rationing system was established in 1995, and it entitles every Iraqi, irrespective of income level, to a monthly food ration for a nominal fee. mVAM results on household's access to PDS deliveries presented in the bulletins are based on responses to the mVAM live telephone interviews conducted during the first three weeks of each month, and therefore may not fully capture PDS rations received by respondents post-interview within the month of the respective reporting period.

Table 2: PDS monthly ration composition

Wheat flour	9 kg
Rice	3 kg
Sugar	2 kg
Veg oil	1 liter

Data Set Interpretation

When interpreting the data, all country-level figures (e.g. FCS and CSI percentages) are calculated using population weights. Population estimates are taken from the Office for the Coordination of Humanitarian Affairs (OCHA) data collected for Iraq 2014.

Reporting statistical tests and significance level

Except where explicitly indicated, only statistically significant results are reported. To report the level of statistical significance, the following reference is used:

p-value	reported symbol
0.10 to 0.05	*
< 0.05 to 0.01	**
< 0.01	***

Sample Size

For survey rounds 1 to 4 (March to June), the total sample size was 1,100 respondents. Starting in round 5 (July) we increased the overall sample size by 450 to a total of 1550 respondents. Table 3 below presents the targeted household sample size per governorate for the telephone interview survey. These figures may slightly vary on the monthly basis, and the actual reached sample is noted in the “Methodology – mVAM remote data collection” section of each bulletin. In rounds 1 to 4, we did not specify a target portion for internally displaced person (IDP) respondents per governorate. Starting in round 5 onwards, we have identified suggested IDP sample quotas based on the latest available official IDP figures from the International Migration Organization (IOM) in Iraq. However, the IDP quotas are not fixed, and when they cannot be met, we ensure that the total sample per governorate is met.

In implementing the new sample size, the following governorates have been combined: (i) Babil and Najaf; (ii) Missan and Wassit; and (iii) Muthanna and Qadissiya. This aggregation was determined by both the geographical proximity of these governorates, and similarity in trends observed in the first four rounds of the survey. The increased sample size was relatively less distributed among these combined governorates, and instead redistributed to a greater extent in governorates where we needed a bigger sample.

Table 3: Target sample size per governorate

Governorate	Non-IDP respondents	IDP respondents	Total sample per governorate
Anbar	65	55	120
Babil-Najaf	85	45	130
Baghdad	140	55	195
Basrah	65	20	85
Diyala	45	30	75
Duhok	50	50	100
Erbil	55	55	110
Kerbala	45	45	90
Kirkuk	55	55	110
Missan-Wassit	75	0	75
Muthanna-Qadissiya	65	0	65
Ninewa	85	50	135
Salah al-Din	55	50	105
Sulaymaniyah	65	45	110
Thi-Qar	45	0	45
TOTAL			1550

Data Quality Control

Prior to beginning any formal analyses, the data collected for the FCS module is inspected for questionable and/or erroneous values. Records are flagged and removed for the following three main reasons:

- 1) Missing values for the overall Starch and/or Protein questions.

- 2) Values for which the overall Starch count is higher than the sum of the individual starch component counts, or for which the overall Protein count was higher than the sum of the individual protein component counts.
- 3) Values for which the overall Starch count was lower than any of the individual starch component counts or for which the overall Protein count was lower than any of the individual protein component counts.