

# Food Insecurity Experience Scale (FIES) collection and analysis Guidelines:

International Programme 2025-2028

---

## 1. Introduction

The South Programme of Interaction’s International Programme 2025-2028 (IP 25-28) includes a total of 35 distinct indicators, each accompanied by specific guidelines. The guidelines for the indicator “% of population experiencing moderate or severe food insecurity (FIES)” is available on request.

However, these brief guidelines do not provide detailed instructions on how to collect, clean, format, and analyse FIES data. During the implementation of IP 21-24, we identified challenges faced by partners in obtaining reliable results for this indicator. To address this, we have developed additional guidelines to assist partners in effectively gathering and interpreting FIES data.

These guidelines are not meant to replace the comprehensive guides developed by FAO. Instead, they are simplified and specifically tailored to our work in IP 25-28. These guidelines are designed to be use with the FIES online tool: <https://fies.shinyapps.io/ExtendedApp/>. While we could also use software like R for statistical analysis, this requires a level of expertise that not all MEL officers possess.

These guidelines are mainly based on the various FAO guides (see additional resources at the end of the document) and have been adapted to our IP 25-28.

## 2. Data Collection

Once you have determined your sample (if needed you can read our guidelines on sampling and data collection available on our website: <https://interaction-schweiz.ch/unsere-wirkung/>) you can start surveying participants. From experience, it seems that data set with less or close to 100 people, tend to be more difficult to analyse. So, if possible, consider surveying **at least** 150 men and 150 women (300 in total).

The following questions are used: <sup>1</sup>

During the last 12 months, was there a time when, because of lack of money or other resources:

- Q1. You were worried you would not have enough food to eat?
- Q2. You were unable to eat healthy and nutritious food?
- Q3. You ate only a few kinds of foods?
- Q4. You had to skip a meal?

---

<sup>1</sup> These questions can be integrated into a larger questionnaire to survey multiple topics



- Q5. You ate less than you thought you should?
- Q6. Your household ran out of food?
- Q7. You were hungry but did not eat?
- Q8. You went without eating for a whole day?

All questions are answered by Yes (1) or No (2)

If you need more information on the exact meaning of a question or if translation in local languages is required, please refer to the FAO Guidance for translation in English or in French: [Guidance for translation \(EN\)](#) / [Guidance for translation \(FR\)](#). There already exist many translations in local languages: [translation in > 170 languages and dialects](#).

Surveys are conducted once a year, always at the same time of the year to avoid any bias caused by specific times of scarcity or abundance. Ideally, people would be to survey multiple time a year with a shorter recall period, however due to limited resources for monitoring and our yearly reporting schedule, an annual survey is considered sufficient.

When asking the questions, respondents should be allowed to answer, “Yes”, “No” or “I don’t know/refuse to answer”.

Generally, the questions progress from less severe to more severe (Q1 is typically considered the least severe, and Q8 the most severe), though this may vary across cultures or livelihood systems. Nevertheless, it is expected that the first questions will receive more “Yes” answers than the last ones. However, when conducting the survey, we should avoid prompting respondents to give expected answers. Only after collecting all responses, we should assess whether any questions were difficult for respondents to answer or were misunderstood. If we receive too many "I don’t know" responses to a particular question, it strongly suggests that the question was not understood. The translation or explanation of the question will need to be reviewed to ensure better responsiveness next time.

The estimated time to complete the survey is about 5 minutes. However, this may vary depending on the language of the survey and the time the interviewer takes to explain the questions.

### 3. Cleaning & Formatting

The easiest way to clean and format the data is to use Excel. First, our raw data in Excel should be structured like that (the column with gender followed by columns with the 8 questions):

	A	B	C	D	E	F	G	H	I
1	Gender	FS 01: You were	FS 02: You were	FS 03: You ate	FS 04: You had	FS 05: You ate	FS 06: Your household	FS 07: You were	FS 08: You were
2	Male	Yes	No	Yes	No	No	No	No	No
3	Male	No	Yes	No	No	Yes	No	No	No
4	Female	No	Yes	Yes	No	Yes	No	No	No
5	Male	No	No	No	No	Yes	No	No	No
6	Female	Yes	Yes	Yes	No	Yes	No	No	No

Once we have that, we should clean and format our data by:

- Correcting any misspellings

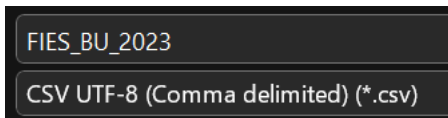
- If necessary, removing rows that contain mostly “I don’t know” responses
- Removing duplicates
- Replacing “Yes” with 1, “No” with 0 and “I don’t know/refuse to answer” with NA throughout the dataset<sup>2</sup>

Next, we should filter our data and create three different files: one with all data, one with only male data and one with all female data. Be sure to remove the gender column, keeping only the eight columns with the questions and their respective answers. This separation is necessary because we would like to disaggregate the data by gender. To do this, we will repeat the analysis on the online app for each of these three datasets.

As FIES is designed to be used with additional metrics (e.g. Urban vs Rural, etc.), we should add 4 columns (a, b, c and d) filled with only “NA” values, alongside the 8 questions:

U	V	W	X	Y	Z
FS 07: You we	FS 08: You we	a	b	c	d
0	0	NA	NA	NA	NA
0	0	NA	NA	NA	NA
0	0	NA	NA	NA	NA
0	0	NA	NA	NA	NA
0	0	NA	NA	NA	NA

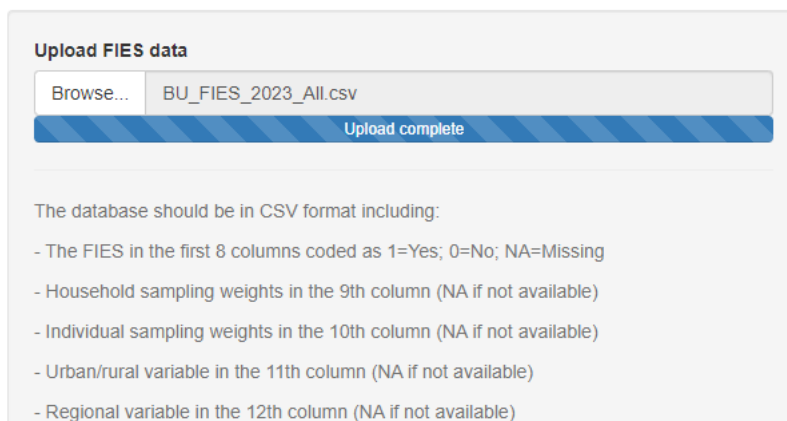
The final step is to convert the Excel files into .csv files, as only .csv files are supported by the FIES online app:



Once we have three .csv files (All, Male and Female data), we are ready to upload them one by one into the app for analysis

#### 4. Analysis

First, upload the .csv file:



<sup>2</sup> You can use the formula = IF (A1="Yes", 1 , IF(A1="No", 0 , "NA"))

If our data is good enough to be analysed, we will have access to different tabs we need to review before obtaining the final food insecurity prevalence rates:

Item and Raw Score Stat   Reliability and residual correlation   Select items for analysis   Equating   DIF   Prevalence rates   Additional information

- The first two tabs display statistics that are useful for determining whether the dataset is of sufficient quality.
- The third tab allows us to remove an item (i.e. question) from the analysis if we have identified - problematic items in the first two tabs.
- The fourth tab allows us to conduct “equating” to make the analysis comparable with other FIES analyses in other countries or at different points in time.
- The sixth tab is where we will finally find the prevalence rates.

### Tab 1: Item and raw score stat

Item statistics

	Severity	S.E.	Infit	S.E.Infit	Outfit	N_Yes_Compl	N_miss_if_any_valid
Worried	-1.645	0.208	0.764	0.111	0.919	199.000	0
Healthy	-1.540	0.206	1.238	0.111	0.890	196.000	0
Fewfood	-1.505	0.205	0.706	0.111	0.356	195.000	0
Skipped	1.000	0.178	1.367	0.099	1.773	112.000	0
AteLess	-1.645	0.208	0.984	0.111	0.479	199.000	0
RunOut	2.514	0.186	0.908	0.088	1.952	50.000	0
Hungry	0.502	0.183	0.913	0.107	0.811	131.000	0
WholeDay	2.319	0.183	0.925	0.089	1.442	58.000	0

#### Severity:

The more “yes” responses a question received (N\_Yes\_Compl), the lower the severity. In our example, “not eating for a whole day” and “Run out of food” are the most severe items, as they received respectively only 58 and 50 “yes” responses.

#### Infit:

The infit statistics (with standard error) indicate whether an item performed well in the sample and is important for the analysis, or if it could be removed:

Infit < 0.7

- ⇒ The item is redundant with other items and could be removed

Infit 0.7 – 1.3

- ⇒ OK

Infit > 1.3

- ⇒ The item performed poorly and could be removed

***Don't forget to consider the standard error range when investigating the severity or infit statistics!***

**Outfit:**

Although less important than infit, outfit statistics indicate whether an item has an unusual response pattern or not. They can help identify outliers in the data:

Outfit > 2

- ⇒ Review the data for the presence of outliers, and if needed remove them before performing the analysis.

In the example above, no action was required as all infit and outfit statistics were within the acceptable range. Infit for “skipped” is acceptable when considering the standard error.

**Tab 2: Reliability and residual correlation**

Rasch reliability

0.77

Residual correlation

	Healthy	Fewfood	Skipped	AteLess	RunOut	Hungry	WholeDay
Worried	0.07	0.41	-0.07	0.12	-0.05	0.12	-0.07
Healthy		0.08	-0.11	-0.14	-0.01	-0.22	-0.06
Fewfood			0.01	0.16	0.02	0.09	-0.06
Skipped				0.02	-0.29	-0.09	-0.26
AteLess					-0.05	0.09	-0.01
RunOut						0.12	0.23
Hungry							0.08

Here we can check the reliability of the Rasch statistical model:

- For an eight-item FIES scale, we should have at least 0.7
- For a seven-item FIES scale, we should have at least 0.6
- ⇒ Removing a problematic item should increase the reliability

We can also review the residual correlation:

- A residual correlation between two items is considered high if it is > |0.4| (absolute value)
- Multiple high residual correlations could mean redundant questions, and is problematic
- ⇒ Removing a problematic item should reduce the residual correlation

In the example above, no action was required since reliability is > 0.7 and there is no multiple high residual correlation (only one at 0.41)

### Tab 3: Select items for analysis

Based on the validation tests, choose the items to be kept in the analysis

- Worried
- Healthy food
- Few kinds of food
- Skipped a meal
- Ate less
- Run out of food
- Hungry
- Whole day without eating

Here we can uncheck a box to remove an item from the entire analysis. For example, if based on your review of the two first tabs, we think “Worried” should be removed, we can uncheck the box, and then check if the revised statistics are now more acceptable. There is no exact rule whether to remove or keep an item, but it is based on the judgment of the data analyst.

***We should always keep at least 6 out of 8 items for the analysis to work!***

### Tab 4 Equating

Choose common items

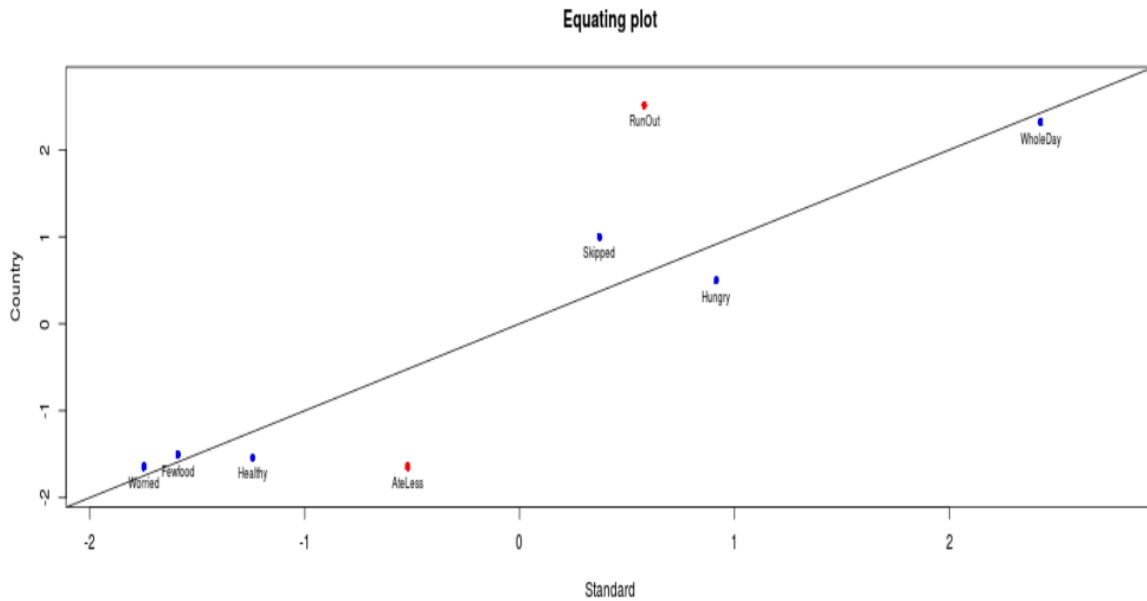
- Worried
- Healthy food
- Few kinds of food
- Skipped a meal
- Ate less
- Run out of food
- Hungry
- Whole day without eating

Absolute difference between country and global standard items

Worried	0.08
Healthy	0.22
Fewfood	0.06
Skipped	0.47
AteLess	0.83
RunOut	1.44
Hungry	0.31
WholeDay	0.08

Correlation between common items

97.5%



Here we can uncheck a box to remove an item from the equating (but not from the entire analysis). Items with the highest absolute difference and that appear farthest from the diagonal line in the plot should be removed first. Basically, the goal is to find the number of items that results in the best correlation (we should aim to get >> 95%).

***You should always keep at least 5 out of 8 items for the equating to work!***

**Tab 6: Prevalence rates**

Here we can find the final prevalence rates with their respective margin of error. A high margin of error (> 10 or 20) indicates that the data is highly heterogeneous, and thus prevalence rates should be interpreted with caution.

Prevalence rates of food insecurity (% of households)

Moderate or severe	MoE	Severe	MoE
61.48	7.59	29.69	6.55

For IP 25-28, the % of population experiencing moderate or severe food insecurity (FIES) needs to be reported in Toladata, and if possible, we should mention the margins of error and the % of population experiencing severe food insecurity in the text field.

We will notice that the prevalence rates change when we select items for analysis or equating. We should never try to lower as much as possible the prevalence when selecting or deselecting items. The selection of items should be based solely on the different statistics explained above.

## 5. Final Remarks & Additional Resources

The overall analysis is somewhat dependent on the person conducting it. For instance, one person may decide to keep an item, while another person may choose to remove it, each with reasonable justifications. They will consequently obtain different prevalence rates at the end. Therefore, we advise repeating the procedure multiple times and, if possible, by multiple persons to minimize the possible bias from the data analyst. It is also important to keep track of the reasons behind each decision to justify our results if needed.

Resources
FAO (2020). <a href="#">Guide to use the FIES App</a>
FAO (2018). <a href="#">Implementing FIES in surveys</a>
FAO (2015). <a href="#">Guidance for translation (EN)</a> / <a href="#">Guidance for translation (FR)</a> Many translations are already available : <a href="#">translation in &gt; 170 languages and dialects</a>
FAO (2016). <a href="#">Methods for estimating comparable prevalence rates of food insecurity experienced by adults throughout the world</a>
Cafiero, C., Viviani, S. & Nord, M. (2018) <a href="#">Rasch model-based procedures developed to define the eight-item FIES</a>

Learn more about Interaction's international programme 2021-2024 *Learning 360*:

- # Programme Overview – [German](#) & [French](#)
- # How we understand Impact – [German](#) & [French](#)



© Interaction, Parkterrasse 10, 3012 Berne, Switzerland.  
[info@interaction-schweiz.ch](mailto:info@interaction-schweiz.ch); [www.interaction-schweiz.ch](http://www.interaction-schweiz.ch).

IP 25-28 MEL guidelines. March 2025.

Compiler & Author: Thibaud ROSSEL, Programme Coordinator Monitoring, Evaluation & Learning (MEL), Interaction. [Thibaud.rossel@interaction-schweiz.ch](mailto:Thibaud.rossel@interaction-schweiz.ch)