

One score, two thresholds, eight times the answer

On the 21/35 thresholds 0.9% of these households have poor food consumption.
On the 28/42 thresholds 7.3% do. Both are correct applications of a published standard, and a report that does not say which it used is not.

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Lesson 1 of 8

Food Security Analysis and IPC — Compute it before you believe it

What this lesson covers

- The score, from its parts
- Range-check first
- A blank is not a zero
- The two threshold sets
- What the score is not
- Report it with its rules
- What comes next

The score, from its parts — In Python

```
import pandas as pd

survey = pd.read_csv("food-security-survey-2024.v1.csv")

WEIGHTS = {
    "fcs_cereals_tubers": 2.0,
    "fcs_pulses": 3.0,
    "fcs_vegetables": 1.0,
    "fcs_fruit": 1.0,
    "fcs_meat_fish_eggs": 4.0,
    "fcs_dairy": 4.0,
    "fcs_oils_fats": 0.5,
    "fcs_sugar": 0.5,
}
```

The score, from its parts — In R

```
library(dplyr)
```

```
weights <- c(fcs_cereals_tubers = 2, fcs_pulses = 3, fcs_vegetables = 1,  
             fcs_fruit = 1, fcs_meat_fish_eggs = 4, fcs_dairy = 4,  
             fcs_oils_fats = 0.5, fcs_sugar = 0.5)
```

The score, from its parts

- Two things have to happen before the multiplication — and both are skipped routinely

Range-check first — In Python

```
groups = list(WEIGHTS)
print(survey[groups].max())
print(f"values above 7: {(survey[groups] > 7).sum().sum()}")
```

Range-check first — In R

```
survey |> summarise(across(all_of(names(weights)), max, .names = "{.col}"))
```

Range-check first

- Twenty-three cells hold a value above seven days — against a seven-day recall

A blank is not a zero — In Python

```
blanks = survey[groups].isna().sum()
print(blanks[blanks > 0])
print(f"households with any blank: {survey[groups].isna().any(axis=1).sum()}")
```

A blank is not a zero — In R

```
survey |> summarise(across(all_of(names(weights)), ~ sum(is.na(.x))))
```

A blank is not a zero

- 127 cells across dairy, fruit and meat are blank, in 123 households — Those are the three highest-weighted groups after. . .

A blank is not a zero — In Python

```
# The silent one: NaN treated as zero.
naive = sum(survey[group].fillna(0) * weight for group, weight in WEIGHTS.items())

# The honest one: a household missing any group has no score.
capped = survey[groups].clip(upper=7)
fcs = sum(capped[group] * weight for group, weight in WEIGHTS.items())
fcs = fcs.where(capped.notna().all(axis=1))

print(f"analysable: {fcs.notna().sum()} of {len(survey)}")
```

A blank is not a zero — In R

```
survey |>  
  mutate(across(all_of(names(weights)), ~ pmin(.x, 7))) |>  
  rowwise() |>  
  mutate(fcs = if (anyNA(c_across(all_of(names(weights))))) NA_real_  
            else sum(c_across(all_of(names(weights))) * weights))
```

A blank is not a zero

- 1,989 households of 2,112 have a complete consumption module — Report that number

The two threshold sets — In Python

```
for poor, borderline in [(21, 35), (28, 42)]:  
    bands = pd.cut(fcs, [-1, poor, borderline, 200],  
                   labels=["poor", "borderline", "acceptable"])  
    print(f"{poor}/{borderline}: ",  
          (bands.value_counts(normalize=True) * 100).round(1).to_dict())
```

The two threshold sets — In R

```
classify <- function(x, poor, borderline) {  
  cut(x, c(-1, poor, borderline, Inf), labels = c("poor", "borderline", "acceptable"))  
}
```

The two threshold sets

Thresholds	Poor	Borderline	Acceptable
21 / 35	0.9%	22.7%	76.4%
28 / 42	7.3%	38.5%	54.1%

The two threshold sets

- The poor-consumption headline is eight times larger on one set than the other — and both are the published standard

The two threshold sets — In Python

```
staples = survey[["fcs_oils_fats", "fcs_sugar"]].mean()
print(f"oil eaten {staples['fcs_oils_fats']:.1f} days a week on average")
print(f"sugar eaten {staples['fcs_sugar']:.1f} days")
print("→ 28/42 is the defensible set here; say so in the methodology note")
```

The two threshold sets — In R

```
survey |> summarise(oil = mean(fcs_oils_fats), sugar = mean(fcs_sugar))
```

The two threshold sets

- Choose on the evidence, state the choice, and never change it between rounds —
A programme that reports 0.9% one year. . .

What the score is not

- It is not a measure of quantity — A household eating small portions of eight food groups scores well
- It is not comparable across contexts with different diets — The weights are fixed globally and the food groups are not. . .
- It is not an IPC phase — It is one outcome indicator feeding one of several evidence rows, and the last unit of this. . .

Report it with its rules — Example

Food consumption, lean season 2024

Analysable	1,989 of 2,112 households (94.2%)
Poor consumption	7.3% 146 households
Borderline	38.5% 766
Acceptable	54.1% 1,077

FCS computed on the 28/42 threshold set: oil is eaten a mean 4.7 days a week and sugar 3.8, so the standard 21/35 cut-offs would classify 0.9% as poor and understate the caseload.

23 impossible values capped at 7 days; 123 households excluded for an incomplete consumption module.

What comes next

- Food consumption is what a household ate.

Read the full lesson, with runnable code

```
https://data-analysis.cassion.dev/courses/food-security-ipc/  
fs-01-the-food-consumption-score
```