Food and Agriculture Organization of the United Nations

Impact evaluations of Food, Cash and Livelihood aid modalities in the DRC

FAO Data in Emergencies

DIEM Surveys

- Diem surveys started as a food security monitoring tool in high food insecure countries to monitor the impact of shocks on food security during the COVID crisis and they have kept going on the same template since then.
- They include indicators on:
  - Food security (FCS, LCSI, RCSI, FIES)
  - Household characteristics (Gender of head, age of head, residency status, education of head)…
  - Livelihoods (Income sources, income change, income amount)
  - Crop production and sales (crop produced, landsize, harvest change, harvest amount, production difficulties and sales difficulties).
  - Livestock production and sales (animals owned this year and last, production difficulties, sales difficulties)
  - Fish production and sales
  - Assistance needed from households and assistance received
- Data are comparable across rounds and countries because the surveys use an identical core questionnaire (with optional questions that vary across surveys).

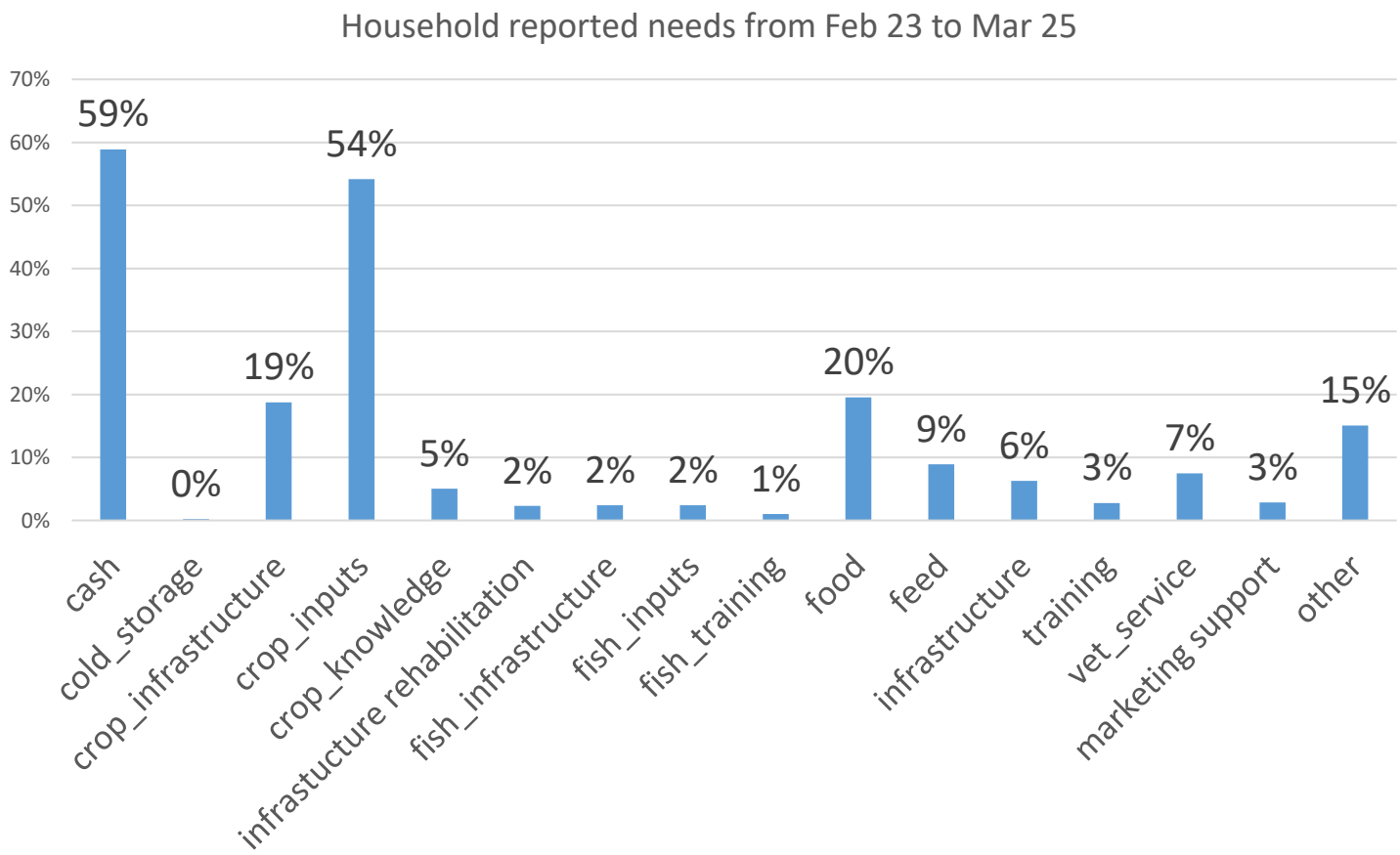
DIEM Surveys

- Regular food security bulletins are produced by the DIEM team (once or twice a year).
- The survey **data** can be used for targeting purposes as well as other analytical purposes.
- For FSAC partners, DIEM surveys can be used to:
  - understand household needs,
  - monitor aid delivery,
  - and estimate the impact of aid.

DIEM surveys are OPEN DATA: Anyone can download the microdata for free on this link.

Some useful variables: Needs reported by surveyed households

- Households are asked what are their assistance needs, if any.
- 20% respond that food assistance is their primary need.
- 59% prefer cash assistance.
- 49% report one type or another of livelihood support



Assistance Received by Households

- **Has your household received any assistance in the last 3 months, and if so, which kind? (Multiple response)**

1)Food

2)Cash

3)Vouchers/input trade fairs

4)Crop and/or vegetable production assistance

5)Livestock assistance

6)Fisheries and/or aquaculture assistance

7)Environmental or infrastructure rehabilitation [community-wide]

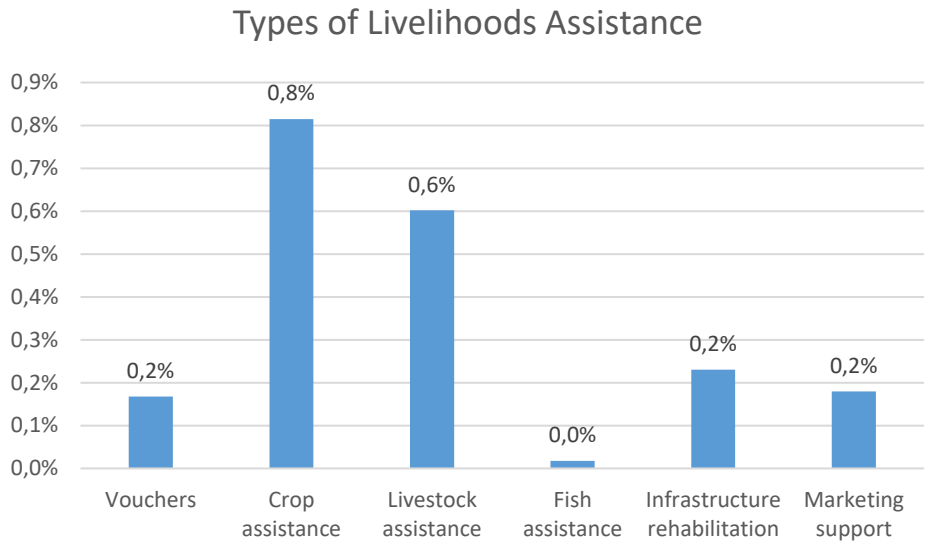
8)Marketing or sales support [e.g. public procurement]

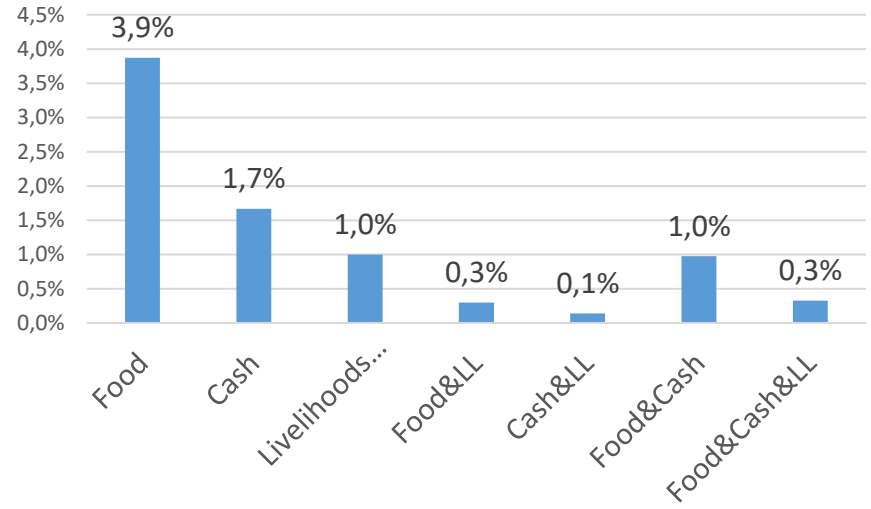
9)Other [specify]

10)No assistance received

11)DON'T KNOW

12)REFUSED



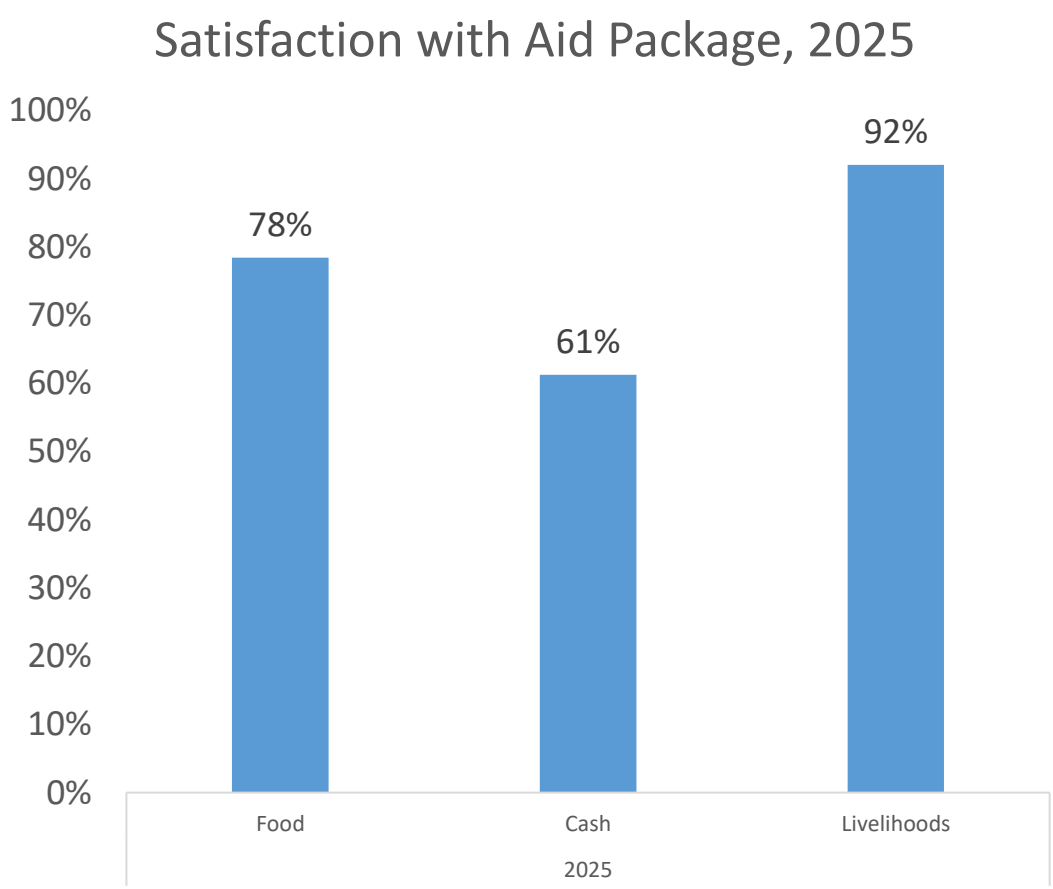


When estimating the impact of livelihoods assistance we isolate it from other modalities (cash or food) by including controls for these other modalities.

Satisfaction with Aid package

The questionnaire also asks reasons for dissatisfaction, if any

- arrived late,
- insufficient quantity
- Not the right modality



DIEM dataset can be enriched with other sources

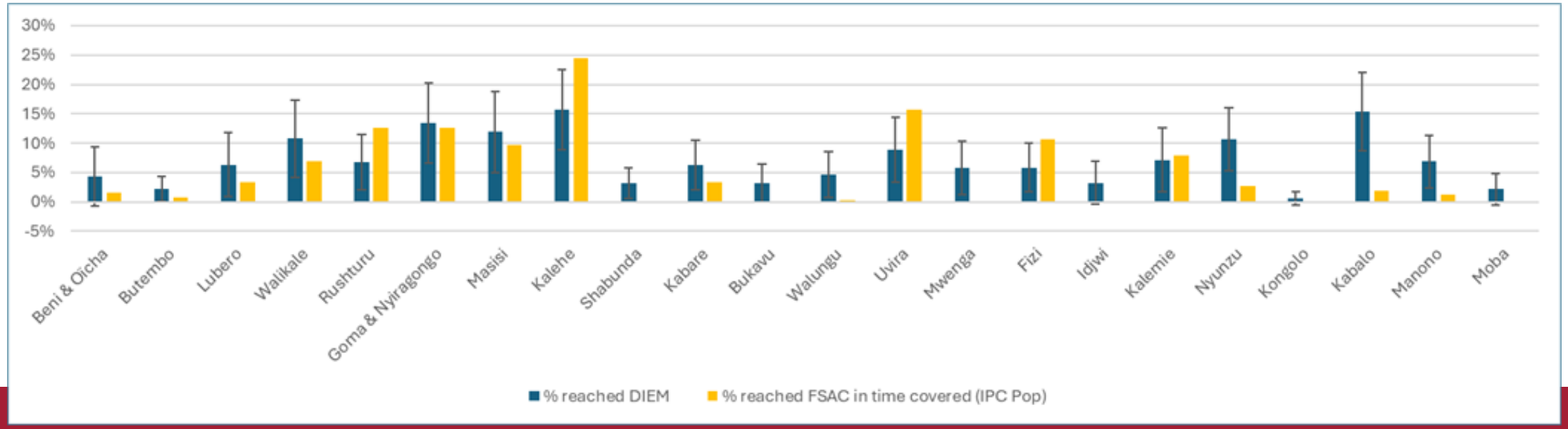
DIEM data is georeferenced by adm2 at the minimum, sometimes at lower levels. This means that we can join:

- Precipitations and Standardized Precipitation Index
- Temperatures (heat/cold waves)
- Conflict
- Prices
- Adm2 Area flooded

We can also join other external data sources from earthquake maps, landslides, locust infestation, etc.

Monitoring Aid Delivery

- DIEM surveys are a useful tool for donors and practitioners alike to monitor programme implementation at the household end:
- % of beneficiary population vs % reported by FSAC;
- Mostly comparable, some discrepancies. Some reconciliation needed but worth improving. (timelines, covered vs assisted)



Impact Evaluation

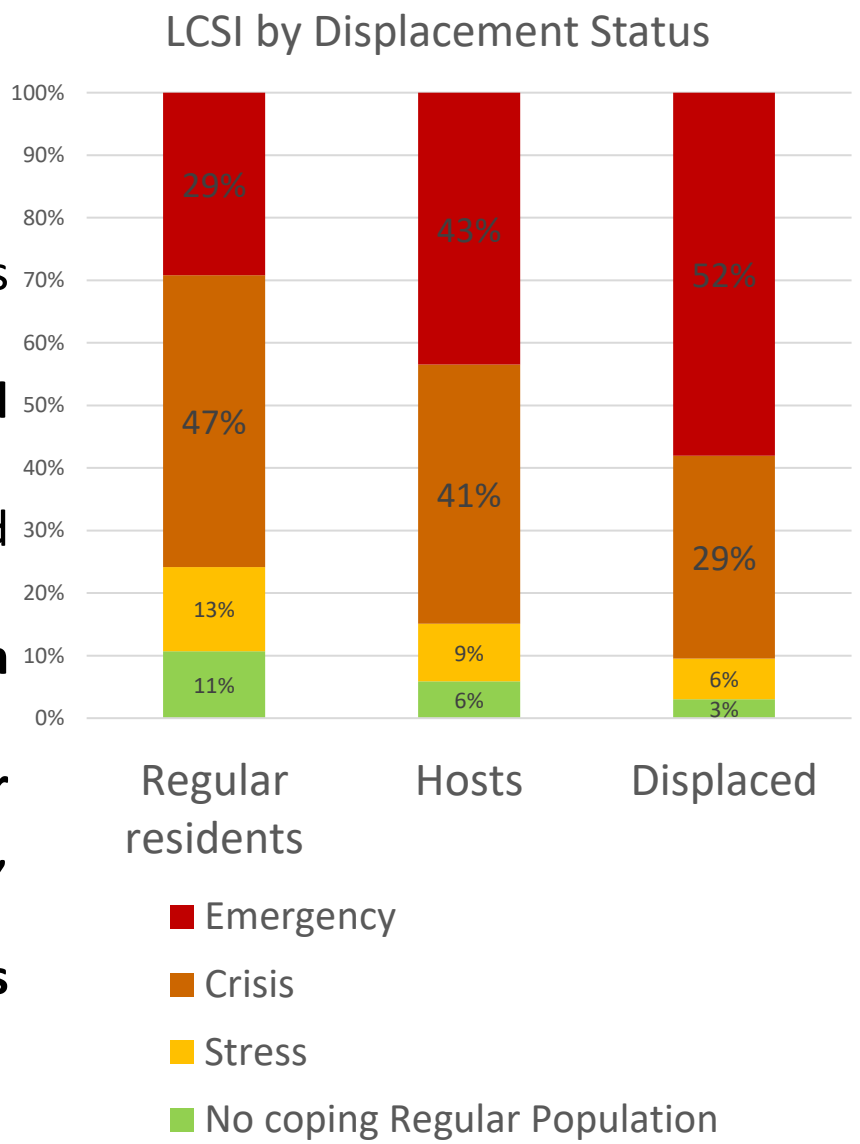
Context

- Sharp Escalation in Conflict in the East;
- Nearly 8M displaced households in 2025, 2/3ds in food insecurity.
- The IPC has consistently recommended to target displaced households for emergency food security aid and livelihoods support.

DIEM surveys provides evidence for this conclusion. Displaced households are:

- **More vulnerable to shocks,** including illness, rising food prices and violence;
- **Much more likely to resort to harmful coping strategies aside from displacement** (sale of productive assets, seed consumption or begging).
- As a result, **they owned fewer assets and livestock**, had a **lower income**, and reported **much lower harvests** than permanent residents, despite 47% of them having access to land in exile.
- Rely more heavily on casual labour **driving down wages for themselves and hosting communities**.
- Conversely**, food prices also higher in hosting communities**.

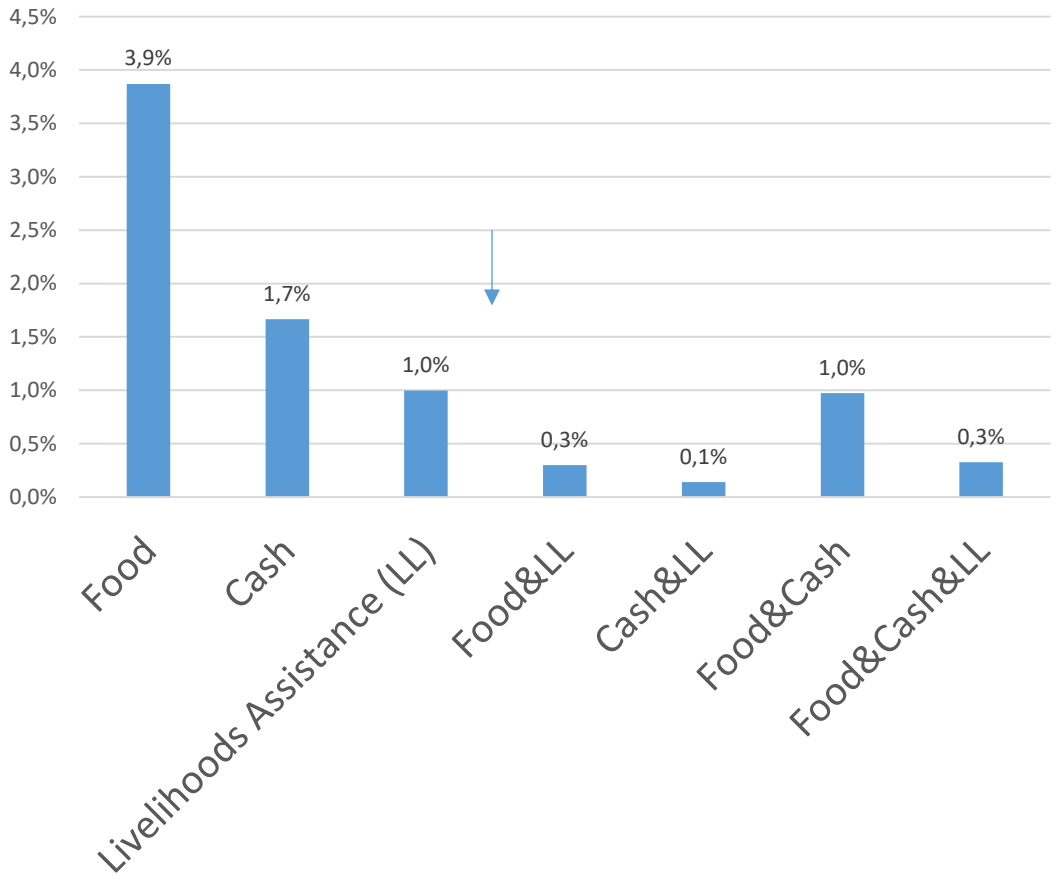
➔ Hosts were also considerably more vulnerable than other communities.



Problem Tree: Reconstructing the Project Framework

Root Cause	Displacement
Immediate consequence	Loss of assets and production capacity
Consequence in term of livelihoods	Reduction in farming production, income and access to food for the displaced. Pressure on hosts food resources and assets, as well as downward pressure on wages in hosting communities.
Consequence in terms of food security	Increase in food insecurity for displaced households and their hosts.

Link it with **Response and Delivery**



- Food aid
- Unconditional Cash transfers
- Livelihood support (mostly seeds and tools distributions to **displaced households** in vegetable gardens or small plots and **hosting communities**.

Needs expressed by farming hh:

Cash(59%), Livelihoods support (54%) and food aid (20%)

Impact evaluation Methodology

Uses DIEM Representative surveys to analyse aid using households who reported receiving aid (not an assessment of FAO interventions but rather FSC).

Propensity Score Matching:

1. Builds a counterfactual by estimating the probability of aid selection using targeting criteria.

2. Compares households who receive treatment to households equally eligible who did not receive treatment.

Difference in Differences:

Further reduces the chances of bias by looking at the change in household trends between the treated and untreated rather than their absolute difference.

Results

1st Stage: Identify targeting criteria for PS

Salient Selection Criteria:

- Being a refugee (all modalities) or recent migrant (food & cash) (as recommended by IPC)
- Being crop farmers or livestock farmers (all)
- Being a smallholder (all)
- Not being affected by drought (as recommended by IPC)

- Being affected by conflict (not reported by cash aid recipients)
- Being 18 to 65 (and not elderly) for livelihood support
- Having no education for food aid, but the opposite is true for cash aid and not sign. for livelihoods.

Some criteria unobserved: distance from markets, dependency ratio, child malnutrition…

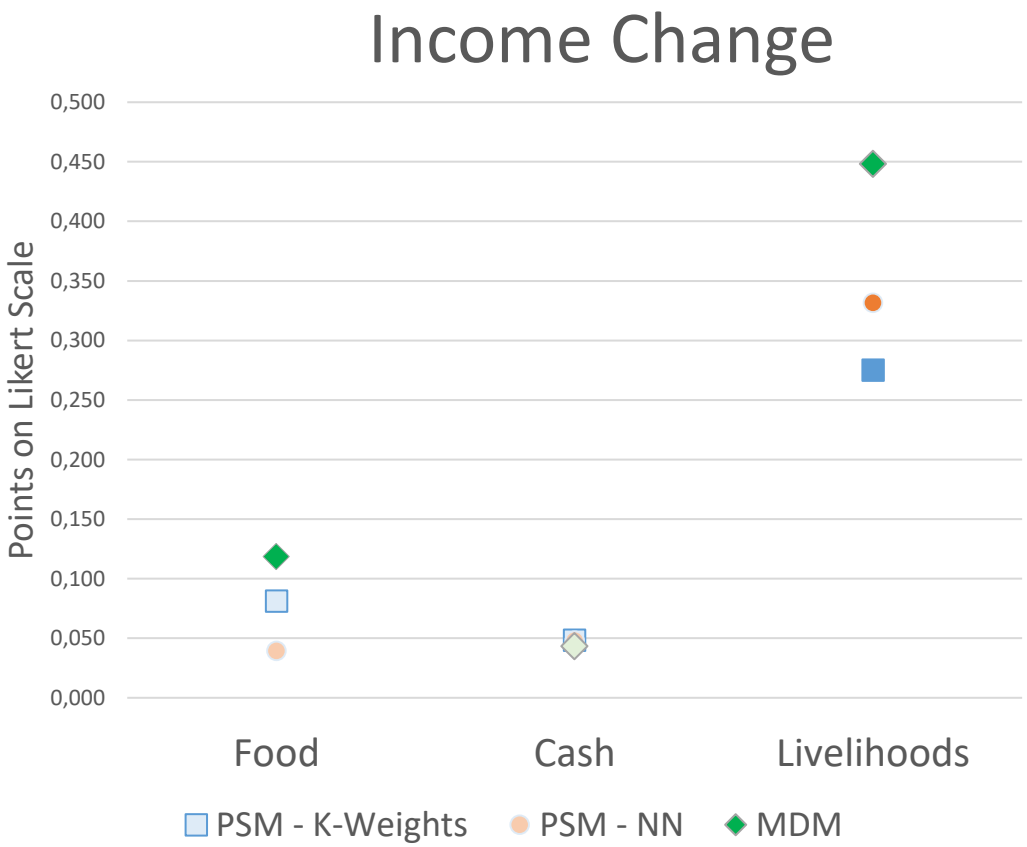
Conclusion: The selection criteria are similar but not identical, meaning the selected populations overlap but are not identical, and because are results are ATT, caution is in order when comparing the IE results!

VARIABLES	(1) assist_any	(2) assist_food	(3) assist_cash	(4) assist
refugee	1.196***	1.251***	1.740***	1.327*
	(0.141)	(0.162)	(0.172)	(0.218
recent_migrant	0.364	0.612	0.733	-0.085
	(0.404)	(0.534)	(0.527)	(1.021
no_educ	0.384***	0.473***	-0.296*	0.237
	(0.0969)	(0.109)	(0.163)	(0.175
over_65	-0.134	-0.128	0.0763	-0.650
	(0.151)	(0.186)	(0.219)	(0.366
crop_farming	0.263***	0.354***	0.306**	0.349*
	(0.0864)	(0.113)	(0.132)	(0.167
livestock_farming	0.451***	0.348*	0.427*	0.342
	(0.154)	(0.207)	(0.235)	(0.323
no_income	0.137	0.0466	-0.0571	
	(0.176)	(0.235)	(0.277)	
farm_casual	0.522***	0.280	0.255	0.432
	(0.159)	(0.196)	(0.261)	(0.293
off_farm_casual	0.0682	0.151	-0.0479	-0.14
	(0.151)	(0.192)	(0.247)	(0.334
small_food_trader	0.172	0.0779	0.247	0.494*
	(0.142)	(0.183)	(0.211)	(0.248
shock_drought	-0.815***	-1.069***	-0.598***	-0.622
	(0.151)	(0.184)	(0.220)	(0.267
shock_flood	-0.119	-0.0232	-0.545**	0.239
	(0.134)	(0.182)	(0.238)	(0.242
shock_violenceinsecconf	0.0600	0.194	-0.474**	0.454*
	(0.102)	(0.125)	(0.192)	(0.194
shock_plantdisease	-0.374**	-0.502***	0.504***	-0.25
	(0.152)	(0.176)	(0.192)	(0.259
crp_landsize_ha	-0.117***	-0.194***	-0.181***	-0.187
	(0.0334)	(0.0478)	(0.0559)	(0.075
2.quarter	-0.290*	-0.186	-0.571**	0.100
	(0.163)	(0.261)	(0.235)	(0.325
3.quarter	1.109***	1.033***	1.517***	1.741*
	(0.159)	(0.201)	(0.272)	(0.387
2024.year	-0.425**	0.109	-0.887***	-0.703
	(0.171)	(0.248)	(0.264)	(0.411
2025.year	-0.126	-0.0776	0.0522	-0.13
	(0.147)	(0.221)	(0.221)	(0.327
Constant	-2.154***	-2.793***	-3.220***	-3.989*
	(0.151)	(0.218)	(0.233)	(0.323
Observations	14,395	14,395	14,395	14,39
pseudo R2	0.108	0.182	0.0935	0.119

2d Stage: Income Change (Likert Scale)

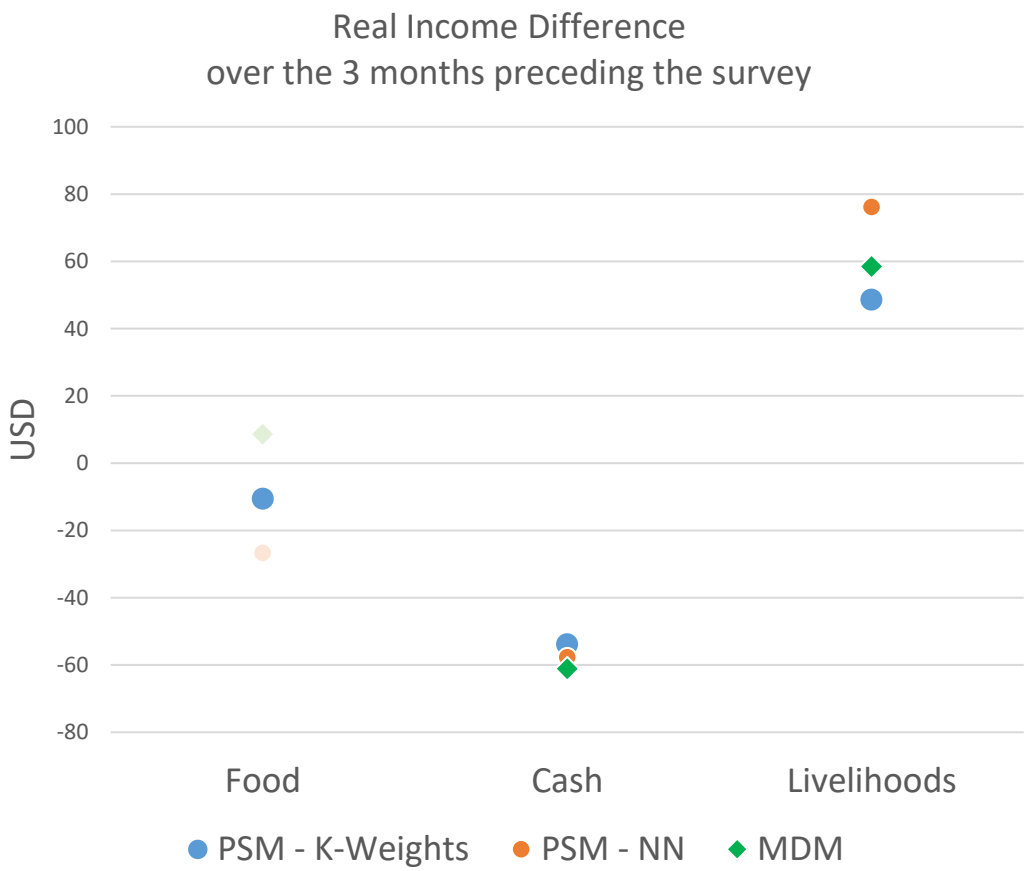
ATT= Average treatment effect on the treated (difference in pre-post trends between treated control)

- Livelihoods aid has the strongest impact on income change as reported by households (on a scale of -2 to 2 from a lot less to a lot more)
- Not all methods are significant but they converge.
- Higher effect for livelihoods to be expected (shouldn´t happen for food aid unless beneficiaries sell their food…)



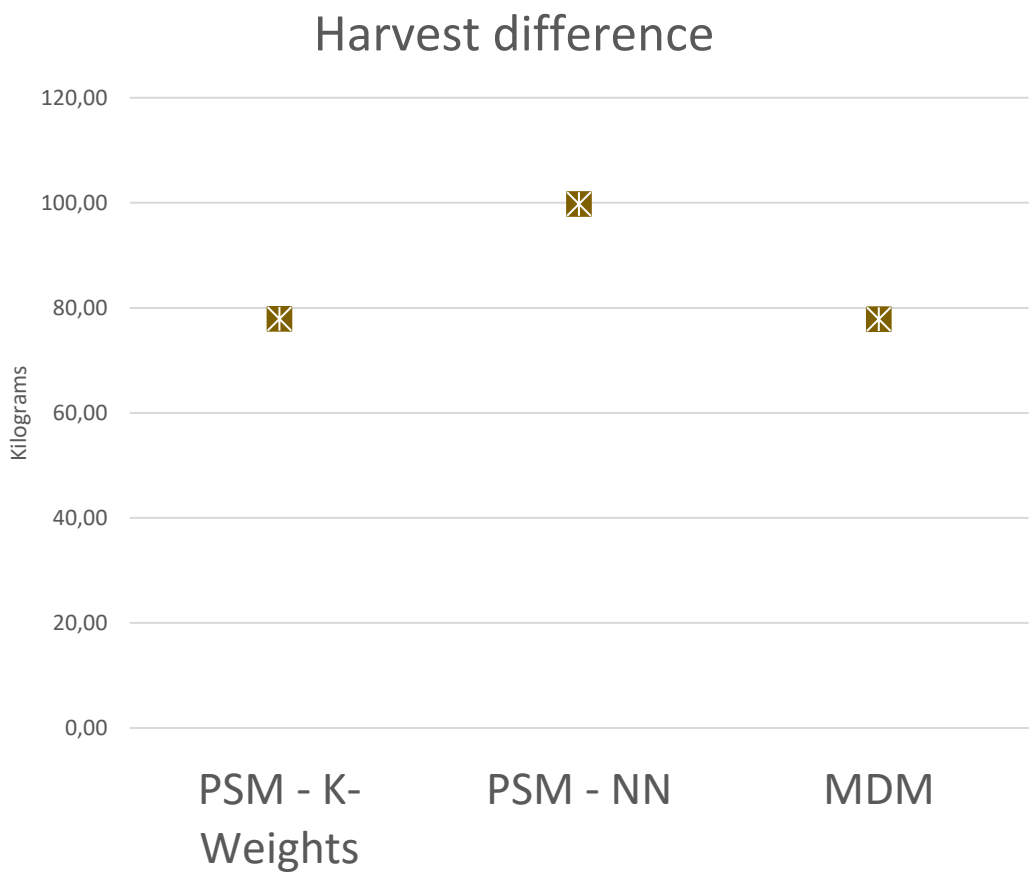
Change in *income amount* for livelihoods beneficiaries

- Using **Pseudo Panel**
- Same pattern as that directly estimated by households.
- No clear effect of food aid
- Negative change for cash aid (likely small amount of cash grants do not compensate for income loss due to shocks)
- Livelihoods beneficiaries reported on average an increase of over 60 USD more than control households. in the 3 months preceding the survey compared to the previous year,
- This adds to the average income of comparable untreated hh of around 210 USD over 3 months (USD70/ month)



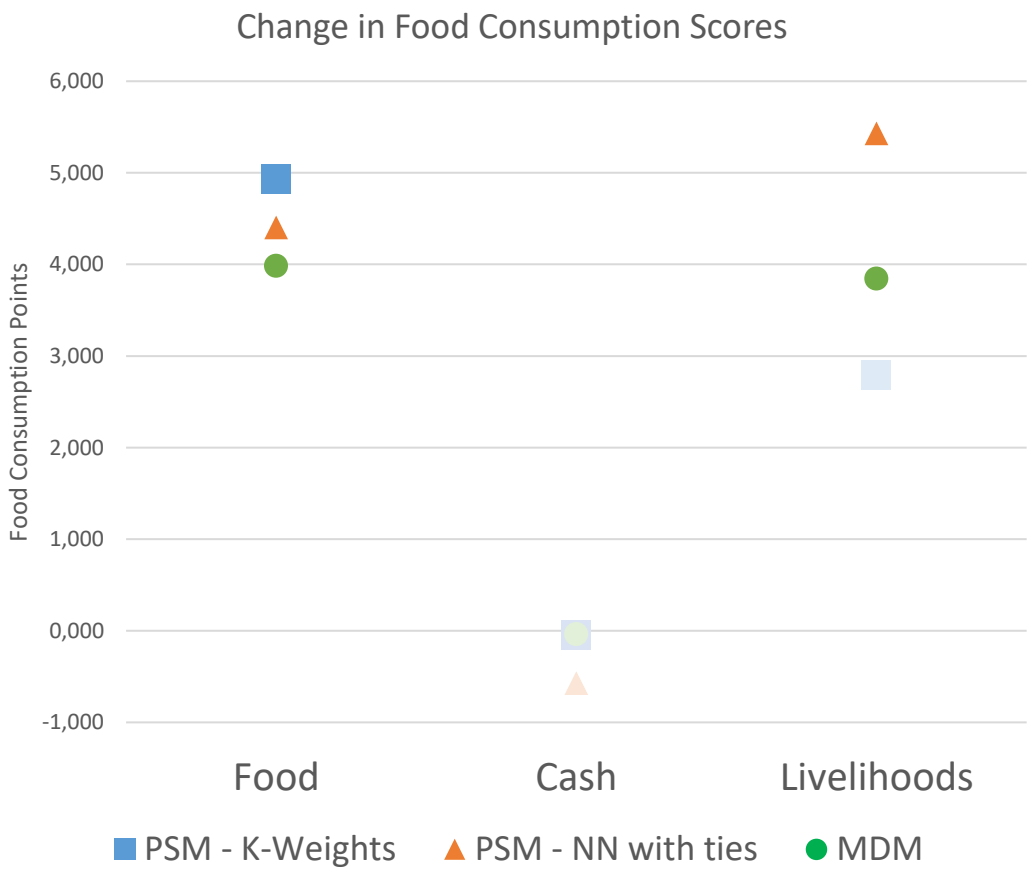
Harvest Change in the sub-population of those receiving Crop assistance

- Using present and recall harvest quantities for “now” and “last year at the same time”.
- 79 to 99 additional kgs of food harvest for recipients of crop assistance.
- More than a month of food for an average household



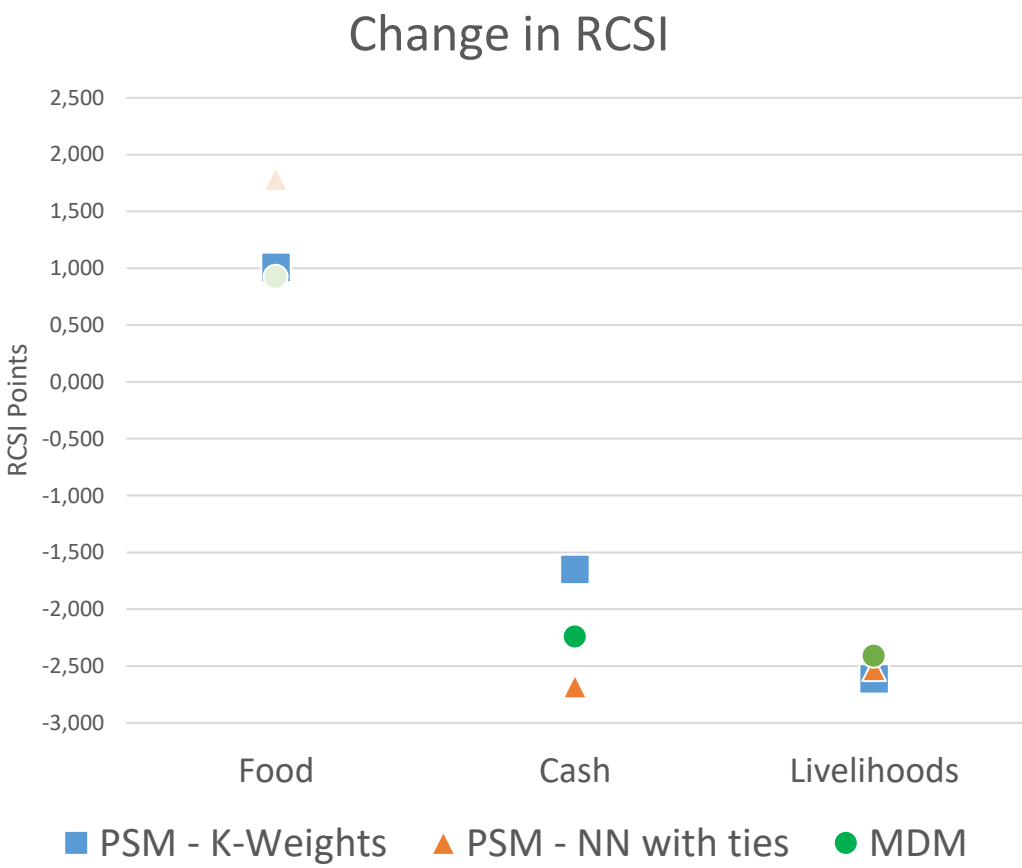
Change in Food Consumption Scores

- Using **pseudo panel**
- We find that food aid and livelihoods support have a comparable impact on food consumption scores, increasing the scrore by around 5 FCS points.
- Both approaches therefore improved the *quality* of household diets.



Change in RCSI using pseudo panel

- RCSI scores *decrease* by more for livelihood aid or cash support than for food aid
- But the relative position of livelihoods and cash vs food aid suggests that beneficiaries may trade off quality for quantity and potentially respond to other basic needs with their cash or income deriving from alternative support sources (while catering to these needs through the sale of food aid results in rationing).



Realised Changes in terms of Theory of Change for Livelihood Support TOC

Distribution of Seeds and Tools by the FAO and FSC Partners

↓

2.3M people in 2024 and 1.6M in 2025 received seeds and tools

↓

Increase in crop production by around 90kgs of crops + surplus generating an additional income of over 70USD over 3 months

↓

Improved food Security: increased FCS by 5 points AND decrease in RCSI(-2.5 points/56)

Scaling up to other countries

We can use the same approach to assess the impact of interventions in other countries.

Improvements in the next questionnaire revision:

- More granular geographic identifiers (adm3), so that we can cross the survey with GIS datasets and estimate selection criteria related to:
  - Distance from markets or public facilities
  - Climate variables
  - Land cover….
  - FSAC partner providing aid…
- Include additional household variables used for selection criteria in the survey (useful for targeting using DIEM and assessing impact).

Difficult to clearly identify the interventions assessed (low share of beneficiaries, insufficient granularity of localization of beneficiaries).

Going further with aid monitoring with FSAC data

- Better identification of packages: Combining FSAC data with DIEM datasets can yield much more granular information.
  - Unique beneficiaries reached vs covered?
  - Beneficiaries by type of intervention (OS 1 / OS 2, and total)
  - Cost of interventions by partner
- Crossing adm3 localities with FSAC partners' location would help identify the aid provider (for large providers) and narrow down the focus on more specific aid packages.
- Estimating the cost of aid modalities per beneficiary (Cost as reported by FSAC/(total beneficiaries*rounds) could be combining with impact assessments for cost-effectiveness analysis.
- The long-term effectiveness of successful programs on food security and resilience, which is important given that livelihood packages tend to be more costly. DIEM data could be useful for this analysis when panel IDs are available.
- Understand the factors that distinguish successful interventions like this one from those that do not significantly affect food security or income.

Conclusions

- DIEM surveys serve as a reliable open-data tool for impact evaluations and can be easily enhanced by incorporating external data sources.
- Both food aid and livelihoods support alleviated food insecurity in terms of nutritional contents (as measured by the food consumption scores), and cash aid reduced the resort to food-based coping strategies. They are successful strategies for immediate emergency aid.
- In the context of the DRC, livelihoods aid resulted in the greatest income gains for beneficiaries and *potentially* leading to the ability for households to gradually build back their asset base.