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IDEAL

Improving Food Security in Humanitarian Emergencies

An Evidence Gap Map Update

About this Brief

This brief provides an overview of the trends in rigorous impact evaluations of emergency food security interventions over the past two years. This update of an Evidence Gap Map (EGM), first published in 2022, highlights which contexts, interventions, and geographies have been the focus of recent evaluations. Our overview of the evidence landscape can be used to inform programming and policy, and highlights where more evidence is needed.

This EGM update is part of the Humanitarian Assistance Evidence Cycle (HAEC) associate award, funded by the United States Agency for International Development's (USAID's) Bureau for Humanitarian Assistance (BHA).

January 2025

An ongoing need for rigorous evidence in emergency settings

Two years since publishing our Evidence Gap Map (EGM) of impact evaluations and systematic reviews of food security interventions in humanitarian emergencies ([Yavuz et al. 2022a](#)), many parts of the world continue to suffer from wide-scale food insecurity due to a multitude of emergencies. Conflict, increasingly severe extreme weather events, and disease outbreaks continue to cause displacement, disrupt agricultural production and markets, and drive people toward food insecurity ([European Commission, 2024](#)). The number of people currently facing famine (IPC Phase 5) has more than doubled since 2023 and is now 1.9 million, the highest number since the Global Report on Food Crises began ([FSIN, 2024](#)). With the number of people requiring support increasing, humanitarian funding has been unable to keep pace. In 2024, \$48.65 billion will be required to support humanitarian efforts, yet, only 25% of the necessary funding has been secured, a drop of 11% compared to the same period in 2023 ([Humanitarian Action, 2024](#)).

With an increasing need for action and significant resource constraints, it is imperative to ensure that available resources are used effectively. Though there can be significant logistical and ethical challenges with conducting impact evaluations in humanitarian settings, rigorous evaluations can help unearth which interventions are most effective, and why ([Puri et al. 2017](#)). Our EGM provides an overview of the rigorous evidence available on food security interventions in emergency settings and can support policymakers, practitioners, and researchers to make more informed decisions around programs, policies, and research ([Snilstveit et al. 2017](#)).

Methods

This brief details the results of an **update to our original EGM**. To produce our update, we duplicated the search, screening, and data extraction methods as outlined in our original protocol ([Yavuz et al. 2022b](#)). We made minor changes to our protocol to ensure the continued relevance of the map. These changes, and an extended overview of our methods, are available in our **online appendix**.

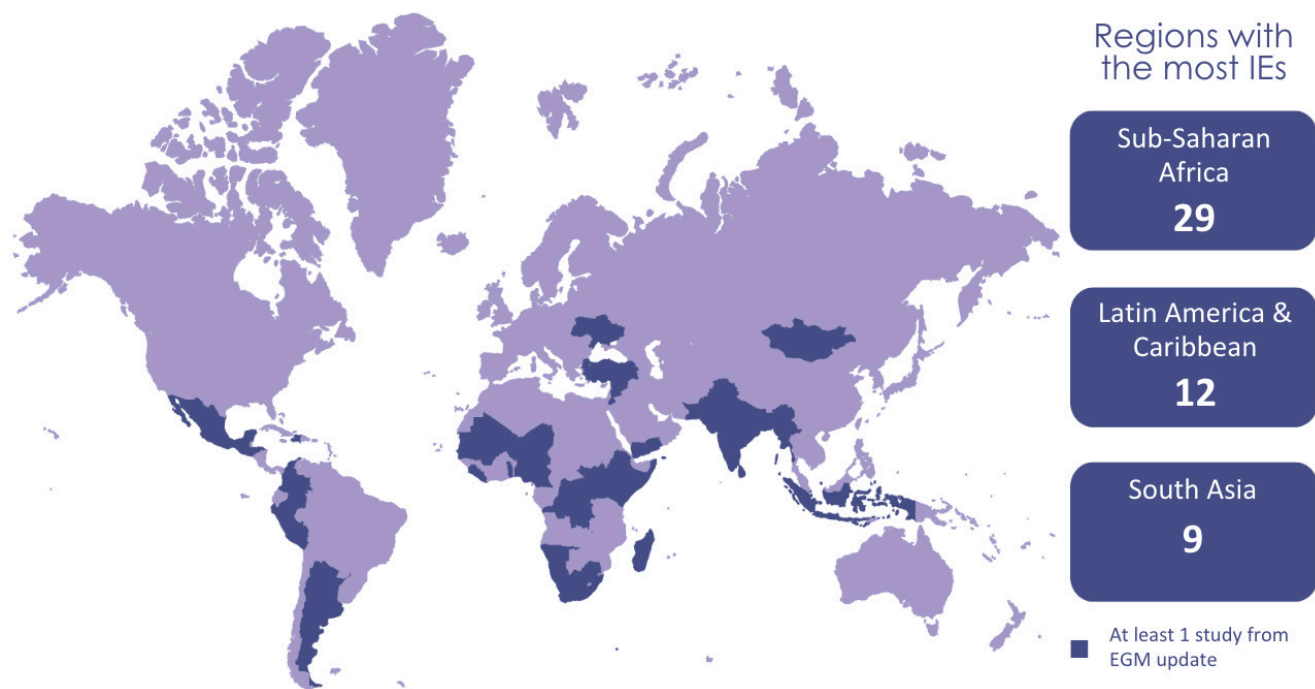
In brief, we conducted our search in 14 academic databases and 28 grey literature sources. We identified 9,580 records once duplicates were removed. We then screened all records based on our inclusion criteria (**Table 1**). After screening and excluding records based on their title and abstract, two coders independently screened the remaining 807 records based on their full text. Ultimately, we included **58 impact evaluations** (IEs) and **2 systematic reviews** (SRs) in this update. Amongst our included IEs are six evaluations funded through the HAEC activity (see pg. 7).

Table 1: Inclusion criteria

Category	Criteria
Population	Studies taking place in an emergency setting
Interventions	Early warning systems; pre-arranged finance; agriculture/ livestock; food, cash or in-kind transfers; nutrition; market-based recovery; water security
Comparator	Any comparison condition
Outcomes	Food availability, accessibility or utilization, health, and the sustainability of food security.
Study Designs	Experimental or quasi-experimental impact evaluations or systematic reviews

 [Our online EGM is available here](#)

Evidence from Sub-Saharan Africa continues to dominate the landscape



In line with our original EGM, the evidence landscape continues to be dominated by **Sub-Saharan Africa** with **50%** of IEs (29 studies) from our update stemming from the region. Studies came from a wide variety of countries. In our original EGM, IEs stemmed from 42 different countries, while our update (which includes 70 fewer studies) has identified studies across **39 different countries**. Multiple studies took place in the same countries, with four IEs each in Bangladesh, Colombia, and Nigeria and three each in Ethiopia, Mali, and South Sudan. Two studies took place in six other countries. Full geographic data is available in our appendix.

Evidence from vulnerable countries remains sparse

In our original EGM, we identified 24 countries highly vulnerable to emergencies with either no IE evidence or only one or two studies. Our update has identified new evidence in nine of these countries (Cameroon, Guatemala, Haiti, Honduras, Madagascar, Mali, Myanmar, Syria, Ukraine).

Looking ahead to countries that face the highest risk of vulnerability in 2025, the INFORM Risk Index ([INFORM, 2024](#)) highlights 41 countries facing a Very High or High risk. Of these, our EGM has identified evidence for 30 countries. The 10 countries which we have not identified any rigorous evidence for should be prioritized for future research (Table 2).

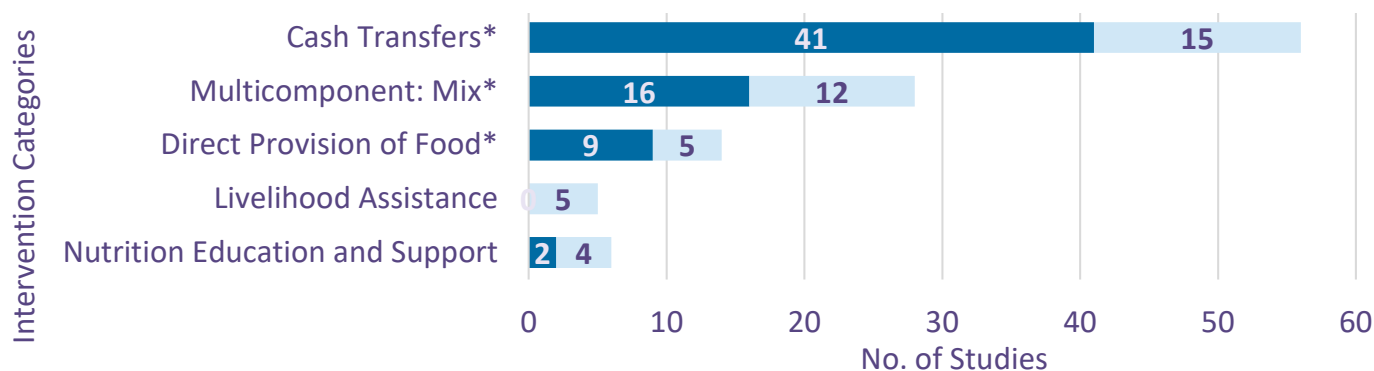
Table 2: Countries at risk of an emergency with no identified IEs

Country*	Risk Index
Burkina Faso; Central African Republic; Chad; Sudan	Very High
Azerbaijan; Benin; Burundi; Iran; Papua New Guinea; Venezuela	High

* Aside from Benin and Iran, all other countries were one of the 24 countries identified as highly vulnerable in the original EGM.

Cash transfers and multicomponent activities remain the most commonly evaluated interventions

Figure 1: Top five intervention categories from update



*At least one HAEC funded IE evaluated this intervention category

■ Original ■ Update

Recent evidence is filling absolute intervention gaps

Our original EGM identified an evidence base concentrated around a few select interventions. Though these interventions remain popular (*cash transfers* remain the most popular intervention evaluated), we find IE evidence for **six intervention categories** that were empty within our original map. Of these, *livelihood assistance* was the joint third most populous intervention category in our update (Figure 1). Our appendix has full intervention data for every study in our EGM.

However, evidence is still lacking

Despite some absolute evidence gaps being filled, there remain **12 intervention categories** for which we identified no IEs, half of which are within the *agriculture and livestock interventions* group. Yet, many of these interventions were part of multicomponent studies which included many different interventions. For example, *savings interventions* and *contingent credit* (Galarza, 2021); *veterinary support* and *provision and access to emergency livestock feed* (Hirvonen et al. 2023); *early warning systems, provision and access to fertilizer* and *capacity building for animal husbandry* (Sagara & Hunder, 2017); *market infrastructure rehabilitation* (Hossain et al. 2023).

Only *destocking, pest and disease control, market access support* and *direct assistance to market actors* are categories with **no evaluations** which are not part of multicomponent studies.

Multicomponent and multisectoral interventions remain popular

Multicomponent interventions combine activities from multiple categories within the EGM. Our update identified patterns that allowed us to create four new multicomponent categories, each combining specific interventions from a single group. These are *cash transfers + for-work interventions*; *provision and access to seeds + capacity building for agriculture*; *protection and promotion of nutritional status + nutrition education and support*; *livelihood assistance + education and training on livelihoods*.

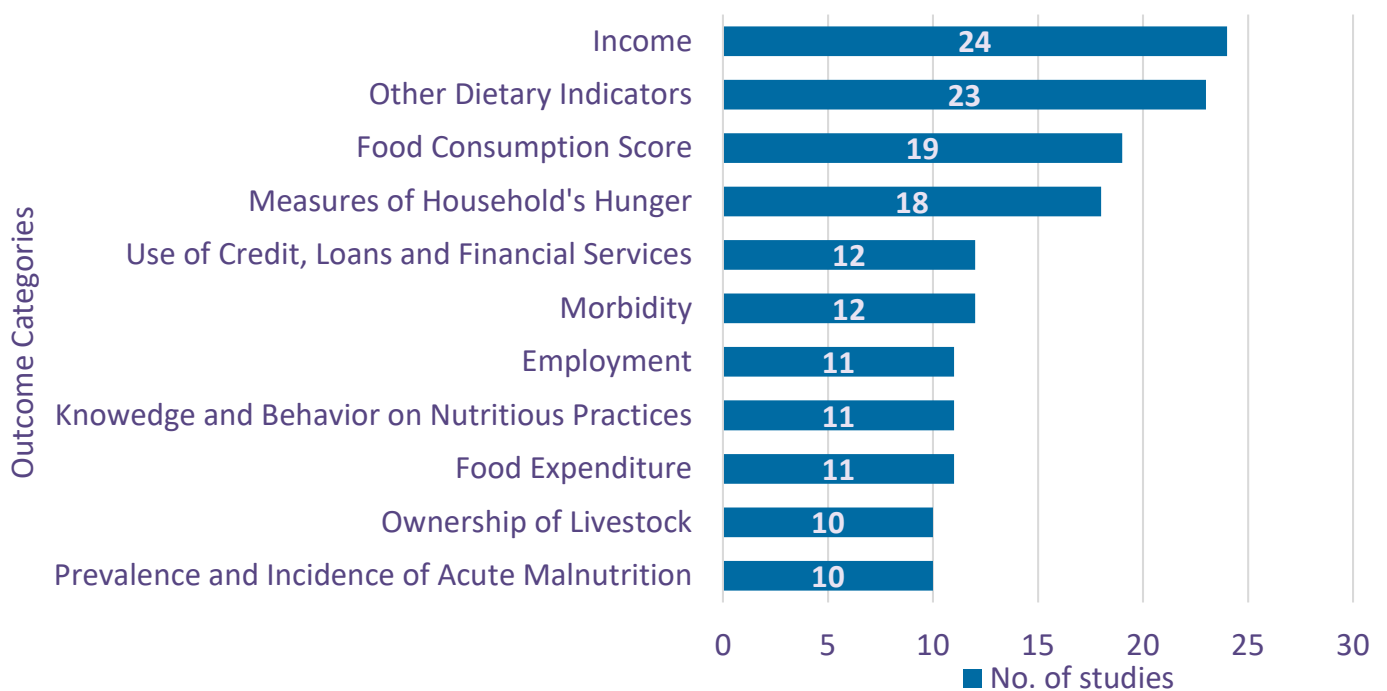
We also created new multicomponent categories for commonly bundled interventions within and across groups.

A wide variety of outcomes are evaluated as part of food security interventions

Figure 2 provides the most commonly evaluated outcomes within the studies from our update. These align with the most commonly evaluated outcomes within the original EGM, the only difference being that *knowledge and behaviour of nutritious practices* is included, and that *ownership of assets and land* is excluded.

In our original map, four outcomes were not evaluated within any included studies. Our update has identified an evaluation of one of these outcomes, *food supply* (Navarro, 2024), while no evidence remains on *food trade, expansion of input and output markets, and knowledge of and behaviour on food safety*.

Figure 2: Top 10 Outcomes from Update



Many of our EGM outcomes contain studies evaluating similar measures and may be suitable for future synthesis work



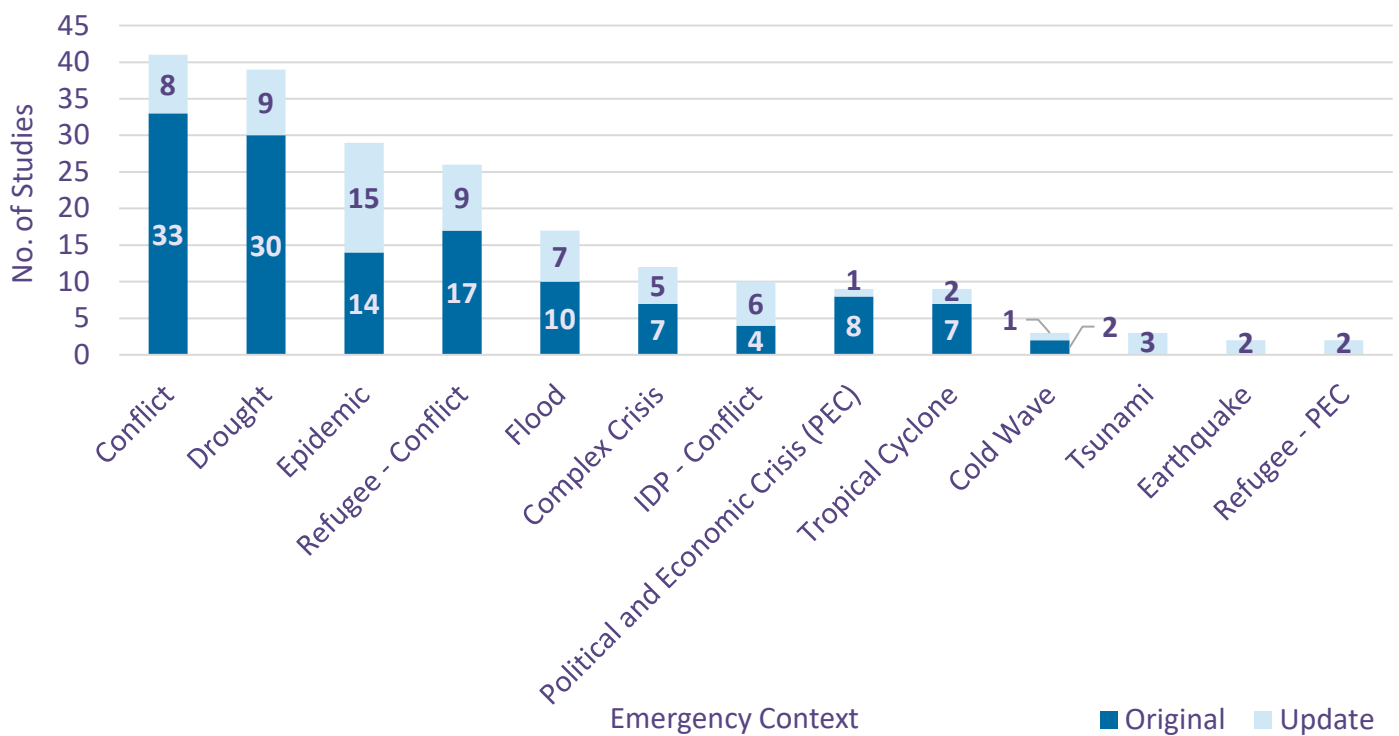
*The number of studies for each of the four outcomes here refers to the EGM as a whole, that is, both the original EGM and this update

Most studies continue to take place in conflict settings with key gaps being filled

Given the scale and precedence of many conflicts over the past two years, it is unsurprising that conflict settings remain the main focus of studies. However, unlike our original EGM, we now see a greater number of studies taking place in refugee and IDP camps, where displacement has been a result of conflict, as opposed to conflict areas themselves (Figure 3).

Our update also identified studies across **three emergencies** where we did not previously have evidence. These are: earthquakes (Haiti: [Gignoux et al. 2023](#); Indonesia: [Dewi et al. 2023](#)), political and economic refugees (Venezuela: [Karlan et al. 2022](#); [Ibáñez et al. 2022](#)), and tsunamis (India: [Hossain et al. 2023](#); Indonesia: [Dewi et al. 2023](#); Sri Lanka: [Luong, 2022](#)).

Figure 3: Evidence Across Emergency Contexts



AB Testing

One of the biggest challenges in conducting IEs in humanitarian settings is the ethical concern of having a pure control group ([HAEC, 2023](#)). One way to address this is through A/B testing where the comparison is not to a pure control group but is instead between different interventions. While 16% of studies in our original EGM used A/B testing, this is becoming increasingly popular with 34% of studies from our update using this method (Table 3).

Table 3: Examples of A/B testing

Study Name	Arm A	Arm B
Pople, 2023	Forecast based finance	Cash transfers
Grijalva-Eternod 2023	Cash transfers	Nutrition education and support
Jenson, 2017	Insurance and other risk transfers	Cash transfers

Trends in the utilization of different evaluation designs remain the same

There is a near-equal split in the use of experimental and quasi-experimental designs across both the original EGM and our update. The use of specific designs follows a near-identical trend, with each design ranking in the same order of popularity across the original EGM and our update (Figures 4 & 5).

Figure 4: Studies by Design (Original)

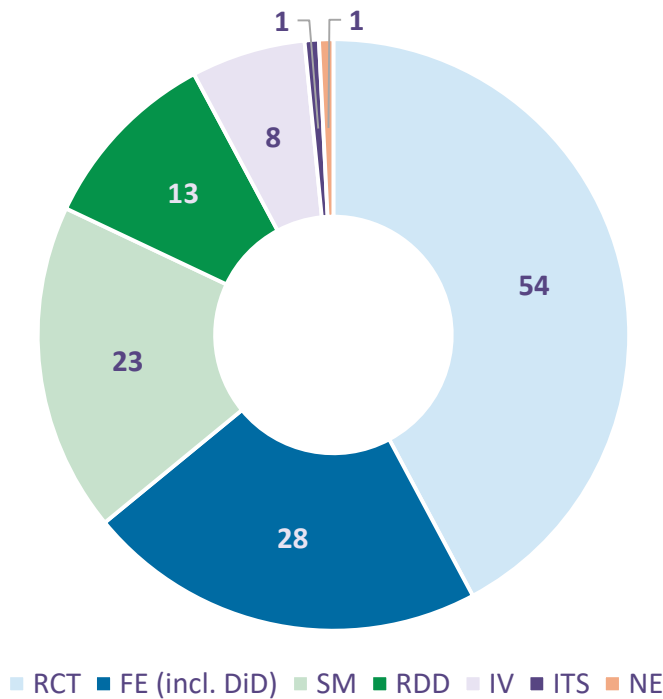
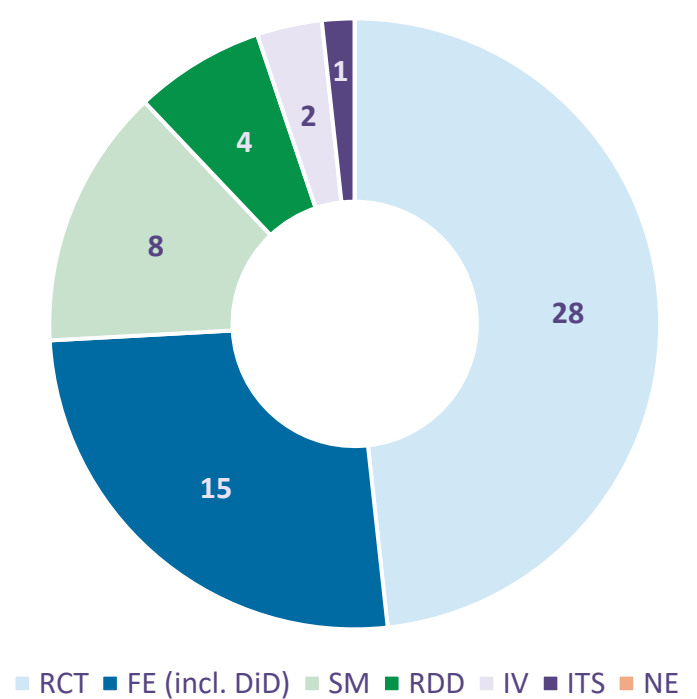



Figure 5: Studies by Design (Update)



Our EGM contains many studies utilizing innovative methods to overcome barriers to data collection and analysis during emergencies. We encourage interested readers to further explore the studies within our online map and provide three examples below.

- 1** [Caria et al. \(2024\)](#) utilize a Tempered Thompson Algorithm in order to allocate treatment and control conditions. The algorithm has the benefit of both maximizing the intervention's impacts as well as the precision of treatment effect estimations.
- 2** [Deininger et al. \(2024\)](#) utilize satellite data to evaluate the impact of an agricultural support intervention in Ukraine, evaluating the impact on crop cover outcomes.
- 3** [Barriga-Cabanillas et al. \(2022\)](#) utilize Call Details Record (CDR) data, which is passively collected through mobile networks to assess the effect of a cash transfer programme. They also compare the results using a conventional RDD design with those of a machine learning algorithm.

 Cost-evidence trends remained the same across both the original EGM and the update. Most studies present no cost evidence. When presented it is most often payment amounts to beneficiaries. Instances of cost-effectiveness/benefit analysis is rare.



RCT	Randomised controlled trial
FE (incl. DiD)	Fixed-effects (including difference-in-difference)
SM	Statistical matching
RDD	Regression discontinuity design
IV	Instrumental variables
ITS	Interrupted time series
NE	Natural experiment

HAEC-funded evaluations help to fill priority research gaps

Alongside funding this EGM, the HAEC Award has [funded impact evaluations](#) of six interventions in five different countries. **Of these, two studies (Guatemala and Honduras) fill primary evidence gaps we had identified in our original EGM.** Both were countries highly vulnerable to an emergency for which we had no IE evidence.



Evaluating the Impact and Cost Effectiveness of Bundled Activities for Economic Recovery in Nigeria

Emergency: IDPs - Conflicts

Design: Cluster-RCT

Intervention: Multicomponent: Mix

EGM outcomes: Food Consumption Score; Measures of Household Hunger; Food Behavior Coping Measures; Use of Credit, Loans and Financial Services; Income; Food Expenditure; Ownership of Livestock; Ownership of Assets and Land

Secondary outcomes: Psychosocial; Life skills; Conflict

A/B Testing: Yes



Enhancing Emergency Assistance and Protection for Recently Displaced Persons in Colombia

Emergency: IDPs - Conflict

Design: Statistical Matching

Intervention: Multicomponent: Food, Cash, and other In-Kind Transfers

EGM outcomes: Food Consumption Score; Food Behavior Coping Measures; Income; Food Expenditure; Employment

Secondary outcomes: Wellbeing; Financial sustainability; Shelter conditions

A/B Testing: No



Assessing the Impact of Cash Transfers and Water Filters on Food and Water Security in Guatemala

Emergency: Epidemic

Design: Cluster-RCT

Interventions: Multicomponent: Mix

EGM outcomes: Measures of Household Hunger; Food Consumption Score; Food Behavior Coping Measures; Access to Clean and Safe Water Resources; Morbidity

Secondary outcomes: Technology use

A/B Testing: No



Assessing the Impact of Sorghum Production on Household Food Security in Climate-Prone Regions in Honduras

Emergency: Tropical Cyclone; Epidemic

Design: Statistical Matching; Fixed Effects (incl. DiD)

Intervention: Multicomponent: Provision and Access to Seeds & Capacity Building for Agriculture

EGM outcomes: Food Consumption Score; Measures of Household Hunger; Food Behavior Coping Measures; Volume of Production; Food supply; Other dietary indicators

Secondary outcomes: No additional outcomes

A/B Testing: Yes



Assessing the Effects of Delayed Food Assistance in Niger

Emergency: IDPs - Conflict

Design: Fixed effects (incl. DiD); statistical matching

Interventions: Direct provision of food

EGM outcomes: Other dietary indicators; measures of household Hunger; Agriculture and Livestock Coping Measures; Food Behavior Coping Measures

Secondary outcomes: No additional outcomes

A/B Testing: Yes



Understanding the Long-Term Impact of Unconditional Multi-Purpose Cash Assistance in Colombia*

Emergency: Refugees - Political and Economic Crisis

Design: Regression Discontinuity Design (RDD)

Interventions: Cash Transfers

EGM outcomes: Income; Employment; Food Behavior Coping Strategies

Secondary outcomes: Psychosocial; Migration; Regularization; Education

A/B Testing: No

*This study does not appear in our online map as it was included in our original EGM (Celhay & Martinez, 2023).

No new high-confidence systematic reviews while large areas ripe for future synthesis remain

Our update identified **two** new systematic reviews (SRs) eligible for our EGM. [Al Daccache et al. \(2024\)](#) identified and summarized the impacts of agricultural interventions in emergencies while [Malhotra et al. \(2023\)](#) focused on the impact of economic development interventions (for our purposes these fall under the *market-based recovery* group) in emergencies.

After conducting a critical appraisal of both reviews, each scored low confidence. Al Daccache et al. (2024) were not explicit in whether data extraction was conducted independently by multiple coders while Malhotra et al. (2023) failed to explicitly state whether citation tracking was conducted to identify additional studies and whether their risk of bias assessments were conducted independently by multiple coders. As both reviews were appraised as low confidence, we urge readers to use caution when interpreting the review's results.

Synthesis gaps

Across our original EGM and this update, we have identified six SRs eligible for inclusion. Of these, just three were appraised as either high or medium confidence, none of which have been published in the previous two years. Given the large volume of new impact evaluations identified in this update, there are many synthesis gaps that could be meaningfully filled.

Table 4 outlines all potential areas for synthesis based on our EGM. We highlight intervention-outcome pairings with 10 or more impact evaluations as opportunities for future synthesis which can generate relevant policy recommendations.

Table 4: Areas for future synthesis

Intervention	Outcome	Approximate No. of studies
Anticipatory Action	Agricultural Outcomes	13
	Food Access	10
	Food Utilization	11
Cash Transfers	Agricultural Outcomes	20
	Food Insecurity	28
	Economic Outcomes	36
	Food Intake	40
Food, Cash and Other InKind Transfers	Agricultural Outcomes	28
	Food Insecurity	37
	Economic Outcomes	43
	Nutrition Outcomes	12
	Food Intake	57
Market-Based Recovery Interventions	Economic Outcomes	19
Nutrition Interventions	Nutrition outcomes	19

Research implications

Our EGM update provides policymakers, practitioners and researchers with the most up-to-date rigorous evidence available on food security interventions in humanitarian emergencies.

This evidence space is rapidly growing. Over 100 studies have been published since 2020 and many of the key evidence gaps we identified in our original EGM are being filled. Based on the findings of our update we put forward the following considerations for commissioning and designing impact evaluations:

- Prioritize primary research gaps in intervention categories where little or no current evidence exists. For instance, destocking, pest and disease control, market access support, and direct assistance to market actors are intervention areas with absolute gaps.
- Prioritize geographical gaps, in particular, those countries which are highly vulnerable to a future emergency, but for which no evidence exists. These are: Azerbaijan; Benin; Burkina Faso; Burundi; Central African Republic; Chad; Iran; Papua New Guinea; Sudan; Venezuela.
- Continue to expand the evidence base on anticipatory action and for emergencies where there is little evidence (e.g., earthquakes, tsunamis, cold waves).
- Incorporate cost-effectiveness/benefit analyses, which may be particularly useful in resource-constrained settings.

Beyond primary evidence, we put forward the following considerations when planning and commissioning future synthesis work:

- Prioritize the synthesis of rigorous evidence. Existing systematic reviews are either outdated or of low confidence. Our map highlights many opportunities across different intervention types (including cash transfers and anticipatory action) where synthesis is possible.
- Prioritize the synthesis of outcome categories where similar measures are more likely to be used. By focusing on outcomes with the highest likelihood of meta-analysis, the chances of being able to draw policy recommendations increases.
- Commission living synthesis projects so that reviews and this map are updated with new evidence, ensuring that decision-makers have access to the most up-to-date evidence.

EGMs can be used to inform research, funding and policy decisions. If you have further questions, or have used our map, please let us know by contacting Cem Yavuz (cyavuz@3ieimpact.org)

For HAEC resources and e-courses on IEs see: <https://fsnnetwork.org/HAEC>






What is an EGM?

3ie's Evidence Gap Maps are **thematic collections of information about impact evaluations and systematic reviews** that measure the effects of international development policies and programs. They present a visual overview of existing and ongoing studies or reviews in a sector or sub-sector regarding the types of programs evaluated and the outcomes measured. The evidence is mapped onto a framework graphically highlighting the gaps where few or no impact evaluations or systematic reviews exist and where there is a concentration of impact evaluations but no high-confidence systematic review.



EGMs are useful tools for development decision-makers looking to see what evidence exists to inform policies and programs. For funders and researchers, these maps show where more investments are needed or where they can avoid duplicating existing research. **EGMs do not provide recommendations for policy and programming or guidelines for practice.** They provide links to resources that can inform policy or program development.

For a conceptual introduction to 3ie EGMs, please view our [3ie Working Paper](#) for a more detailed discussion, please view [Snilstveit et al. \(2016\)](#).

How to use an EGM

- 
Inform programing investment Quickly identify which interventions are effective (or not) by looking at the EGM report's high and medium-confidence SR summary section.
- 
Inform research/ learning investment Identify key topical areas where more research is needed. This can be specific interventions, outcomes, regions, settings, etc.
- 
Inform activity and project design This EGM provides illustrative examples of how impact evaluations can be implemented in humanitarian settings, overcoming resource and data limitations.
- 
Identify relevant indicators to measure Explore the specific outcomes used within the EGM's studies to see which outcomes and indicators are used to measure various steps along different theories of change.
- 
Identify relevant evaluation designs Filter by evaluation design in the online EGM to consult 'methods' sections of relevant papers to gain insights into how evaluations have been conducted by researchers.

Tasks EGMs can support

- 
Reviewing applications for awards EGMs can help identify whether applications are addressing research needs or are focused in areas where interventions are seemingly more effective.
- 
Writing proposals EGMs identify gaps which could be filled with future research. Proposals can lean on EGMs to highlight the why work is needed.

How to read an EGM?



Notes: This is an illustrative example of how to interpret an EGM, this does not reflect the evidence base for this EGM.

Improving Food Security in Humanitarian Emergencies: An Evidence Gap Map Update

The Humanitarian Assistance Evidence Cycle (HAEC) associate award works to increase the efficiency and effectiveness of emergency food security activities funded by the USAID Bureau for Humanitarian Assistance (BHA) by increasing the use of cost-effective and timely impact evaluations in humanitarian contexts. Impact evaluations provide robust evidence to inform technical approaches to improve the impact of humanitarian interventions.

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