IRC Feedback on Model Changes
Prepared for GiveWell

Model updates

The major updates are listed below. For simplicity, we focus on changes that updated our cost-effectiveness estimate by 0.5x or more. The most recent version of our main model is here and ceiling analysis is here, with updates highlighted in red.

The updates listed below are ordered by magnitude of impact on cost-effectiveness, with the most significant changes listed at the top.

- **Updating all-cause mortality rates to use the most recent IHME data available**
    - We previously used 2019 IHME data and adjusted for subsequent changes in food insecurity.
    - IHME has released preliminary 2021 mortality data, and we are now using these estimates in our CEA (without adjusting for subsequent changes, since the data is more recent). This suggested a significant decrease in all-cause mortality in Burkina Faso and Chad, and an increase in all-cause mortality in Somalia.

Great that there is more recent data available, as we think mortality rates might vary substantially year-over-year in many of these contexts, especially given fast-changing political situations and food insecurity (see below for more).

- **Removing the "External validity adjustment for current food insecurity situation"**
    - Previously, we included this adjustment to adjust mortality and prevalence rates, which were older and didn't reflect changes to food insecurity.
    - Since we now expect that both mortality and prevalence estimates reflect current conditions, we don't believe there is a need to adjust further based on food insecurity scores.

While we believe the 2021 data may be more reflective of the current context than the previously unadjusted 2019 data, we believe these data may underestimate current mortality rates. Broadly, we think that the interacting factors of food insecurity and political insecurity have increased across all GiveWell-funded contexts since 2021, collectively causing increased hunger, increased demand for mortality-reducing health services, and increasingly strained health services. Below, we have included some evidence we believe to be relevant for how each country's context may have changed since 2021. Unfortunately, none of this evidence directly assesses mortality rates. We asked our country program teams whether there might be more recent mortality data that we could include, and there does not appear to be any reliable evidence. As such, we provide the evidence below to provide additional motivation for our broad assessments.

Burkina Faso: We believe the IHME-estimated mortality rate of 1.3% is an underestimate of the current context. First, the food security situation has deteriorated with many regions' Integrated Food Security Phase Classification (IPC) increasing. In Kadiogo, where the GiveWell program is operating, the IPC level has shifted from level 1 ("minimal") in 2021 to level 2 ("stressed") for Oct 2023 - Jan 2024 projections (source: ICP-Cadre harmonisé 2023). It appears that, at the national level, Burkina Faso's IPC level may have increased from 2021 to the latest projections. In addition to considering mortality rates from a food insecurity lens, we believe the access to and quality of health services may have also generally deteriorated since 2021, due primarily to two coups in 2022 that have led to the prioritization of military spending at the expense of health spending. For example, the number of health facilities closed in 2023 was 365, compared to 149 in 2021, meaning that 15% of the population is without access to any kind of health care (source). We haven't investigated how closures vary by region, and what that might imply for mortality rates in the GiveWell project area. The worsening security situation has also caused an increase in internally displaced people, from around 1.6M people in 2021 (source) to 2 million people in March 2023 (source).

Chad: Within the GiveWell project area, increased food insecurity has also been observed since 2021, moving from IPC1 to IPC2 for Melfi and Baro HD and from IPC2 to IPC3 for Mangalme. (source). In addition, Chad has also experienced conflict since 2022 that has contributed to increased food insecurity. This conflict has included the ongoing destruction of crops (e.g.), which we believe will cause additional food insecurity in the coming years beyond FEWSNET's current projections.

DRC: In the Kalemie region, food insecurity has increased significantly since 2021, moving from IPC level 2 to level 3 (source). This has been exacerbated by increasing inter-ethnic conflict in the area, resulting in people unable to harvest their crops and increasing forced displacement (estimated to be 5.9M as of July 2022, including 700,000 new IDPs in the first half of 2022 (source). We anticipate this situation to continue, with presidential elections on the horizon and continued political instability (e.g.).

Niger: The food insecurity situation has also worsened in Niger since 2021, with this past lean season seeing the second highest number of food insecurity since the launch of the Cadre Harmonisé nutrition security tool in 2012 (^^^source). This is also coupled with the recent security developments following the coup, with the suspension of trade already impacting the availability and price of staple foods (^^^source). Even in the week following the announcement of sanctions, the national price of rice increased by 17% (source). In addition, the security situation has also affected the ability of WFP and other humanitarian organizations to treat malnutrition, and the government has had less financial capacity to implement its food assistance program (^^^source). With global political opposition to the coup, we also expect the freezing of some long-term grants in-country (source).

Somalia: Similarly, the malnutrition situation in Somalia has also drastically deteriorated, with IPC levels moving from 2-4 from 2021 to 2023 in the GiveWell project areas (source).

- **Correction to a formula error**
    - In the previous CEA, the "Internal and external validity adjustment" row didn't include parentheses around the last piece of the formula where we import our ceiling analysis adjustment.
    - We've corrected this.

Thank you for letting us know. We appreciate the transparency.

- **Updating SAM coverage estimates**
    - The previous CEA used baseline coverage data to calculate untreated prevalence estimates. The previous ceiling analysis assumed a 30 percentage point increase in SAM coverage across all countries for Y1.
    - We've updated these estimates for Burkina Faso, Niger, and Chad (in the CEA here and in the ceiling analysis here):

- For Burkina Faso, we've updated SAM coverage inputs to use the coverage level reported in IRC's Y1 end-of-year survey, assuming the same percentage point increase in all districts.
- For Niger, we understand the Y1 end-of-year survey did not provide a reliable picture of coverage due to widespread stockouts. Given that, we roughly assume that SAM coverage increases by half the percentage point coverage increase reported in Burkina Faso.
- For Chad, we assume a smaller 15 percentage point increase, since baseline coverage levels were already fairly high.

We appreciate that we are generally attempting to make informed guesses with limited and imperfect data. However, we caution against using past coverage changes to predict future coverage changes in a given context, and are especially uncertain about how/whether we might use coverage changes in one country to estimate changes in another country. See below for some additional commentary, which we would be happy to discuss in more detail.

Our combined prevalence and coverage surveys are designed to estimate the change in prevalence and coverage over a certain period and whether that change is statistically significant. In Boulmiougou Health District, for example, we credit the increase in coverage measured to rapid scale-up of technical support and the provision of anthropometric malnutrition detection supplies to health facilities that previously lacked them, as well as the initiation of community awareness and screening. Each administrative area where we work, and facilities within those administrative areas, faces its own sets of enabling factors and barriers to coverage.

Other factors that could lead to changes in coverage (positive, negative, or lack thereof) could include: an increase or decrease in non-IRC treatment programs (including the government's program), an increase or decrease in non-IRC screening and referral programs, changes to the environment such as conflict, social tensions or natural disasters, changes in the underlying prevalence of malnutrition in the district, or socio-economic or infrastructural changes, just to name a few. Increases in coverage depend on the activities implemented, the involvement of the MoH at district level, access, and the decision making of individuals.

Given this, we brainstormed with country program staff how we might use existing data to estimate potential coverage changes. As you know, our coverage surveys are designed to produce snapshots of coverage and prevalence at the smallest yet most operationally feasible unit possible. Though we do not have a clearly optimal methodology to propose (and recognize the challenges of indirectly estimating coverage using practitioner best guesses and/or modeled estimates), our suggestion is to (a) use the upper end of the 95% Confidence Interval as the highest coverage could have possibly been in each context at baseline, and then (b) assume a modest (~10%) increase in coverage. See below for context-specific estimates, which our country program staff reviewed and anecdotally believe to be plausible and reasonable estimates of coverage changes.

		Coverage results						GW		IRC	
		Baseline	Lower 95% Cl	Upper 95% C	End of Y1	Lower 95% Cl	Upper 95% C	inrease in Year 1, best guess	SAM coverage after Year 1, best guess	SAM coverage after Year 1, best guess	
BF	Bogodogo	13.00%	0.00%	28.4%	N/A	N/A	N/A	36%	49%	38%	Less than GW estimation
	Boulmiougou	5.30%	0.00%	13.4%	41.6%	14.2%	69.1%	36%	42%	41%	OK same guess
	Sig-Noghin	13.00%	1.60%	24.4%	N/A	N/A	N/A	36%	49%	33%	Less than GW estimation
Chad	Baro	45.10%	25.00%	65.3%	N/A	N/A	N/A	15%	60%	65%	Higher than GW estimation
	Mangalme	34.50%	19.2%	49.8%	N/A	N/A	N/A	15%	50%	50%	OK similar guess
	Melfi	13.20%	1.5%	24.8%	N/A	N/A	N/A	15%	28%	33%	More than GW estimation
DRC	Kalemie	6.40%	0.00%	13.8%	N/A	N/A	N/A	30%	36%	23%	Less than GW estimation
	Nyemba	9.00%	4.20%	13.80%	N/A	N/A	N/A	30%	39%	24%	Less than GW estimation
Niger	Balleyara	13.50%	2.9%	24.0%	N/A	N/A	N/A	18%	32%	34%	OK same guess
	Filingue	2.20%	0.00%	6.9%	5.50%	0.00%	14.2%	18%	20%	20%	OK same guess
	Ouallam	15.40%	4.9%	25.9%	N/A	N/A	N/A	18%	34%	35%	OK same guess
Somalia	Galgadud	15.1%	9.9%	20.4%	N/A	N/A	N/A			34%	
	Mudug	0.40%	0.00%	0.9%	22.60%	13.4%	31.7%			20%	
	Nugal	25.10%	15.10%	35.10%	N/A					40%	

- **Updating SAM and GAM prevalence estimates**
    - The previous CEA and ceiling analysis used prevalence rates from baseline surveys.
    - We now use data from the Y1 end-of-year surveys IRC provided to us for Burkina Faso and Niger (in the CEA here and in the ceiling analysis here). Since the end-of-year surveys were only conducted in one district, we make a rough assumption that the percentage change in prevalence is the same across all districts.

Similar to above, we appreciate GiveWell searching for ways to ensure its estimates attempt to reflect the most up-to-date data available. However, we do have some concerns with (a) using these data to estimate prevalence, (b) replacing baseline prevalence rates with those from Y1 surveys in contexts where we have both data, and (c) assuming similar prevalence changes in other contexts for which we do not have Y1 end-of-year survey data. Please see below for more.

On (a), we think both our baseline survey and Y1 end-of-year survey underestimate actual prevalence. This is because these surveys define malnutrition via MUAC & edema only, whereas WHO 2023 guidelines recommend defining SAM as W/H or MUAC < 115 mm and/or edema - and all GiveWell project contexts admit children on the three criterion. Though concordance of MUAC & W/H differs by context, we underestimate prevalence by not adjusting our estimates to account for the children missed by the exclusion of W/H during the surveys. GiveWell admissions data from the end of 2022 suggests that using a MUAC and edema only approach to calculate prevalence only captures 40.9% of children who would be considered acutely malnourished by the WHO 2023 guidelines and our programs. While the effect connection between anthropometric criteria and mortality is still debated, research does suggest that MUAC alone misses a significant proportion of child-deaths (source).

On (b), we think the seasonal timing of our Y1 end-of-year surveys may also underestimate average prevalence. Per donor requirements, our coverage surveys are not conducted during peak malnutrition, but at other times that we believe to be an underestimate of average prevalence.

On (c), we believe assuming malnutrition prevalence decreases in one contexts based on follow-up surveys in another context is not appropriate, for similar reasons to why we can't assume changes in coverage in one context says anything meaningful about another context. Changes in the underlying context driving acute malnutrition are partially outside of our control, and could include factors such as food insecurity, conflict, climate change, and changes in other health services. We should be very cautious to imply that our services will decrease malnutrition prevalence over time, as we don't provide post discharge programs and this will depend more on the enabling environment (or lack thereof) that a child returns home to, underlying conditions, etc.

- **Updating counterfactual coverage estimate for Burkina Faso**
  - Previously, we modeled the "Percentage of SAM cases treated by IRC/ALIMA that would be treated without IRC/ALIMA" using guesses from IRC staff.
  - Since we now have reliable data for baseline coverage and Y1 end-of-year coverage in Burkina Faso, we re-calculated this percentage, assuming baseline coverage is a proxy for counterfactual coverage.

The updated counterfactual figure for Burkina Faso made us consider whether we might have misestimated the percentage of cases that IRC treats that would be treated in the absence of the GiveWell project. As a result of this, we returned to country programs, shared with them this updated information, and gathered their input to re-estimate counterfactual treatment for the current contexts. After this process, we have the following estimates. We continue to have high uncertainty about the accuracy of these estimates, but believe they may be better guesses than our previous estimates.

Chad: we would estimate a counterfactual of 40%, primarily due to the insufficiency of UNICEF RUTF stock required to cover the needs in the absence of our treatment activities.

DRC: We estimate that no treatment would occur without the GiveWell project, as local health ministries do not have or receive any RUTF. UNICEF only receives funding from USAID to purchase treatment supplies for the USAID project, which does not overlap with GiveWell-funded IRC activities.

Niger: we estimate 35% due to observed increases in UNICEF RUTF stock-outs, as well as the absence of community activities that are normally supported by partner organizations.