

# Nutrition Modeling Consortium

**April 27 –28, 2020**  
**Virtual Meeting Report**

New York Academy of Sciences



## Table of Contents

Executive Summary.....	4
<i>Gilles Bergeron</i> .....	<b>Error! Bookmark not defined.</b>
<b>April 27 – Day One Proceedings</b> .....	<b>4</b>
<b>Updates on NMC activities</b> .....	<b>4</b>
Updates from the Bill & Melinda Gates Foundation.....	4
<i>Rahul Rawat</i> .....	4
NMC Secretariat’ Ongoing Fundraising Efforts .....	5
<i>Megan Bourassa</i> .....	5
Website update.....	6
<i>Saima Ahmed</i> .....	6
Nutrition Modeling Tools: Impact on program and policy decisions .....	6
<i>Frances Knight</i> .....	6
<b>Nutrition Advocacy in the Time of the COVID-19 Pandemic</b> .....	<b>8</b>
How can the tools be used for advocacy in general and during COVID-19? .....	8
<i>Kavita Sethuraman &amp; Tara Kovach</i> .....	8
Discussant Remarks on the Use of Tools for Advocacy.....	9
<i>Purnima Menon</i> .....	9
<b>April 28 – Day Two Proceedings</b> .....	<b>10</b>
<b>Discussion around Using the Tools during the COVID-19 Pandemic</b> .....	<b>10</b>
IMPACT Model .....	10
<i>Timothy Sulser</i> .....	10
Fill the Nutrient Gap.....	10
<i>Saskia de Pee</i> .....	10
IHME.....	11
<i>Abie Flaxman</i> .....	11
LiST .....	11
<i>Tim Robertson</i> .....	11
Questions & Answers:.....	13
MAPS .....	13
Edward Joy .....	13
MINIMOD .....	14
<i>Steve Vosti</i> .....	14
THRIVE.....	15
<i>Chris Sudfeld</i> .....	15

Summing up UNICEF priorities in the pandemic.....	15
<i>Chika Hayashi</i> .....	15
ASN .....	16
<i>Lindsay Allen</i> .....	16
MNF and the Call for Action.....	16
<i>Saskia Osendarp</i> .....	16
<b>Capacity Building in the Use of Modeling Tools.....</b>	<b>17</b>
IHME.....	17
<i>Nick Kassebaum</i> .....	17
WFP .....	18
<i>Saskia de Pee</i> .....	18
LiST .....	18
<i>Neff Walker</i> .....	18
SIMPLE Macro .....	19
<i>Steve Vosti &amp; Hanqi Luo</i> .....	19
Optifood .....	21
<i>Elaine Ferguson</i> .....	21
MAPS.....	22
<i>Edward Joy</i> .....	22

## Executive Summary

This is the first meeting of the NMC in 2020, and the agenda for this meeting can be found [here](#). Due to the situation created by COVID-19, the meeting was changed from an in-person meeting to a virtual one and was shortened from one and a half day to two half day (morning) sessions. The original topics that had been proposed for this meeting—advocacy and capacity building—were retained but a special session on the work that individual tools are doing in relation to the pandemic was added, following a call with our scientific organizing committee (SOC).

On Day One, the meeting began with updates on the NMC. First Rahul Rawat, our new Program Officer at BMGF, offered thoughts about the current situation, the potential role of the NMC in the pandemic and prospects for what might come from the Foundation. Next, Megan Bourassa discussed funding opportunities we have been pursuing; then Saima Ahmed highlighted recent changes made to the NMC website. Lastly, Frances Knight presented the qualitative study she carried out on the use and impact of modeling tools in LMICs. In the second session Kavita Sethuraman and Tara Kovach discussed their approaches to advocacy, its role in supporting tool use and how it can best be done. Purnima Menon provided a response as discussant for this session.

On Day Two, the focus turned to a discussion on using the tools in the COVID-19 context: can they help foresee indirect effects of the virus on nutrition, and what recommendations emanate from such observations? Seven tools discussed how they are using their tools in context of the pandemic (IMPACT, FNG, IHME, LiST, MAPS, MINIMOD, and THRIVE). UNICEF presented their actions to confront the pandemic and protect the health and nutrition of women and children globally. ASN's coming President, and MNF's director also shared their thoughts on the role of their organization during the pandemic. The fourth and final session of the meeting turned to the experience of various tools in building the capacity of users in nutrition modeling. Six tools contributed to this discussion, including IHME, WFP, MINIMOD, LiST, Optifood, and MAPS.

## ***April 27 – Day One Proceedings***

### *Updates on NMC activities*

## **Updates from the Bill & Melinda Gates Foundation**

### ***Rahul Rawat***

Rahul Rawat became the NMC grant's new program officer after Ellen Piwoz retired earlier in April. He stated that “in light of the pandemic the case for the NMC could not be greater” and that nutrition has an especially important role to play. A number of other modeling groups are currently working to estimate the impact of the disease on new infections and on mortality, but there are simultaneous efforts to understand the indirect impact of the pandemic. This includes some of the efforts from the LiST team to assess the impacts on health systems and access to services, which will be discussed in greater detail later. He expressed his hope that the NMC can help liaise with the different nutrition modeling efforts to create a unified framework and avoid the fragmentation of other fields now that the NMC has come beyond its inception phase.

BMGF's current grant to NYAS for the NMC is ending this year. The Foundation is looking at how to extend some of its funding to ensure that it continues in some form. There are a number of internal changes at the Foundation so this has not been a trivial task. Specifically the current grant for the NMC comes entirely from the Nutrition team, which is undergoing a Strategy Refresh and a search for a new director. It is expected that the new director nomination will be announced soon. This is important as this person will take the lead on developing the Foundation's new Nutrition Strategy. While no change is expected in the Foundation's

commitment to nutrition writ large, there was a shift in the different teams that work on Nutrition in anticipation of the refocus on fortification, which occurred more than a year ago when an upstream discovery group was formed in Global Health that will focus on the discovery of new tools, and efficacy trials. As a result, about a year and a half ago, the Nutrition Team moved all its “upstream” discovery work with another group. On the “downstream” side, the Nutrition Strategy was refocused on large scale food fortification, some on food systems, and some on nutrition in the health system. One change as of April 1 is that nutrition in the health system programs were moved to the Maternal Newborn Child Health (MNCH) team. Both Rahul and Alison Tumilowicz were among those who moved from Nutrition and now sit with the MNCH team. Given these changes and Ellen Piwoz’s retirement a couple weeks ago, it’s still unclear now if food system programs will move to the Ag team or stay with Nutrition. This will be decided in next few months. However, within the Foundation the commitment to Nutrition hasn’t changed, but the internal mechanisms for coordination and for having one voice have shifted. Rahul will remain as program officer for this grant and will continue to relay information as it becomes available.

[Questions & Answers:](#)

## NMC Secretariat’ Ongoing Fundraising Efforts



### *Megan Bourassa*

In our last meeting, it was mentioned that NYAS is working on a grant to the Fondation Botnar to study the impact of occupational status on nutrition of adolescent women in two LMIC secondary cities (Medellin, Colombia, and Marrakech, Morocco); and to devise ways of ameliorating their diet using Optifood and FNG optimization recommendations. This grant was funded in January. NYAS sent a team to Medellin in March to ramp up activities and consolidate links with partners on the ground but COVID constraints have delayed the process and impeded startup in Marrakech. Activities will be resumed as soon as countries reopen.

In last November’s meeting, it was also discussed that NYAS was joining as sub-grantee on an application to USAID for a large Global Health grant to Jordan. The Academy has good contacts with in-country partners and has access to a recently collected bio-marker survey and to the national electronic health database. NYAS submitted a 2-page concept, and is waiting to hear back. If the donor agrees to fund the project, the NMC Secretariat will recruit tools that could help plan nutrition interventions using the existing data.

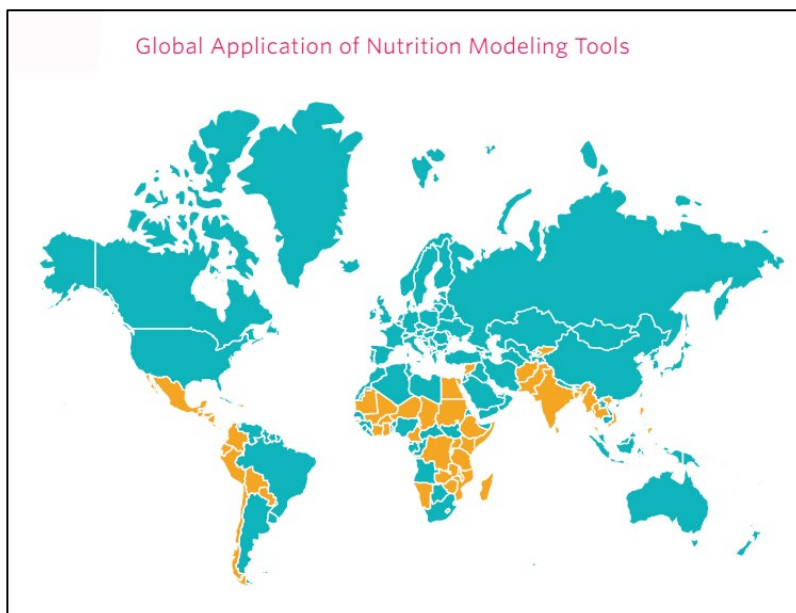
Lastly, looking at NYAS archives, it was revealed that 3 years ago on this day, the 1<sup>st</sup> meeting of the group that created the NMC took place at NYAS. Happy Anniversary to the NMC.

[Questions & Answers:](#)

## Website update

### *Saima Ahmed*

The [NMC webpage](#) was recently updated with an interactive map showing where NMC tools were used. When you hover with the mouse over the highlighted country, it shows what tool(s) was used and when. This will be further refined to include more info, such as the modeler's contact info. To keep the map updated, please let the NYAS team know when so a new application of a tool is completed so the map can be updated accordingly. A few tools do not yet have 2-pager summaries. If members would like their tool to be included, they should let the NYAS team know and they will be provided with the template. Lastly, the large spreadsheet that contained detailed information about each tool, if it is deemed useful the NYAS team can provide the means to keep this updated.



### [Questions & Answers:](#)

## Nutrition Modeling Tools: Impact on program and policy decisions and factors that determine this impact



### *Frances Knight*

**Introduction:** Earlier NMC meetings raised the lack of evidence on the impact of nutrition modelling tools as an issue. Modelers are also aware that recommendations from modeling exercises are not always acted upon. Those concerns led to this survey of tool users, with the following objectives:

1. Document why and how different nutrition modelling tools have been applied, their analysis objectives, dissemination process and modeling results
2. Document the use of modeling results in program/policy decisions
3. Identify factors that strengthen or hinder the impact of modeling on program/policy decisions
4. Develop recommendations on the design and implementation of nutrition modelling tools for program/policy decisions.

**Methods:** A qualitative study methodology was used that involved semi-structured interviews with 109 key informants representing 30 'case studies' for 12 tools in 22 low- and middle-income countries (LMIC). A target of three country 'case studies' was set for each tool and selection focused on capturing different experiences and geographical variation. NMC members provided initial information on where tools had been used and by whom. Individuals knowledgeable about the analysis or use of results were invited to participate. Purposive and snowball sampling were applied to identify at least three informants per case study, representing different end user groups, namely: brokers, technical analysts and consumers. Respondents included government staff from Health and Agriculture ministries and research bodies, local and international staff from UN agencies, NGOs

and academic institutes. The analysis focused on defining factors that contributed to or limited use across case studies. Information was triangulated across multiple end-users where possible.

**Results and Discussion:** In almost all case studies tools were applied with a primary goal of informing government decision-making, although in a few cases tools were motivated by a need to inform NGO program decisions. Many applications had multiple objectives; such as informing program decisions in the short-term and advocacy efforts for greater government awareness and commitment to addressing malnutrition in the long-term. In some cases, results informed government-led advocacy, but in almost all cases, results were used by non-government bodies to advocate for actions (commitments, investment or specific actions) by government. In several cases, results influenced government policy, such as prioritisation of target groups or geographic areas, fortification laws or prioritisation of activities in national or sub-national nutrition strategies. In a few instances, the results led to policy/program changes.

### 5. Informed targeting and prioritisation of interventions for policy development.

- Modelling results referenced in some nutrition policies.
- Linked to nutrition-sensitive actions in a few UN/NGO strategies.
- Often informed national and sub-national government decisions; (oil fortification, processed food laws and transfers).
- Informed many UN/NGO decisions about elements to include in programmes, where to implement and who to target.

*"It convinced the government to define the northern region as the most vulnerable. So now, when there is not enough money for Vitamin A everywhere, they will make sure that at least this region gets it."*  
NGO 'Broker', West Africa

*"We were able to get the government to push up the cash transfer amount... Not to what was actually needed to meet the nutrient requirements but at least closer to what was needed".*  
NGO 'Consumer', Southeast Asia.

Key factors influencing tool impact included the degree of understanding of the analysis process and the ability of users to recognise opportunities for strategic application of tools/results, to apply the newly gained evidence to inform decision-making and to carry out advocacy. Local 'ownership' of the analysis process and results also encouraged uptake and use of the results. Training local analysts to use the tools fostered ownership and understanding of methods, but there was no consensus on

### Opinions about training local analysts Fell into three broad categories:

*"Capacity should always be built and local analysts should carry out modelling where possible."*

*"Could be appropriate in some cases but training them to apply evidence for advocacy and decision making a more pressing need in others."*

*"Analysis would not be used frequently enough/turnover too high to justify the investment of time and resources in training local analysts".*

whether training in tool use should always be prioritised. External factors such as leadership changes, political priorities and resources for implementing recommended changes were also noted as factors influencing use. Finally, modelling tools and their results were shown to be only as powerful as the advocacy applied to promote them. As such, advocacy needs to be planned and budgeted for and tool applications could be strengthened to fit into larger advocacy efforts rather than existing as stand-alone activities.

**Conclusion:** This study demonstrates the value of NMC tools to public and NGO program/policy in LMICs and identifies where modelling tools as a whole could strengthen their case when facing end-users. The report will soon be shared with NMC members for comment. Interested NMC members will be invited to provide inputs to a manuscript based on this study in the coming months.

[Questions & Answers:](#)

**Modelling only as powerful as the **Advocacy Efforts** applied to promote it and encourage change.**

- Modelling results considered valuable yet unrealistic to expect policy *change* as result of one analysis only.
- Engagement often ended at dissemination.
- ‘Follow-up’ a common weak point, either wasn’t planned, out of scope/capacity or not considered.
- A few government end-users saw their role as putting difference evidence sources together to make an advocacy case yet this was more commonly done by international partners.

*“Some donors want us to say ‘oh this is the impact of this one analysis’ – but no government is going to change a policy based on just one analysis, it’s a combination of many evidence points and then the advocacy efforts. It’s a combined impact”.*  
**NGO ‘Broker’, West Africa**

*Nutrition Advocacy in the Time of the COVID-19 Pandemic*

**How can the tools be used for advocacy in general and during COVID-19?**



**Kavita Sethuraman & Tara Kovach**

In this session, Kavita and Tara discussed the process they used in the FANTA project to turn data generated by the PROFILES tool for advocacy purposes in LMICs. Having a strategic plan on how to use data is essential. Creating an effective platform to communicate data and its implications to a broader influential audience is key to increasing the visibility and use of the data. Without this it is unlikely to reach the audiences that have the most influence and can make the policy changes needed in nutrition. They found the following questions to be the very useful when developing a strategic plan:

- What key information do you want to convey?
- When will your data be ready to use? The timing process is critical as most governments have a five-year economic plan. It’s important to be familiar with the policy-making national planning process and start discussions when governments are in the planning phase before the budget is approved.
- Who do you want to convey it to? (Policy, communication, data experts, etc.)
- What you want from each of those audiences, whether they are policy makers, gatekeepers who have influence on national or subnational budgets, media, or others.
- Who to coordinate with? Include all organizations with the same mission to ensure they are working in a strategic and harmonized way.
- How will you disseminate those messages? Strategies include one-on-one meetings, video, fact sheets, targeted material developed in each country for audiences like government or district level planners, etc.



Key elements of successful advocacy programs (see [Pelletier et al. 2013](#)) includes strong leadership, especially from government; broad and effective partnerships to ensure all issues are addressed and to leverage comparative advantages within partnerships to produce results; clear goals; time-bound objectives, processes



and action plans; and a thorough situation analysis and research beforehand to identify the local advocacy needs and gaps to inform strategies, tactics and interventions accordingly.

[Questions & Answers:](#)

## Discussant Remarks on the Use of Tools for Advocacy

### *Purnima Menon*

Purnima then provided her thoughts, based on her experience with advocacy in India over the last 10 years. The first is this idea of process and the link to advocacy and timing: how do we align the modeling approach with what needs to happen at a certain time point? Twelve years ago in India, people weren't paying attention to nutrition, but today nutrition developing partners work together and the purpose of advocacy is very different. One challenge to this group is how do we align along the policy cycle? For this it is important to keep the principles of advocacy intact and speaking with one clear voice. This includes talking about the gaps in knowledge, areas of disagreement and areas of engagement. How do you do that as modeling tools, and how do you do that within the policy cycle? In many cases the process of advocacy is too organized and that's not how policy happens. Instead it's important to consider how we can go with the cadence of what needs to be said and contacts made, and how do you use a predetermined process to also build agility and responsiveness? From the experience from nutrition in India, the work done over a number of years now and bringing people together has allowed the nutrition community to be very nimble, agile and responsive, for instance in coming together around the COVID support.

Communication and coordination are a challenge for the nutrition community writ large. The pandemic makes it even more apparent: you have to be in country, to be listening, to be responsive so it's become an essential component. It's not how you take it to country X but how do you work with a whole circle of people who work and live in that country to embrace and engage with the tools, and use that when the time is right over there. It's impossible to know when the policy maker wants evidence, but it is most effective when everybody who engages with the ever changing policy makers know what evidence is available. Briefs and websites intersect products with people and are a means to an end. They are not an end in and of themselves. They're taken to some logical end by people who work with them and use them when the time is right.

[Questions & Answers: No Questions](#)

# April 28 – Day Two Proceedings

## Discussion around Using the Tools during the COVID-19 Pandemic

### IMPACT Model



**Timothy Sulser**

IMPACT is an integrated system of linked economic, climate, water and crop models focused on the agricultural sector. It is intended to produce alternate scenarios up to 2050 that to explore the future of supply, demand and trade of the global agriculture system looking at food security and some malnutrition outcomes.



#### COVID-19 Analyses

- Just finished draft for a quick look\* at impacts on hunger of rice and wheat trade restrictions
- Looking to do another quick analysis of COVID-19 impacts on productivity and availability of various commodities (esp. F&V and fish)
- More important rigorous analysis (but requires additional funding) to look at interacting and compounding shocks during the COVID-19 pandemic at the global level:
  - Value/marketing chain disruptions
  - Production shocks
  - Input factor market disruptions
  - Cropping calendar derailment
  - Demand-side disruptions (discontinuous level shifts in demand)
  - Income/GDP shifts

A quick analysis of impact of COVID-19 on rice and wheat trade restrictions was just made. It also looked at the impact on productivity and availability of commodities such as fruits, vegetables and fish. A more thorough analysis is being planned on interacting and compounding shocks done by COVID-19 on market chain disruptions, production shocks, input factor market disruptions, cropping calendar derailment, demand-side disruptions and income/GDP shifts.

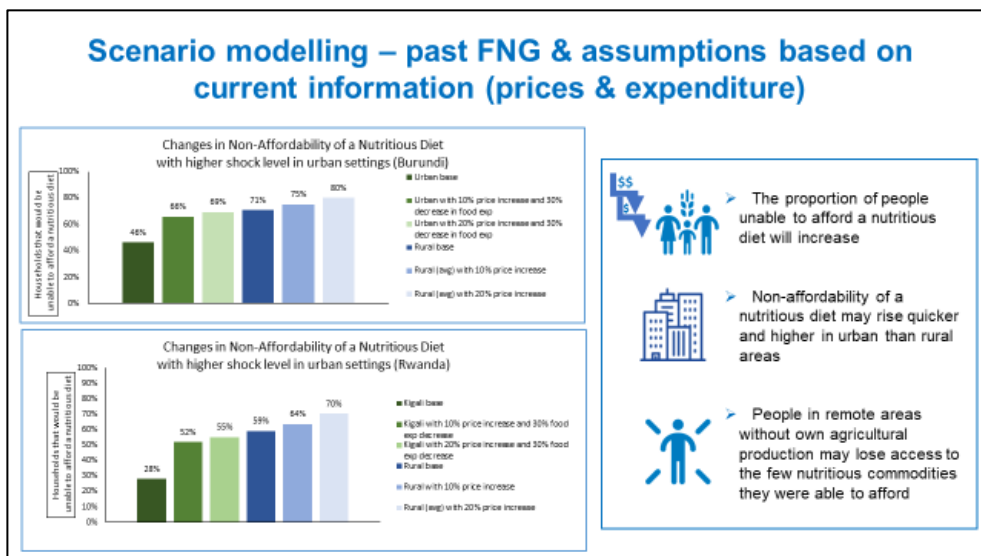
### Questions & Answers:

### Fill the Nutrient Gap



**Saskia de Pee**

WFP has used FNG in several countries where information is available about price and income changes to see how the pandemic may affect the affordability of a nutritious diet. Using 2017 data from Rwanda and Burundi, two modeling scenarios--10% (scenario 1) or 20% (scenario 2) cost increase, with 30% decrease in food expenditure in urban areas (both scenarios)—examine the proportion of the population for which a nutritious diet would be unaffordable. In Burundi for example, the proportion of urban households unable to afford a nutritious diet would go from 46% to 66% under scenario 1 and to 69% under scenario 2. In both countries, rural areas are less impacted than urban areas, so the latter are catching up with rural ones in terms of unaffordability.



During the pandemic, WFP is examining how to target social protection mechanisms (which households, who in the households, what targeting modalities--cash, vouchers or commodity-specific vouchers) and to clarify what nutritious foods to promote with the vouchers. It was also used to inform humanitarian response plans using available data to assess where vulnerabilities are and to inform response planning. This also supports ration design in locations that expect supply chain breaks of especially nutritious foods coming from abroad. WFP is also looking at what's available in terms of prices of diverse foods, monitoring real time data from remote market assessments.

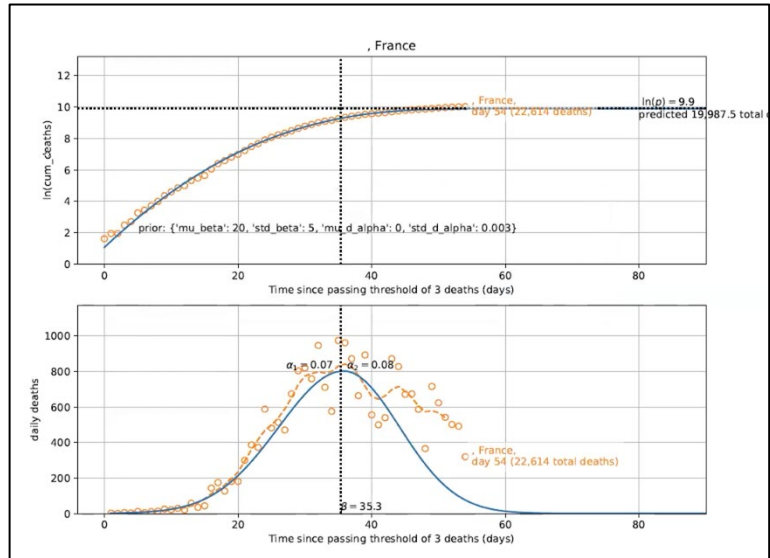
**Questions & Answers: No Questions**

**IHME**

**Abie Flaxman**

IHME’s work has focused on understanding when demand for medical services and hospital use will peak, based on a model of deaths per day for the US (expansions beyond the US are being planned). Using nonlinear regression, it assesses the real deaths per day over time. This showed that in France, the mortality peaked sooner and tapered more slowly than the parametric predicted. They are now expanding the model to better represent what happens.

**Questions & Answers:**

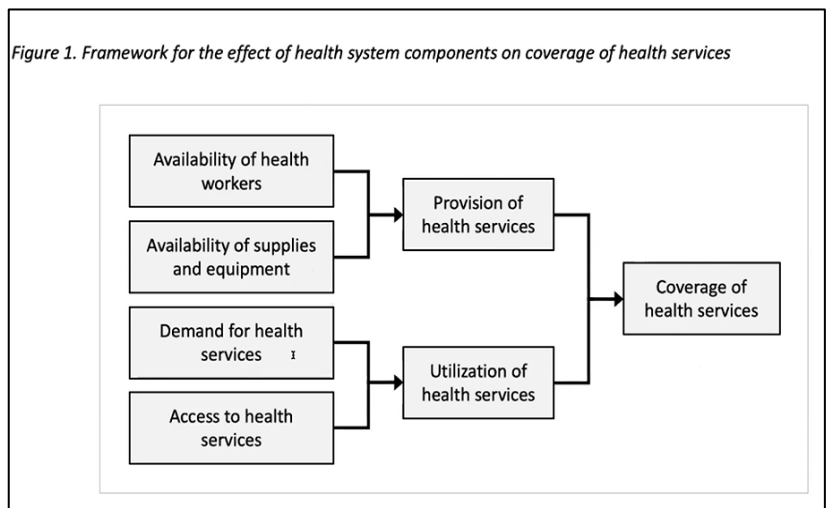


**LiST**

**Tim Robertson**

While still in early days, the idea is to use LiST to model the effects of the pandemic on child and maternal mortality in LMICs and to forecast what will happen if a scenario “x” comes to pass: what will that mean in child or maternal deaths? Other scenarios that focus on the same outcomes can be done that assume increasingly severe restrictions and can model deaths over different time periods - 3, 6 and 12 months. A paper just accepted by The

Figure 1. Framework for the effect of health system components on coverage of health services



Lancet Global Health focused on health service coverage shows how restrictions on health system-delivered nutrition interventions will impact on nutrition—like supplementation and other micronutrient interventions.

Table 3. Component and coverage reductions for Scenario 3

	Workforce Reduction	Supplies Reduction	Demand Reduction	Access Reduction	Coverage Reduction
Family Planning	Moderate (10%)	Moderate (10%)	None (0%)	Large (25%)	39-3%
Antenatal Care	Large (25%)	Moderate (10%)	Small (5%)	Large (25%)	51-9%
Childbirth Care	Large (25%)	Moderate (10%)	None (0%)	Large (25%)	49-4%
Postnatal Care	Large (25%)	Moderate (10%)	Small (5%)	Large (25%)	51-9%
Early Child Vaccinations	Large (25%)	Moderate (10%)	Small (5%)	Large (25%)	51-9%
Early Child Preventative	Moderate (10%)	Moderate (10%)	Small (5%)	Large (25%)	42-3%
Early Child Curative	Large (25%)	Moderate (10%)	None (0%)	Large (25%)	49-4%
Relative increase in the proportion of children who are wasted					50-0%

Table 6. Additional child deaths per month by intervention among all modeled countries (n=118)

Intervention	Category	Child deaths Scenario 1	Percent of total deaths	Child deaths Scenario 2	Percent of total deaths	Child deaths Scenario 3	Percent of total deaths
Increase in wasting prevalence	Wasting	7,430	18%	15,550	21%	43,810	23%
Case management of neonatal sepsis/pneumonia	Curative	7,770	18%	12,920	17%	34,390	18%
Oral antibiotics for pneumonia	Curative	6,920	16%	11,760	16%	28,710	15%
Oral rehydration solution (ORS)	Curative	3,380	8%	5,840	8%	14,800	8%
Thermal protection	Childbirth	2,030	5%	3,670	5%	9,960	5%
Clean cord care	Childbirth	1,760	5%	3,280	4%	9,730	3%
Tetanus toxoid vaccination	Antenatal	1,910	4%	2,970	4%	6,610	5%
Neonatal resuscitation	Childbirth	1,280	3%	2,280	3%	6,000	3%
Immediate drying and additional stimulation	Childbirth	1,170	3%	2,080	3%	5,430	3%
Clean birth environment	Childbirth	890	2%	1,630	2%	4,600	2%
Measles vaccine	Vaccines	1,030	2%	1,540	2%	3,160	1%
Vitamin A for treatment of measles	Curative	850	2%	1,520	2%	4,230	2%
DPT vaccine	Vaccines	950	2%	1,410	2%	2,890	2%
Vitamin A supplementation	Preventative	830	2%	1,350	2%	2,550	1%
Assisted vaginal delivery	Childbirth	520	1%	920	1%	2,400	1%
H. influenzae b vaccine	Vaccines	560	1%	830	1%	1,720	1%
Antibiotics for preterm or prolonged PROM	Childbirth	420	1%	750	1%	1,960	1%
Parenteral administration of antibiotics	Childbirth	420	1%	750	1%	1,960	1%
Pneumococcal vaccine	Vaccines	460	1%	690	1%	1,410	1%
Artemisinin compounds for treatment of malaria (ACTs)	Curative	330	1%	530	1%	1,170	1%
Zinc for treatment of diarrhea	Curative	260	1%	450	1%	1,140	1%
Antibiotics for treatment of dysentery	Curative	200	0%	350	0%	860	0%
Cesarean delivery	Childbirth	180	0%	320	0%	840	0%
Households protected from malaria (ITN/IRS)	Preventative	30	0%	30	0%	50	0%

Not knowing how coverage will change, LiST uses a simple model where service coverage is affected by factors including the availability of workforce, supplies, demand and access to health services; then builds scenarios (one per severity of wasting increases) using assumptions about, say, reduction in workforce, supplies, etc. across interventions (obviously, some interventions will see more reduction than others). The worst case (scenario 3) assumes large disruptions in workforce and access to services. Disruptions in supplies and demand, though less, are also modeled. The product of those reductions yields an average coverage reduction estimate for each intervention (rightmost column). The changes, especially in scenario 3, are quite extreme but there are certainly parts of the world, such as Sub-Saharan Africa, where those are not unrealistic. While simplistic, this allowed the LiST team to set up scenarios with hypotheticals that are feasible and allowed them to model changes in maternal/child mortality. Note: some nutrition “interventions” were not changed--e.g. breastfeeding, which may in fact be enhanced. The model includes only wasting, not stunting because wasting would happen

quickly and have a rapid impact on child mortality but stunting would not be so immediate. Though the increases in wasting are hypothetical, they are in the realm of the possible when shocks occur, based on WHO data. Based on their models, the lack of services for wasting would account for about 20% of all additional child deaths.

[Questions & Answers:](#)

**MAPS**

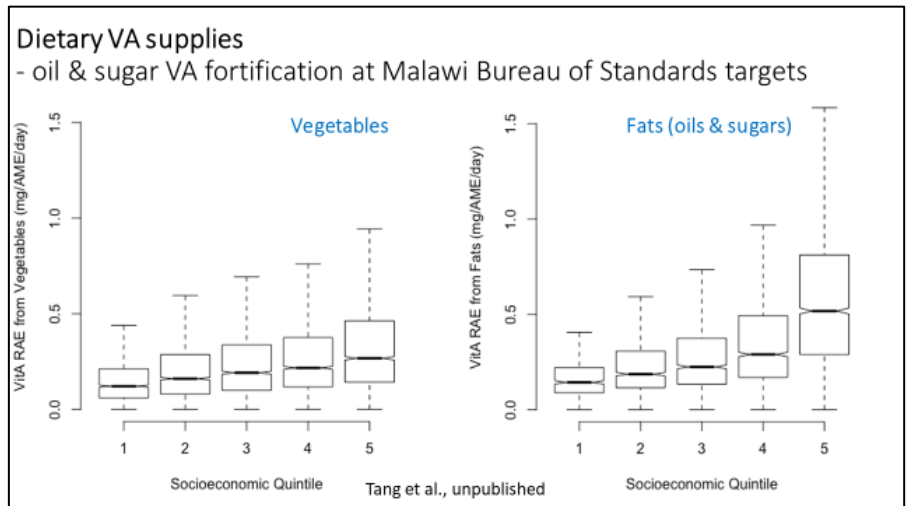


**Edward Joy**

MAPS can support micronutrient assessment with

spatial, socioeconomic, sociodemographic and seasonal disaggregation. An example using zinc data for Malawi shows that depending on where maize is grown, it might contain 15 ppm in some regions, or double that (30 ppm) in other regions. This translates to a ~5 mg/day difference in zinc intakes depending on where you live. The precise spatial disaggregation can also account for the various local sources (i.e. maize, millet, rice, sorghum). Combining this data with

food consumption data from Living Standards and Measurements Survey and other such data, the access to specific micronutrients can be assessed by wealth quintiles. For example, analysis of vitamin A intake (example shown) demonstrates that the poorest quintile has the lowest consumption of vitamin A from vegetables and fortified fats and sugars (assuming the foods are fortified to levels mandated by the government), compared to the wealthier groups. A seasonal perspective can also look at vitamin A quantity consumed from different sources (e.g. mango vs green maize) and the sources of maize flour (produced vs purchased vs donated) during the year and by region. This can highlight the strong seasonal component of consumption patterns.



Thinking ahead to the implications of COVID-19 for the food system, this can help determine when food security is threatened. Further, we can look at the proportion of dietary supply from a particular food group, and how it can be disrupted by labor availability. The proportion of dietary micronutrient supplies from market bought foods/fortified food items can also be assessed to understand when value chain disruptions might affect micronutrient supplies. This can be disaggregated to look at demographic groups or geographic areas at greatest risk of micronutrient deficiencies under scenarios of change in dietary supplies; or look at what season is most likely to see market disruptions impacting nutrition hardest and which micronutrient is most likely to be impacted. This can all be done in sub-Saharan African countries, where adequate data exists, and can be done on a sub-national level. This is where the MAPS team is going now and preparing the data management architecture to produce those analyses.

[Questions & Answers:](#)

## MINIMOD



**Steve Vosti**

MINIMOD consists of two modules: a dietary intake module (with link to LiST) that generates estimates of usual dietary intakes and dietary inadequacies from primary or secondary sources. This predicts the effects of all combinations of candidate interventions on the number of individuals with low intake or intake above the UL. LiST then predicts the functional outcomes (e.g. lives saved or cases of anemia averted). The second module is the

program cost data model, which allows for planning, establishing and assessing operational costs for all combinations of candidate interventions using “activity-based costing” estimations. Once brought together the two modules can estimate in a spatially and temporally explicit manner the relative cost effectiveness of alternative micronutrient intervention programs. These inputs are then used in a cost optimization model, which finds the most cost-effective set of intervention programs that reports a summary measures of nutrition benefits and the costs/cost savings vis-à-vis alternate sets of intervention programs (e.g. business as usual, or some other combinations).

The pandemic might cause five types of shocks:

1. Some platforms may become unavailable, e.g. the VA campaign is canceled. What are the consequences (on coverage and mortality), and what alternatives exist to save young lives (e.g. can you push other fortification programs to make up for those lapses)?
2. Access to delivery platforms is decreased (e.g. a reduced reach of clinics’ IFA distribution). What will the health consequences of this be and how can we mitigate (e.g. extend the reach and at what cost?)
3. Funding is reduced. Optimization can identify the most cost-effective sets of MN intervention programs, target beneficiary groups, geographic areas or intervention programs, to help mitigate the impact/costs (e.g. if VA campaign is closed, can investing more in oil fortification program help?)
4. As the quality of diets decline (e.g. protecting calories vs nutrition), what will be the effects of existing program given the new diets?
5. Priority shifts away from micronutrient deficiencies—“the phone goes dead at the MOH”. Estimating the mortality, or lives saved, and champion those.

Work done in Cameroon using 2019 data looked at the effect of changes in program modalities (e.g. oil vs oil + routine VAS vs oil + VAS campaign) on lives saved, by region. Fortified oil only was fine for cities but VAS campaigns were critical to save lives in the more rural North & South regions (though not to the same extent). Estimates over 1-year and over 10-years illustrate large differences of those various choices across regions.

### [Questions & Answers:](#)

#### Leveraging MINIMOD Data and Tools in the COVID-19 Pandemic

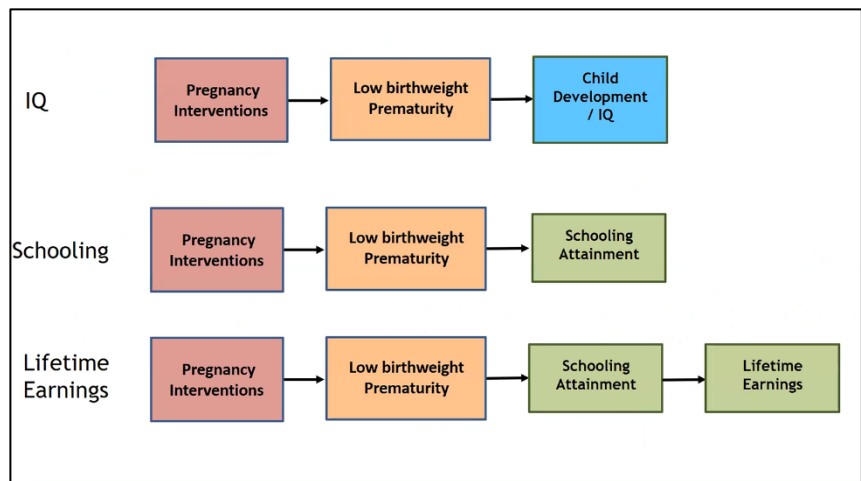
- Unavailable delivery platforms
  - E.g., campaigns have been suspended for VAS
    - What are the consequences?
    - What alternatives exist for saving young lives?
- Decreased access to/use of existing platforms
  - E.g., reduced reach of clinics in distributing IFA tablets
    - What will the nutritional/health consequences be?
- Reductions in available funding
  - Optimization modeling can help identify the most cost-effective sets of MN intervention programs, and the impact and cost consequences
    - Targeting – beneficiary groups, geographic areas, etc.
    - Improving the performance of ongoing intervention programs
- Changes in diets
  - Changes in food prices and incomes can cause changes in diets – calories may be protected
  - Estimate the effects of programs given *new* diets
- Priorities shifting away from MN deficiencies
  - Linking MN deficiencies to mortality outcomes, and reductions in deficiencies to lives saved

## THRIVE



**Chris Sudfeld**

Aside from mortality, THRIVE can look at the effect of COVID-19 on human capital over time, 2-30 years later. This work is in its initial stage but estimates will be released later this year. The notion is how increasing services will improve human capital formation (or, now that we are in the obverse phase, how a reduced coverage of nutrition interventions will affect human capital). THRIVE focuses mainly on pregnancy interventions, e.g. how increasing pregnancy interventions will lead to reduce LBW, which will improve child development and IQ, then affect schooling attainment and lifetime earnings.



Many cohort studies are available that look at LBW and VLBW effect on cognitive scores. Also, a recent meta-analysis looking at BW and schooling achievement shows that one SD increase in BW is associated with a 0.13-year increase in educational attainment. How much this translates into lifetime earnings was also estimated: in LA and SSA, each additional year of schooling gets increase lifetime earnings by ~10%. Those links are not specific to COVID-19, but integrating such long-term outcomes as policy levers for advocacy can illustrate how scaling back nutrition intervention may affect other SDGs, e.g. ensuring that children are ready for primary education, or stating the long-term cost of reducing antenatal care interventions as the effects ripple out in decades to come enables THRIVE to look beyond just mortality outcomes.

## Summing up UNICEF priorities in the pandemic



**Chika Hayashi**

UNICEF actions focus on:

- Advocacy to keep nutrition on the agenda at the global and regional level
- Inform global and national strategies about testing priorities, mitigation or other measures
- Monitor and evaluate the actual effects of the pandemic, the impact of responses at global, regional and national levels and inform operational research
- Monitor post-COVID-19 transition back to “normal” and build nutrition resilience

Two work streams are being promoted. The data stream looks at 1) nutritional status at the time of COVID-19 diagnosis, following through recovery among women, pregnant women and children (associating outcomes with their initial nutrition status); and 2) monitoring disruptions in services and responses in 200 countries using monthly questionnaires, U-Report, random mobile phone surveys; and 3) analyzing and mapping vulnerabilities to COVID-19 among children at risk. The modeling work stream looks at 1) the potential impact of COVID-19 on nutrition outcomes, following through different pathways; 2) different disruption scenarios due to containment measures; and 3) different interventions to mitigate the effects from the disruptions. The aim is to use a standardized approach at country, regional and global offices.

There is also an effort to model indirect pathways by looking at health systems, social protection systems in terms of the effect of disruptions on nutrition interventions, provision of counseling, commodities, food

supplementation. School closures will also create dietary restrictions due to cancelation of school meals and take home foods. The food systems and economic instability will cause a rise in food insecurity, caretaker behaviors, lost wages, price increases and illness/death in the family. Next steps are to create a conceptual model to map baseline of vulnerabilities; collate the data and finalize the assumptions to generate global advocacy numbers; then produce key messages, tools for countries and regions. They looked at LiST and add features to incorporate countries' needs.

#### [Questions & Answers:](#)

## ASN

### *Lindsay Allen (literal transcript of comments)*

“This presentation is a bit premature but since I’m the incoming president for ASN, I can provide some cues on how ASN might get involved in the pandemic. This is a top priority as I set out plans for my year as president. We need a task force to see how ASN best fits and since many people are already working on this, we don’t want to duplicate. I see an opportunity to focus more on biological questions than what is being done now. So we might share information on interactions, stimulate research on the biology, and share all this next year in Boston. The sort of things I’m thinking about: look at dietary patterns with lots of people eating junk food but also, the movement to prepare food at home and eat better; what are the subtle effects of vitamin status, e.g. vit D, normal immune status and risk of COVID mortality?; how does stress affect behavior and response to food--effects might be biological, in addition to economic; also, look at social programs like school feeding; and the area in which you are all working on global food security, or the resilience of food systems.

ASN has made its virtual platform ready this year and Nutrition 2020 online will have everything, posters, group discussions, awards, the whole works. We’re ready to have a year’s worth of interactions within ASN, GEMS (interest groups across sections—modeling could be a good one); clinical nutrition. I plan this year to have a series of online meetings and ask these groups to come together with their priorities and research ideas, and offer an opportunity to present them online. We would have new collaborators as well, like the Consortium of Universities for Global Health, etc. That’s as far as my ideas have gone. I see ASN providing a platform where we can share research, thoughts, and experiences within nutrition and encourage research in general. I don’t see how ASN, the premier nutrition organization of professionals in the world can possibly proceed without tackling the whole COVID issue. Any suggestions or comments on these very preliminary ideas are welcome.”

#### [Questions & Answers:](#) No Questions

## MNF and the Call for Action

### *Saskia Osendarp (literal transcript of comments)*

“I already mentioned the Call for Action yesterday. This initiative rests on the notion that the nutrition community must team up and look at COVID’s impact and at mitigation. In the last 2 weeks many groups have come together on this, including the NMC today.

The group pushing this is very conscious of the urgency of action: we need to come up quickly with some first recommendations and estimates of the true impact on all forms on malnutrition so that the issues are included in donors’ next year budgets. Good and soon is better than best and late. So I invite you to reach back to me if you have ideas, this is not a one-time thing as it will have lasting impact and we can model the long term effects as the situation evolves over time, and as new data comes in. The effort will need to be repeated probably twice a year to fine tune and steer action. We will use data on coverage, food prices, income changes, food security, and all that’s been collected already over the 2 last months, to model the impact of those changes on the consumption of food, healthy diets, and food security. From what I heard here, I liked the focus on long term



effects and risks, and UNICEF’s intent to look also at obesity and NCDs: we don’t know yet what those impacts will be. I will leave it here for now.”

## [Questions & Answers:](#)

# Capacity Building in the Use of Modeling Tools

## IHME



### Nick Kassebaum

IHME and GDB’s approach to Capacity Building is to teach about health metrics, so audiences know what comes out of the analyses and how to use the data. A “Network Engagement Team” leads collaborator engagement and capacity building. Tasks are to a) strengthen relationship with existing collaborators, b) expand the network—geographically and thematically; c) engage the network in all aspects of science; d) encourage data sharing and training; and e) support evidence-based policy.

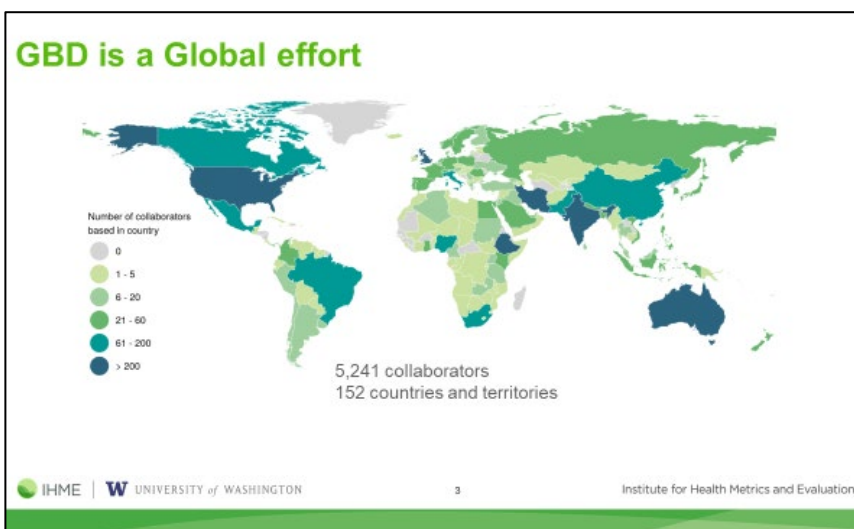
GBD is a global effort that is open for enrollment and is growing all the time. It now includes 5241 collaborators from 152 countries and counting. Anyone can get involved for free by enrolling on IHME’s website and all backgrounds and areas of expertise are welcome.

Collaborators are organized by cause or risk; by country; by specialty (demographics, health systems, health financing, geospatial science; and within those, in sub-categories, like Nutrition/Maternal Care; or Child Nutrition/Wasting; etc.).

To increase the fluency and capabilities of people within the collaboration IHME organizes in-person annual GBD technical training workshops; in-country seminars and workshops—for instance a recent workshop held in China had 170 people from all provinces in the country; collaborator papers focusing on specific policies; pilot projects awarded on annual basis to help people develop add-on analyses or get on with specific questions that are proving difficult; etc. IHME has also developed institutional agreements with country governments, specific research institutions and multilaterals like PAHO, WHO.

IHME maintains communications with the network by sending a formal newsletter to update members on opportunities to review preliminary estimates; presentations and papers from collaborators; upcoming events; news; examples of policy use; and analytic progress and timeline. It also organizes regular phone calls and webinars to discuss or solicit input to address data gaps or findings; or to bring several countries together that share similar problems and generate connections and discussions; and responds to country invitations for in-person discussions or capacity building workshops. A media support team is also available to help ministries interpret and comment on results coming out of GBD.

What is different about this approach is that all the codes in GBD are public, but it’s such a gigantic effort to run everything that it is more like an OS where one needs to know enough about the platform to write one’s own



code/program to sit on top of it. That conceptual approach has proven successful in allowing people to be power users of GBD and use it all the time.

## Questions & Answers: No Questions

## WFP

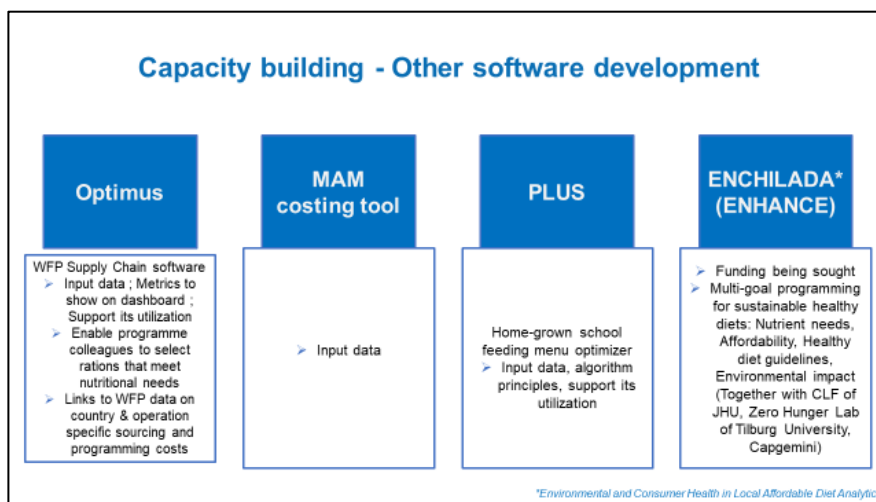


**Saskia de Pee**

FNG's capacity building effort on the Cost of the Diet software is two-fold: 1. for people to appreciate and understand the tool; and 2. for them to use it. On the first aspect, training focuses on understanding the results, including being able to speak to the findings, suggest what to analyze or model, and to identify new opportunities to use the software. On the second aspect, the focus is on conducting the basic analysis and on doing the modeling.

WFP has trained many people including the FNG team itself, as well as colleagues in WFP's Nutrition Division and specific colleagues in regional bureaus, like Cairo, Timor-Leste who then do the analysis with HQ staff. There were also two opportunities to train students and staff (25 in total) through the University of Westminster. Further the HQ team responded to requests from regional bureau, like Nairobi and Cairo (who got very good at it) and from governmental entities in Ethiopia, Philippines, Sri Lanka and Sudan.

Other FNG capacity building efforts around other software operated by WFP, such as Optimus, a supply chain software that was developed for logistics and costing in complex emergencies. This team had reached out to FNG group to make sure their nutrition component was correctly done. The team also supports the MAM costing tool; a home-grown school feeding menu optimizer called PLUS; and ENHANCE a multi-purpose programming tool for sustainable healthy diets that simultaneously optimizes nutrient needs, affordability, healthy diet guidelines and environmental impact. This effort is led jointly with CLF of JHU, Zero Hunger Lab of Tilburg University and Capgemini.



## Questions & Answers: No Questions

## LiST

**Neff Walker** (*literal transcript of comments*)

“How do you train people to develop expertise in a national modeling program? From my experience working with HIV AIDS and LiST, a key question is how often the product will be used. As much as one likes a model, in fact countries office want to use it whenever they do their planning cycle; this can be every year, 2 years, 5 years; in fact, what we find is most countries use the model only occasionally. Only in JHU do you use it once a week. This makes it very difficult to develop expertise in national governments, as there's not much need and if you do train people, as we do with LiST, by the time they want to use the tool two years later, either the people that learned it have forgotten, or there's been updates to the software, or they moved on to other divisions. There's no real mechanism for maintaining expertise within a government system for tools that are used rarely. The one counterexample to that is the HIV that were developed for UN AIDS: there are countries that have

fairly good capacity, one because it is better funded, and two, they've been running regional workshops where they've trained people from 130 countries and they've been doing that every other years for the last twenty years so there is some carry over, and for big countries, say India, SA, China, there's clearly expertise there on those models. Perhaps the same thing could happen with models on nutrition or something like LiST but it takes a long time to develop that expertise and they have to have huge programs to be able to support one or two people within the government to be able to maintain that expertise. Really, our kind of approach has been more to assume that when countries want to use the model, they will need external technical support and what we've tried to do early on is to provide most of that support ourselves, or to build capacity within partners, for example SCF, CDC, WHO, UNICEF, so the idea is that they can provide technical support when countries want to use the tool. We've done a bit of work in trying to outreach and create more technical capacity in some of the LMICs, Malawi, Mali and Uganda are examples, where we've inserted training on the tool in their MpH program. We hope that will have long term benefits in terms of having more internal capacities in country but it's been very slow and in Uganda's Makerere Univeristy, the idea that they would become kind of a regional center (they did get some requests, and we funneled some requests to them), in fact did not keep them enough occupied so they could be constantly functioning. So our approach has shifted much more to build external capacity and try to do two things: 1) revamped the model and make it simpler to use and 2) build resources for people to make standard analyses for their countries; we focus more on webinars than in person training like we used to do; and that's been our take on this. The idea that there would be all kind of people who'd be able to use our model, hasn't been effective and I'm not sure it can ever be. So we settle for the "use by other groups" with external support".

**Questions & Answers: No Questions**

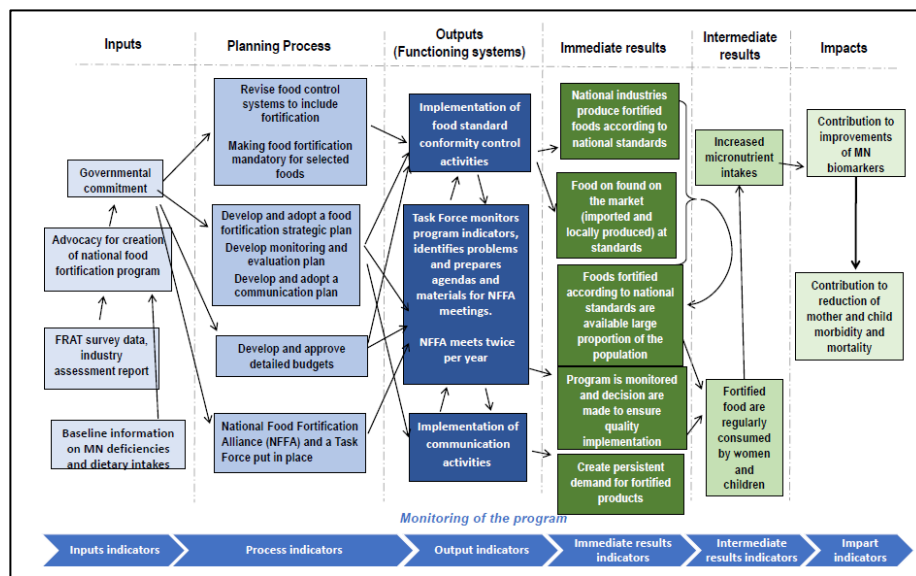
**SIMPLE Macro**



**Steve Vosti & Hanqi Luo**

In this 2-part presentation Steve

first presented MINIMOD approach to capacity building and how it links with the broader set of investments to improve impact. Then Hanqi presented one component of MINIMOD--the model, which generates estimates of needs and benefits associated with alternative interventions. The impact pathway tool is used to show countries what is involved (see graph), from inputs to processes, outputs, intermediate results and impact.



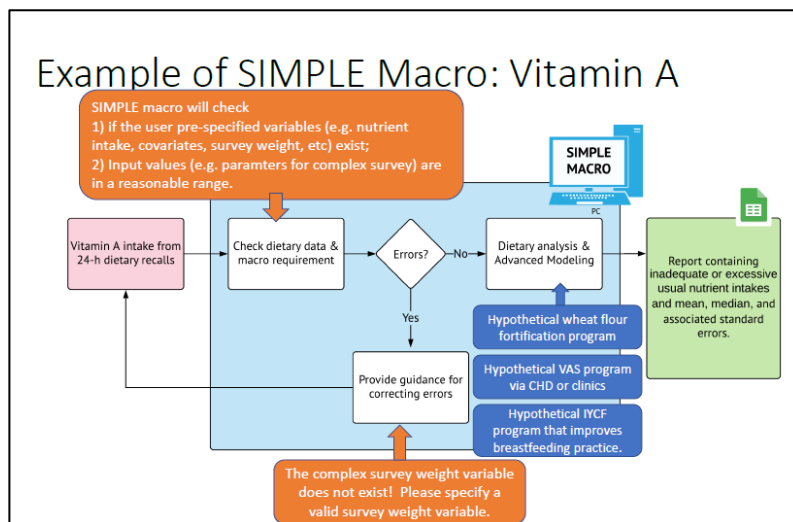
The MINIMOD team focuses only on parts of this whole pathway: e.g. the need for people to collect baseline information on micronutrient deficiencies and dietary intakes; and on intermediate results and final impacts. However, other people must be aware of this activity all along, be sensitive to it and accept that it is possible and useful to do it. This includes those involved in generating the processes, people in the food industry, control agencies, trade and standards supervisors, consumers associations. So different pieces of information generated by MINIMOD have to be delivered to all those players so they believe what comes out of the tool and support those products.

The SIMPLE macro is a tool to simplify dietary modeling and make capacity building effective. Hanqi focused on the analysis part of the nutrition data value chain. The SIMPLE macro aims to estimate inadequate or excessive nutrient intake; and to model the effect of nutrition interventions (e.g. supplementation, fortification, exclusive breastfeeding) in correcting those. To operate the macro some programming expertise, intermediate statistical analytical skills, and an understanding of how to model dietary intake data are required. Earlier capacity building activities in HICs demanded 6-8mo of PhD student time; and in LMICs, two or more years of intensive interactions for collaborators via quarterly week-long workshops and weekly calls. Yet collaborators still struggled to carry out basic simulations independently. This is a problem as there is a high turnover rate, which leaves no capacity on the ground. As a result, no data analysis nor translation of results can be done, compromising the whole nutrition data value chain effort, and a new strategy was needed. This is where SIMPLE macro came up.

SIMPLE macro was co-developed by the Institute for Global nutrition at UCD and the National Cancer Institute. Target participants are analysts with basic nutrition knowledge and statistical skills. The basic training has been reduced to a 2hr workshop on basic SAS use; and a 2hr workshop on the SIMPLE macro. The macro checks first if the data exists and is reliable, prompting for corrections if needed. Once error free, the macro is carried out. Different interventions can be modeled alone or in combination (e.g. wheat flour fortification, VAS, EBF, etc.). The excel output can be used for

publication or a report. This macro was used in LMICs (Cameroon, Ethiopia) to compare different VA interventions; and in the US to compare micronutrient intake from food and supplements between cancer/non-cancer survivors. As for next steps, a short-term goal is to publish in journals and make the code, macro and manual available for free download; create YouTube tutorials. Long term goals are to develop a global open web-based dietary analysis software, expand the features and integrate with existing dietary intake tools to allow for timely reporting.

**Questions & Answers:** No Questions



## Optifood

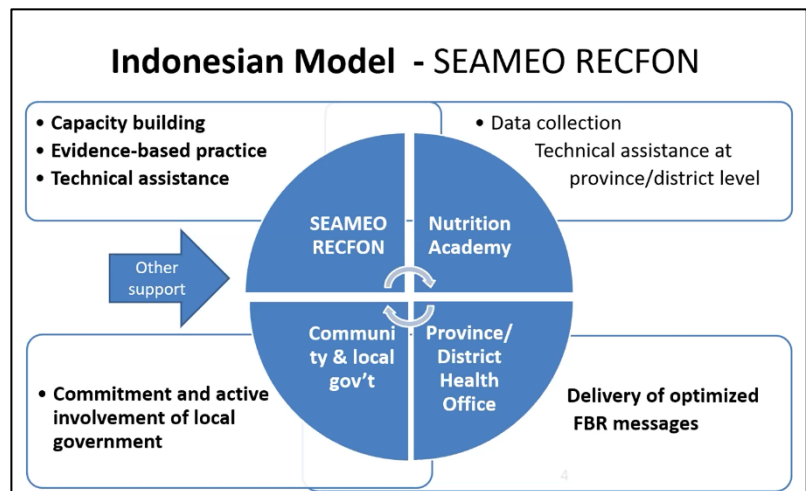


### Elaine Ferguson

The capacity building aim of the Optifood team is to have trainees: 1. Understand the tool and underlying concepts to correctly interpret the results; 2. Understand the data requirements and how to process it; 3. Understand how to use the tool, at basic level; and 4. Expand the understanding of the different types of questions it can answer. Experience in capacity strengthening has been varied. There were small (4-20 participants) group trainings (2-3 days) that involved researchers, students, UNICEF and government employees. Every year in the UK students are trained in using the tool. Trainings were also done in various countries, e.g. Indonesia, India, Uganda, Guatemala, France, etc. Another type of training that was attempted was to include Optifood in university classes, as was done in the UK, Denmark, the Netherlands and Indonesia. Unfortunately, it was too short (3 hours only) and was an optional workshop. Yet this might be tried again in the future, because it worked well when targeted at MSc or PhD students. The last type of training was through the creation of working groups in countries where the tool was used, Guatemala, Indonesia and Uganda. This gives long-term, sustainable training, but the challenge is in keeping sustained. A good example is Guatemala, where FANTA supported face to face training and virtual discussion groups every fortnight. The practical investigation of key questions helped structure those groups. Yet even then, the drive to continue using the tool has fizzled without a local champion. This has led to an alternate formulation of capacity building in Indonesia (SEAMEO), which has received strong support particularly from local governments. SEAMEO is now considered for expansion in Myanmar and Laos.

Looking forward, challenges are very similar to what LiST identified. Specifically, challenges are 1. To identify appropriate participants and institutions—they need capacity, commitment, interest and stability; 2. The time it takes for doing the analysis (interest wanes if too long); and 3. The need for technical support. Thus, it would be good to position the tool within a global organization with other tools from the NMC and to ally with groups like INTAKE, that collect dietary data. Those bodies can understand the tool and provide support in terms of training. With COVID-19, we will need to learn how feasible it is to train online. One thing we should do is to start building scenarios to explain and get people excited on how it can be used; as there is great interest and constant questions from graduate students. It would be useful to strengthen the training platforms across the NMC in ways that make the uses and linkages clear, which has been done with Optifood and Cost of Diet, (e.g. where it can be used and where not). Lastly, as Purnima said, there are great advantages in country training, building national capacity and creating champions.

Questions & Answers: No Questions



## MAPS



**Edward Joy**

Looking to the future, as MAPS is a new tool, a 4-pronged strategy is proposed: 1. Develop a user network. Initially this was through in-person consultations and workshops. Continues via the website, now being populated with questions—such as what sort of tools, and functionalities—users would like to see addressed. This should create a network of tool users from different settings and will create “co-design” model with user input. 2. User support will be developed alongside manuals, with click functionality for entry level users with pre-loaded data, and enabling user-provided data for advanced users. 3. Training of Trainers, using in-country workshops; and 4. Curriculum development, working with in-country institutions (like Addis Ababa University, or LUANAR in Malawi) to develop modules suitable for under and post graduate courses, tailored to face to face or e-delivery teaching.

Alongside that, MAPS will offer support to students who want to use the tool as part of their research. As the nutrition world is quite small in those countries, and with limited training programs, there is a good opportunity to capture students and give them a taste of MAPS before students move to other organizations, iNGOs or the private sector. This is facilitated by all MAPS materials being open access.

Questions & Answers: No Questions

### MAPS sustainability

- User network development - <https://micronutrient.support/>
- User support
- Training of trainers
- Curriculum development
  - New modules suitable for under- and post-graduate taught courses, developed for E-learning delivery
  - Frameworks for new under- and post-graduate research projects

