IUNS-ICN 2025

International Congress of Nutrition
24-29 August 2025 | Paris, France

SUSTAINABLE FOOD FOR GLOBAL HEALTH

What do and don't we know about who is being reached with effective nutrition interventions in LMIC?

Rebecca Heidkamp, Johns Hopkins Bloomberg School of Public Health

Data DENT
Data for Decisions in Nutrition

NO CONFLICTS OF INTEREST TO DISCLOSE

Data DENT

Data for Decisions in Nutrition

- Funded by the **Gates Foundation** 2018-2025
- **DataDENT** aims to transform the availability and use of nutrition data by addressing gaps in nutrition measurement and advocating for stronger nutrition data systems

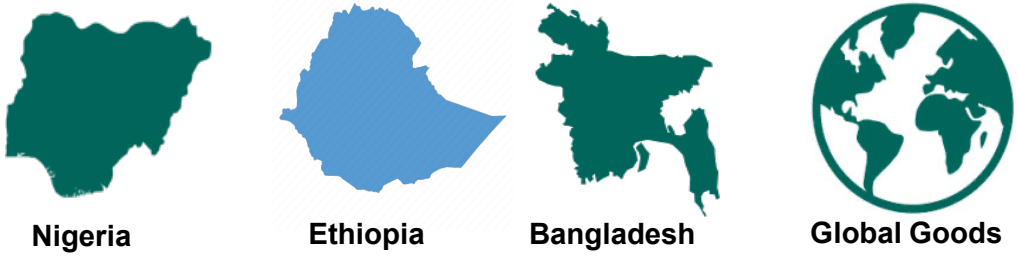
Lead partners

Johns Hopkins Bloomberg School of Public Health

International Food Policy Research Institute (IFPRI)

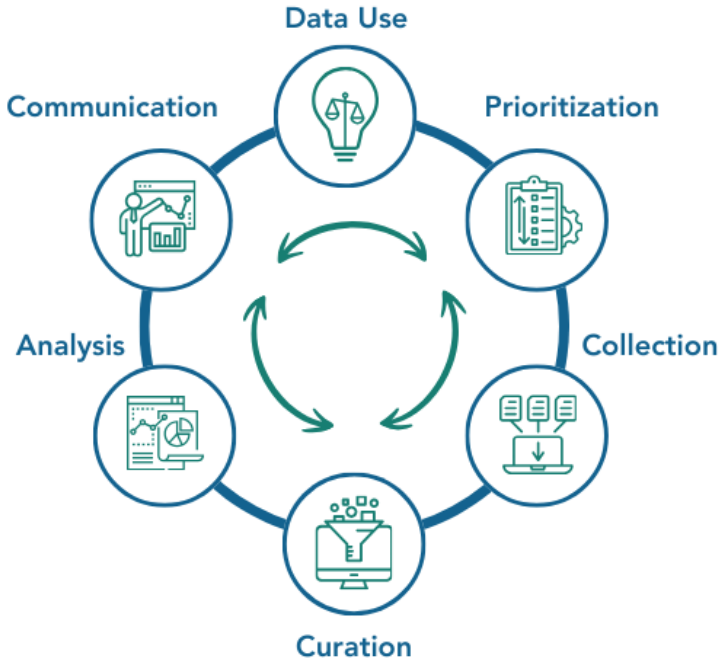
Results for Development

Current geographic priorities



Nigeria | Ethiopia | Bangladesh | Global Goods

We work across the Nutrition Data Value Chain



- Developing national strategies for DVC strengthening
- Fostering data literacy for better data use
- **Improving measurement, analysis & use of intervention coverage data**
- Data advocacy
- Data for Nutrition Community of Practice

Why monitor intervention coverage?

- Global WHA Nutrition & NCD targets are primarily nutrition outcomes …. but public health investments are made in nutrition interventions
- Data on who is / is not being reach are ACTIONABLE

What is coverage?

$$\% = \frac{\text{Population who received the intervention}}{\text{Population eligible for intervention}}$$

Where does data about who is being reached with nutrition interventions (regularly) come from?

Admin Data

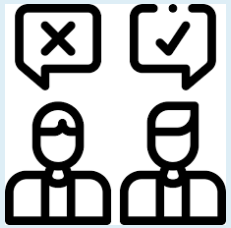
Management Information System



- "real time" data at lower admin levels
- essential for program management
- data quality challenges but meaningful
- aggregated reporting
- HMIS, + (EMIS, AgMIS, social protection)

Survey data

Periodic Household Survey

- periodic / lagged data
- population-based estimates
  - capture interventions beyond facilities (home, community, school, etc)
  - track progress to coverage targets
  - allow for equity analysis
  - allow for co-coverage analysis

★ *Focus of this session*

- Post Event Coverage surveys
- Surveillance systems

We know more than we did 5 years ago…

Maternal and Child Undernutrition Progress 2

Mobilising evidence, data, and resources to achieve global maternal and child undernutrition targets and the Sustainable Development Goals: an agenda for action

Rebecca A Heidkamp, Ellen Piwoz, Stuart Gillespie, Emily C Keats, Mary R D'Alimonte, Purnima Menon, Jai K Das, Augustin Flory, Jack W Clift, Marie T Ruel, Stephen Vosti, Jonathan Kweku Akuoku, Zulfiqar A Bhutta

Lancet 2021; 397: 1400–18
Published Online March 7, 2021
https://doi.org/10.1016/S0140-6736(21)00568-7
See Comment page 1329
This is the second in a Series of two papers about progress in maternal and child undernutrition

Johns Hopkins Bloomberg School of Public Health, Baltimore, MD, USA (R A Heidkamp PhD); Bill & Melinda Gates Foundation, Seattle, WA, USA (E Piwoz ScD); International Food Policy Research Institute, Washington, DC, USA (S Gillespie PhD, M T Ruel PhD); Centre for Global Child Health, The Hospital for Sick Children, Toronto, ON, Canada (E C Keats PhD, Prof Z A Bhutta PhD); Results for Development, Washington, DC, USA (M R D'Alimonte MPH, A Flory MA, J W Clift PhD); Division of Women and Child Health (J K Das MD) and Centre of Excellence in Women and Child Health and Institute for Global Health and Development (Prof Z A Bhutta), The Aga Khan University, Karachi, Pakistan; International Food Policy Research Institute, Delhi, India (P Menon PhD); Department of Agricultural and Resource Economics, and Institute for Global Nutrition, University of California, Davis, CA, USA (S Vosti PhD); World Bank, Washington, DC, USA (J K Akuoku PhD)
Correspondence to: Prof Zulfiqar A Bhutta, Centre for Global Child Health, The Hospital for Sick Children, Toronto, ON, M5G 0A4, Canada
zulfiqar.bhutta@sickkids.ca
or

As the world counts down to the 2025 World Health Assembly nutrition targets and the 2030 Sustainable Development Goals, millions of women, children, and adolescents worldwide remain undernourished (underweight, stunted, and deficient in micronutrients), despite evidence on effective interventions and increasing political commitment to, and financial investment in, nutrition. The COVID-19 pandemic has crippled health systems, exacerbated household food insecurity, and reversed economic growth, which together could set back improvements in undernutrition across low-income and middle-income countries. This paper highlights how the evidence base for nutrition, health, food systems, social protection, and water, sanitation, and hygiene interventions has evolved since the 2013 *Lancet* Series on maternal and child nutrition and identifies the priority actions needed to regain and accelerate progress within the next decade. Policies and interventions targeting the first 1000 days of life, including some newly identified since 2013, require renewed commitment, implementation research, and increased funding from both domestic and global actors. A new body of evidence from national and state-level success stories in stunting reduction reinforces the crucial importance of multisectoral actions to address the underlying determinants of undernutrition and identifies key features of enabling political environments. To support these actions, well-resourced nutrition data and information systems are essential. The paper concludes with a call to action for the 2021 Nutrition for Growth Summit to unite global and national nutrition stakeholders around common priorities to tackle a large, unfinished undernutrition agenda—now amplified by the COVID-19 crisis.

Introduction

Paper 1 of this two-part Series shows that, prior to the COVID-19 crisis, rates of maternal and child undernutrition in low-income and middle-income countries (LMICs) were declining, albeit slowly. Since 2010, 61 countries and four Indian states have joined the Scaling Up Nutrition (SUN) movement, and together with countries not in SUN, committed to new multisectoral strategies.[1] Nevertheless, as of 2019, only 106 of 194 countries were on track to reach at least one of nine World Health Assembly (WHA) nutrition targets.[2]

Long before the COVID-19 pandemic, the global nutrition community considered 2020 a pivotal year, marking 5 years until the WHA targets endline and a decade remaining to reach the Sustainable Development Goals (SDGs). At the 2013 Nutrition for Growth (N4G) Summit, donors and civil society actors made broad policy, programme delivery, impact and investment commitments, including mobilising $4 billion for nutrition-specific and $19 billion for nutrition-sensitive interventions by 2020. These commitments have been difficult to track; available evidence suggests mixed fulfillment.[2]

The themes of the follow-up N4G summit, which has been rescheduled from 2020 to 2021, are quite pertinent to the COVID-19 crisis: (1) nutrition within universal health coverage (UHC); (2) climate-smart food systems for healthy diets and livelihoods; (3) nutrition in fragile states; (4) data-driven accountability; and (5) new investment and innovation in nutrition financing.[3] In people infected with SARS-CoV-2, risks of complications and mortality are higher for those with malnutrition and diet-related non-communicable diseases than in individuals without these health problems.[4] At the population level, unprecedented disruptions to global health, economic, and food systems have contributed to declining coverage of routine health services, sharp increases in household food insecurity, and anticipated setbacks to global nutrition targets.[5,6] Furthermore, the pandemic has underscored gaps in timely information for decision making and, as economies falter, the need for new nutrition investment strategies.[7]

To support the global nutrition community, particularly those shaping N4G 2021 commitments, we first take stock of what we have learned since the 2013 *Lancet* Series on maternal and child nutrition about addressing undernutrition through health, food systems, social protection, and water, sanitation, and hygiene (WASH) interventions. For discussions specific to fragile states, we refer readers to recent publications from the BRANCH consortium.[4] We then review the evolving nutrition data landscape and, finally, take stock of resource commitments needed to recoup and extend progress towards undernutrition goals.

[Heidkamp et al Lancet 2021]

Data Gaps

- 2020 review of 22 effective nutrition interventions along the RMNCH continuum in LMIC
  - Monitoring systems: 6 addressed, 10 partial, 6 not addressed

Progress

- DHS Round-8: 4 new interventions & 3 updated in core questionnaire
- Nutrition interventions added to HMIS in many countries + DHIS-2 Nutrition core module (2022)

…but there is still a lot that is unknown

#1 issue = future of DHS Program & investments in national multi-topic HH surveys

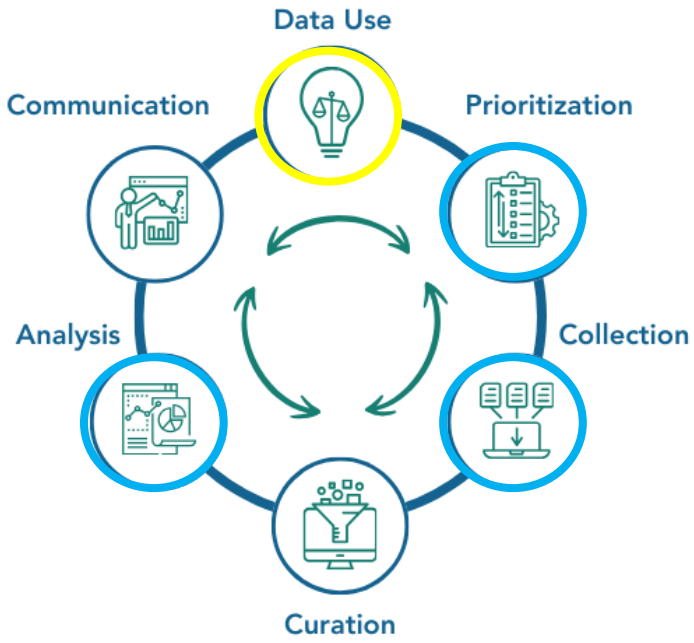
Measurement priorities

- Nutrition does not yet have a core/prioritized indicator set *(in progress)*
- How often are data needed for monitoring & management?

Data collection

- Validity of questions used to collect data
- Indicators & data sources for interventions outside of the health sector

How do we maximize our data investments?



Data DENT

Data for Decisions in Nutrition

- **Learning to ask better questions: findings from formative research and validation studies with household survey participants**: **Sunny Kim**, International Food Policy Research Institute (IFPRI) & **Melinda Munos**, Johns Hopkins BSPH
- **Collecting more with less: learning from experiences implementing new comprehensive nutrition intervention coverage modules and using mobile phone approaches**: **Swetha Manohar**, IFPRI & **Melinda Munos**, Johns Hopkins BSPH
- **Making sense from data: sharing analytical approaches that capture the co-location of interventions in key populations and address data gaps**: **Phuong Hong Nguyen**, IFPRI
- **Policy implications and key takeaways**: **Masresha Tessema**, EPHI

IUNS-ICN 2025

International Congress of Nutrition
24-29 August 2025 | Paris, France

SUSTAINABLE FOOD FOR GLOBAL HEALTH

Asking better questions: Findings from formative research and validation studies with household survey participants

Sunny S. Kim, International Food Policy Research Institute
Melinda Munos, Johns Hopkins Bloomberg School of Public Health

INTERNATIONAL FOOD POLICY RESEARCH INSTITUTE
IFPRI

JOHNS HOPKINS BLOOMBERG SCHOOL of PUBLIC HEALTH

icddr,b

Addis Continental Institute of Public Health
አዲስ ኮንቲኔንታል የሕና አጠባበቅ ኢንስቲትዩት

LINKS OF INTEREST'S DISCLOSURE

We have no conflicts of interest to declare in relation to this presentation.

Challenges with coverage measures and indicators for select evidence-based nutrition interventions

Coverage measures do not **exist**	• **Counseling about infant and young child feeding (IYCF)** • Nutrition-sensitive social protection (NSSP) programs
Coverage indicators are not valid (**inaccurate)**	• **Iron-containing micronutrient supplementation in pregnancy**
Coverage measures are **complex & need refinement**	• **Large-scale food fortification (LSFF)**

Succinct – Accurate – Reliable

Challenge: IYCF counseling coverage measure

- As of 2019, no standard measures on counseling for infant and young child feeding (IYCF). [Gillespie S, et al. *BMJ Glob Health* 2019]
- IYCF practices (e.g., EBF, MDD) often used to proxy intervention coverage; however, practices vary widely by context and do not consistently correlate to intervention coverage
- Measurement challenges:
  - ✓**multiple service platforms and providers** and sources of messages (e.g., mass media and commercial ads)
  - ✓**"counseling"** as a technical term is poorly understood and meaning varies (range of activities)

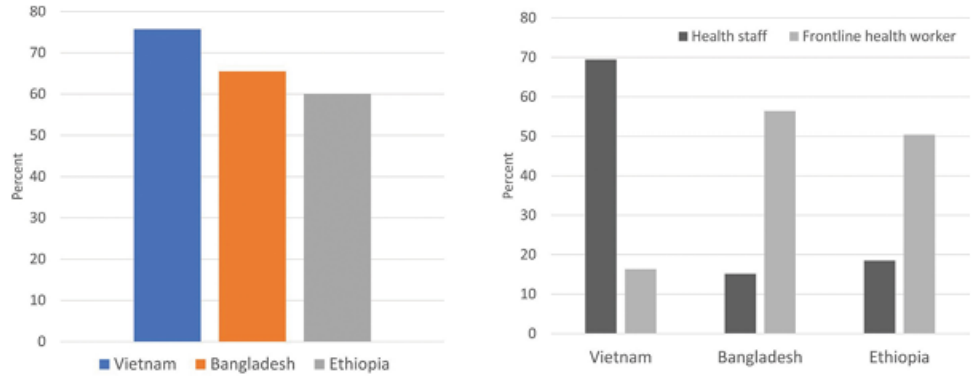
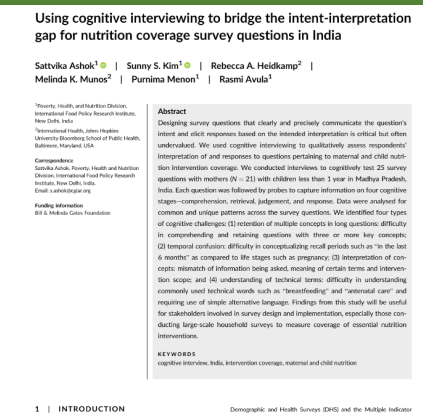


Figure 1 Illustration of the use of core questions about counseling on breast feeding during pregnancy in Bangladesh, Vietnam and Ethiopia.[16 17]

Process: Design new indicators for IYCF counseling

Reviews and consultations (2018)

- **Literature & data review** → measurement framework
- **IYCF Counseling Consultation** (A&T, DataDENT, UNICEF, WHO) to consolidate evidence & propose indicators
- **HH Survey Consultation** (Gates, DD, USAID, UNICEF, WHO) to recommend indicators for inclusion in DHS-8



Using cognitive interviewing to bridge the intent-interpretation gap for nutrition coverage survey questions in India

Sattvika Ashok[1] | Sunny S. Kim[1] | Rebecca A. Heidkamp[2] | Melinda K. Munos[2] | Purnima Menon[1] | Rasmi Avula[1]

[1]Poverty, Health, and Nutrition Division, International Food Policy Research Institute, New Delhi, India
[2]International Health, Johns Hopkins University Bloomberg School of Public Health, Baltimore, Maryland, USA

Correspondence
Sattvika Ashok, Poverty, Health and Nutrition Division, International Food Policy Research Institute, New Delhi, India.
Email: s.ashok@cgiar.org

Funding information
Bill & Melinda Gates Foundation

Abstract

Designing survey questions that clearly and precisely communicate the question's intent and elicit responses based on the intended interpretation is critical but often undervalued. We used cognitive interviewing to qualitatively assess respondents' interpretation of and responses to questions pertaining to maternal and child nutrition intervention coverage. We conducted interviews to cognitively test 25 survey questions with mothers (N = 21) with children less than 1 year in Madhya Pradesh, India. Each question was followed by probes to capture information on four cognitive stages—comprehension, retrieval, judgement, and response. Data were analysed for common and unique patterns across the survey questions. We identified four types of cognitive challenges: (1) retention of multiple concepts in long questions: difficulty in comprehending and retaining questions with three or more key concepts; (2) temporal confusion: difficulty in conceptualizing recall periods such as "in the last 6 months" as compared to life stages such as pregnancy; (3) interpretation of concepts: mismatch of information being asked, meaning of certain terms and intervention scope; and (4) understanding of technical terms: difficulty in understanding commonly used technical words such as "breastfeeding" and "antenatal care" and requiring use of simple alternative language. Findings from this study will be useful for stakeholders involved in survey design and implementation, especially those conducting large-scale household surveys to measure coverage of essential nutrition interventions.

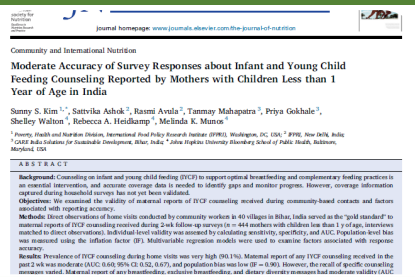
KEYWORDS
cognitive interview, India, intervention coverage, maternal and child nutrition

1 | INTRODUCTION

Demographic and Health Surveys (DHS) and the Multiple Indicator

Cognitive interviews in India & Nepal (2019)

- Assessed interpretation of and responses to survey questions
- Refined questions based on findings
- **Results:**
  - ✓Reduced number of concepts per question
  - ✓Simplified technical terms



journal homepage: www.journals.elsevier.com/the-journal-of-nutrition

Community and International Nutrition

Moderate Accuracy of Survey Responses about Infant and Young Child Feeding Counseling Reported by Mothers with Children Less than 1 Year of Age in India

Sunny S. Kim[1,*], Sattvika Ashok[2], Rasmi Avula[2], Tanmay Mahapatra[3], Priya Gokhale[3], Shelley Walton[4], Rebecca A. Heidkamp[5], Melinda K. Munos[5]

[1] Poverty, Health and Nutrition Division, International Food Policy Research Institute (IFPRI), Washington, DC, USA; [2] IFPRI, New Delhi, India; [3] CARE India Solutions for Sustainable Development, Bihar, India; [4] Johns Hopkins University Bloomberg School of Public Health, Baltimore, Maryland, USA

ABSTRACT

Background: Counseling on infant and young child feeding (IYCF) to support optimal breastfeeding and complementary feeding practices is an essential intervention, and accurate coverage data is needed to identify gaps and monitor progress. However, coverage information captured during household surveys has not yet been validated.

Objectives: We examined the validity of maternal reports of IYCF counseling received during community-based contacts and factors associated with reporting accuracy.

Methods: Direct observations of home visits conducted by community workers in 40 villages in Bihar, India served as the "gold standard" to maternal reports of IYCF counseling received during 2-wk follow-up surveys (n = 444 mothers with children less than 1 y of age, interviews matched to direct observations). Individual-level validity was assessed by calculating sensitivity, specificity, and AUC. Population-level bias was examined using the inflation factor (IF). Multivariable regression models were used to examine factors associated with response accuracy.

Results: Prevalence of IYCF counseling during home visits was very high (90.1%). Maternal report of any IYCF counseling received in the past 2 wk was moderate (AUC: 0.60; 95% CI: 0.52, 0.67), and population bias was low (IF = 0.90). However, the recall of specific counseling messages varied. Maternal report of any breastfeeding, exclusive breastfeeding, and dietary diversity messages had moderate validity (AUC

Validation studies in India, Nepal & Kosovo (2020-2021)

- Gold standard: observations of visit & counseling
- Timeline of recall question tested varied by context (exit, 2wks after visit, or 6mos after delivery)
- **Results:**
  - ✓Obtaining gold standard are challenging.
  - ✓High SN but low SP (over-reporting).
  - ✓Exit interviews had good accuracy; longer recall periods had moderate accuracy.
  - ✓Recall of specific visit/info had poorer accuracy.

Choufani J, et al. *Matern Child Nutr* 2020
Andrew L, et al. *Soc Sci Med* 2022
Kim SS, et al. *J Nutr* 2023
Bryce E, et al. *Matern Child Nutr* 2022
Kim SS, et al. *J Nutr* 2023
McKay M, et al. *BMC Preg Childbirth* 2024

Takeaway: Filling the IYCF counseling data gap

- Survey questions added to DHS-8 Women's Questionnaire:

SECTION 4. PREGNANCY AND POSTNATAL CARE					
NO.	QUESTIONS AND FILTERS	CODING CATEGORIES			SKIP
418	As part of your antenatal care during this pregnancy, did a healthcare provider do any of the following: f) Talk with you about breastfeeding?		YES	NO	DK
		f) BREASTFEED.....	1	2	8
473	During the first 2 days after (NAME)'s birth, did any healthcare provider do the following: d) Talk with you about breastfeeding? e) Observe (NAME) breastfeeding to see if you are doing it correctly?		YES	NO	DK
		d) TALK ABOUT BREASTFEEDING....	1	2	8
		e) OBSERVE BREASTFEEDING.....1		2	8
SECTION 6. CHILD HEALTH AND NUTRITION					
641	In the last 6 months, did any healthcare provider or community health worker talk with you about how or what to feed (NAME)?	YES.....1 NO.....2 DON'T KNOW.....8			

- As of June 2024, six sub-Saharan African countries had published DHS-8 datasets with **estimates of coverage and inequalities** in MIYCN counseling coverage.

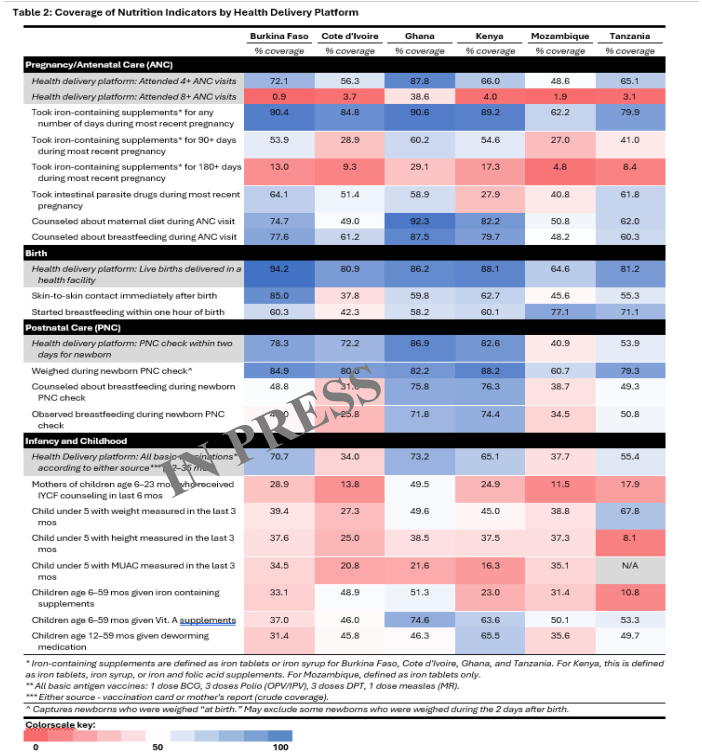


Table 2: Coverage of Nutrition Indicators by Health Delivery Platform

	Burkina Faso	Cote d'Ivoire	Ghana	Kenya	Mozambique	Tanzania
	% coverage	% coverage	% coverage	% coverage	% coverage	% coverage
Pregnancy/Antenatal Care (ANC)						
Health delivery platform: Attended 4+ ANC visits	72.1	56.3	87.8	66.0	48.6	65.1
Health delivery platform: Attended 8+ ANC visits	0.9	3.7	38.6	4.0	1.9	3.1
Took iron-containing supplements* for any number of days during most recent pregnancy	90.4	84.8	90.6	89.2	62.2	79.9
Took iron-containing supplements* for 90+ days during most recent pregnancy	53.9	28.9	60.2	54.6	27.0	41.0
Took iron-containing supplements* for 180+ days during most recent pregnancy	13.0	9.3	29.1	17.3	4.8	8.4
Took intestinal parasite drugs during most recent pregnancy	64.1	51.4	58.9	27.9	40.8	61.8
Counseled about maternal diet during ANC visit	74.7	49.0	92.3	82.2	50.8	62.0
Counseled about breastfeeding during ANC visit	77.6	61.2	87.5	79.7	48.2	60.3
Birth						
Health delivery platform: Live births delivered in a health facility	94.2	80.9	86.2	88.1	64.6	81.2
Skin-to-skin contact immediately after birth	85.0	37.8	59.8	62.7	45.6	55.3
Started breastfeeding within one hour of birth	60.3	42.3	58.2	60.1	77.1	71.1
Postnatal Care (PNC)						
Health delivery platform: PNC check within two days for newborn	78.3	72.2	86.9	82.6	40.9	53.9
Weighed during newborn PNC check^	84.9	80.6	82.2	88.2	60.7	79.3
Counseled about breastfeeding during newborn PNC check	48.8	31.1	75.8	76.3	38.7	49.3
Observed breastfeeding during newborn PNC check	42.2	25.8	71.8	74.4	34.5	50.8
Infancy and Childhood						
*Health Delivery platform: All basic vaccinations** according to either source*** (12–30 m*	70.7	34.0	73.2	65.1	37.7	55.4
Mothers of children age 6–23 mos who received IYCF counseling in last 6 mos	28.9	13.8	49.5	24.9	11.5	17.9
Child under 5 with weight measured in the last 3 mos	39.4	27.3	49.6	45.0	38.8	67.8
Child under 5 with height measured in the last 3 mos	37.6	25.0	38.5	37.5	37.3	8.1
Child under 5 with MUAC measured in the last 3 mos	34.5	20.8	21.6	16.3	35.1	N/A
Children age 6–59 mos given iron containing supplements	33.1	48.9	51.3	23.0	31.4	10.8
Children age 6–59 mos given Vit. A supplements	37.0	46.0	74.6	63.6	50.1	53.3
Children age 12–59 mos given deworming medication	31.4	45.8	46.3	65.5	35.6	49.7

** Iron-containing supplements are defined as iron tablets or iron syrup for Burkina Faso, Cote d'Ivoire, Ghana, and Tanzania. For Kenya, this is defined as iron tablets, iron syrup, or iron and folic acid supplements. For Mozambique, defined as iron tablets only.*
*** All basic antigen vaccines: 1 dose BCG, 3 doses Polio (OPV/IPV), 3 doses DPT, 1 dose measles (MR).*
**** Either source - vaccination card or mother's report (crude coverage).*
^ Captures newborns who were weighed "at birth." May exclude some newborns who were weighed during the 2 days after birth.

Colorscale key: 0 50 100

[Phillips E, et al. *Matern Child Nutr, IN PRESS]*

Challenge: IFA supplementation in pregnancy

In question validation study in Nepal with >400 women who delivered in last 6 months:

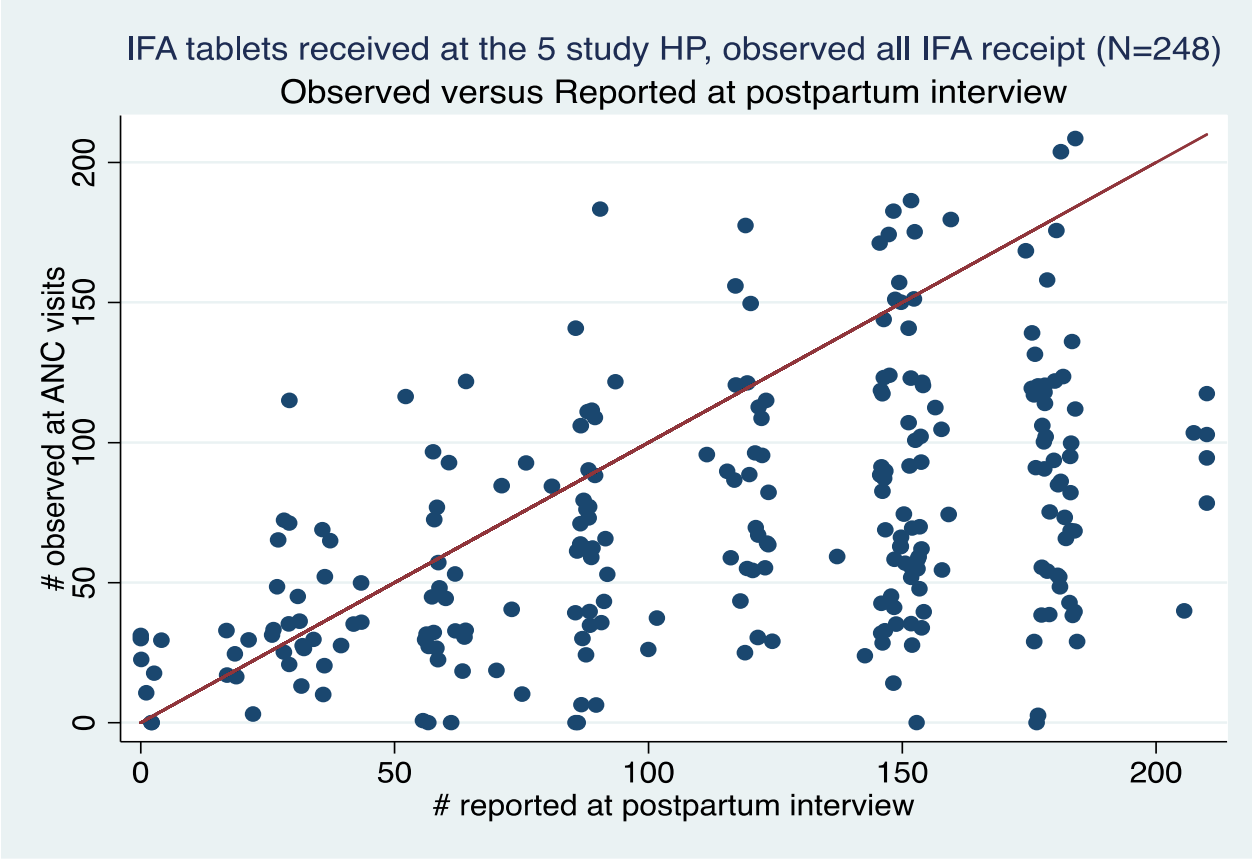
- Women could accurately report of *any iron folic acid (*IFA) during most recent pregnancy.
- However, 72.6% overreported the number of IFA tablets they received, by an average of 70 tablets.
- A smaller number of women significantly under-reported the amount of IFA received.
- Cognitive testing showed that women did not understand questions well.

428 (3) (4)	During the whole pregnancy, for how many days did you take the iron tablets or syrup? IF ANSWER IS NOT NUMERIC, PROBE FOR APPROXIMATE NUMBER OF DAYS.	DAYS . . . . . ☐☐☐ DON'T KNOW 998

[Bryce E, et al J Nutr. 2022; Thorne-Lyman A et al. Soc Sci Med, 2022]

"I have to remember how many days I did not take [iron tablets]. It is a thing from a year ago … how to remember?"

[Thorne-Lyman A et al. Soc Sci Med, 2022]



[Bryce E, et al J Nutr. 2022]

Can we design better questions? Formative research on IFA/MMS coverage questions in Ethiopia and Bangladesh

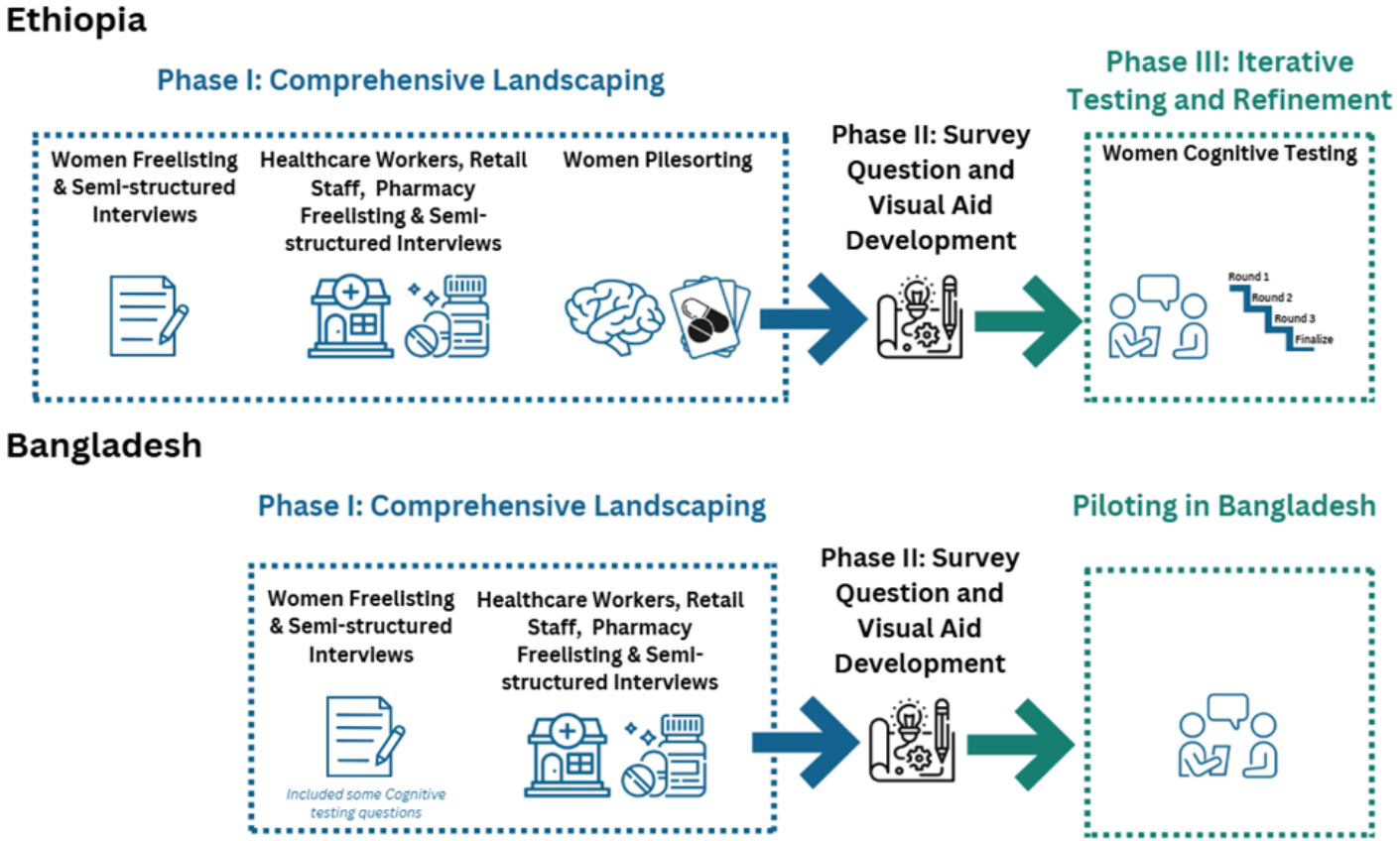


Image: Cognitive Testing in Ethiopia (2024)

Key findings from formative research

- May different prenatal MN products are available in urban market.
- Women *understood "iron,"* but no commonly understood terms to distinguish MMS or multivitamins.
- *Packaging matters:* Many women estimated adherence by the number of completed containers (bottles, blister packs).
- Among **currently pregnant** women:
  - In **Ethiopia**, 7-day adherence recall seemed more accurate than 30-day.
  - In **Bangladesh**, 7- and 30-day adherence questions produced plausible responses.
- Among **recently delivered** women, questions about the *number of months* and the *number of days in a usual week* that IFA was taken were understood and produced plausible responses.
- It was challenging to identify which images to include in the visual aid – women looked for specific product rather than “type” of product.

Takeaway: Can we transition to new questions?

Continue to build evidence & advocate:

- Submitted to DHS-9
- Implemented questions in survey in Bangladesh in 2025
- Ongoing criterion validation studies for MMS adherence questions in Ethiopia (CIFF) and Nepal (ECF)
- Need distinct & memorable branding of UNIMAPP MMS as introduced in countries

Women with birth in last 2 years

1. During your pregnancy with [INSERT NAME IN PP.0], were you given, or did you buy any tablet or syrup that contains iron?

INSTRUCTION: SHOW VISUAL AID

2. During your last pregnancy were you given or did you buy any of the following?
   - A. MMS TABLET OR FULLCARE
   - B. SUPPLEMENTS WITH MULTIPLE MICRONUTRIENTS?
   - C. IRON TABLET OR SYRUPS?

   [SHOW VISUAL AID]
3. During your last pregnancy, how many months pregnant were you when you first started taking [INSERT RESPONSES LISTED IN Q2]?
4. During your last pregnancy, how many months did you take [INSERT RESPONSES LISTED IN Q2]?
5. During you last pregnancy, how many days in a usual MONTH did you take the [INSERT RESPONSES LISTED IN Q2]
6. During your last pregnancy where did you get these [INSERT RESPONSES FROM Q2]? Anywhere else?

Currently pregnant women

1. During this pregnancy, were you given, or did you buy any tablet or syrup that contains iron?

INSTRUCTION: SHOW VISUAL AID

2. During this pregnancy were you given or did you buy any of the following?
   - A. MMS TABLET OR FULLCARE
   - B. SUPPLEMENTS WITH MULTIPLE MICRONUTRIENTS?
   - C. IRON TABLET OR SYRUPS?

   [SHOW VISUAL AID]
3. During this pregnancy, how many months pregnant were you when you first started taking [INSERT RESPONSES LISTED IN Q2]?
4. How many days did you take the [INSERT RESPONSES LISTED IN Q2] in the last MONTH?
5. During this pregnancy where did you get these [INSERT RESPONSES FROM Q2]? Anywhere else?

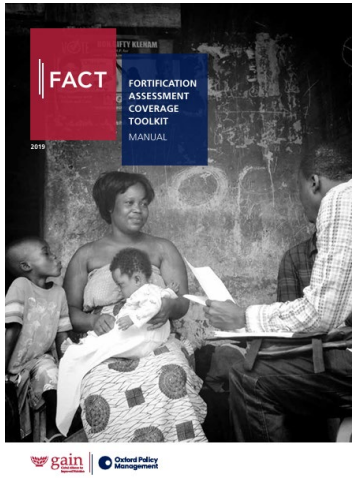
Challenge: LSFF coverage measures

- GAIN's 2013 Fortification Assessment Coverage Toolkit (**FACT**) provides survey questions to construct several indicators, including:

  % of households that consumes the **fortifiable**[1] food vehicle (at home)

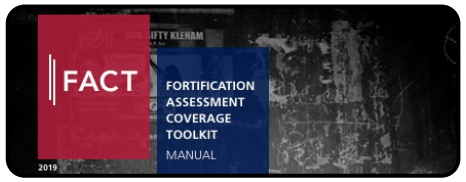
- Estimates of coverage of **fortified food** requires testing samples.
  - Rapid test kits are not readily available except for iodized salt. Food samples must be collected & tested in lab ($$$) or need improved linkage between purchase data and production-level data on quality.

- Measurement issues:
  - ✓ Need to reduce to a **minimum set of Qs** to include within multi-topic surveys
  - ✓ Uncertainly about consumer **recall/reporting of key product characteristics** - brands, packaging, statement and logos



[1]**fortifiable** = industrially processed and amenable to adding micronutrients

Formative research for LSFF coverage measures



Technical consultations with GAIN, 2022-2023

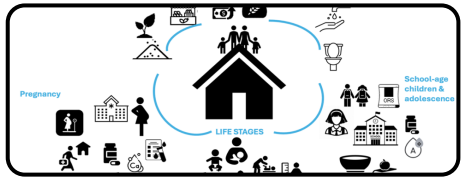
- Reviewed FACT questionnaire in detail
- Identified minimum set of questions for further formative research

Market landscaping in Bangladesh and Ethiopia, 2024

- Types of shops (categories of sources as response options)
- Types of food vehicles, brands, packaging characteristics, logos and fortification statements

Cognitive interviews in Bangladesh and Ethiopia, 2024

- Assessed qualitatively respondents' interpretation of and responses to survey questions to improve questions and response options

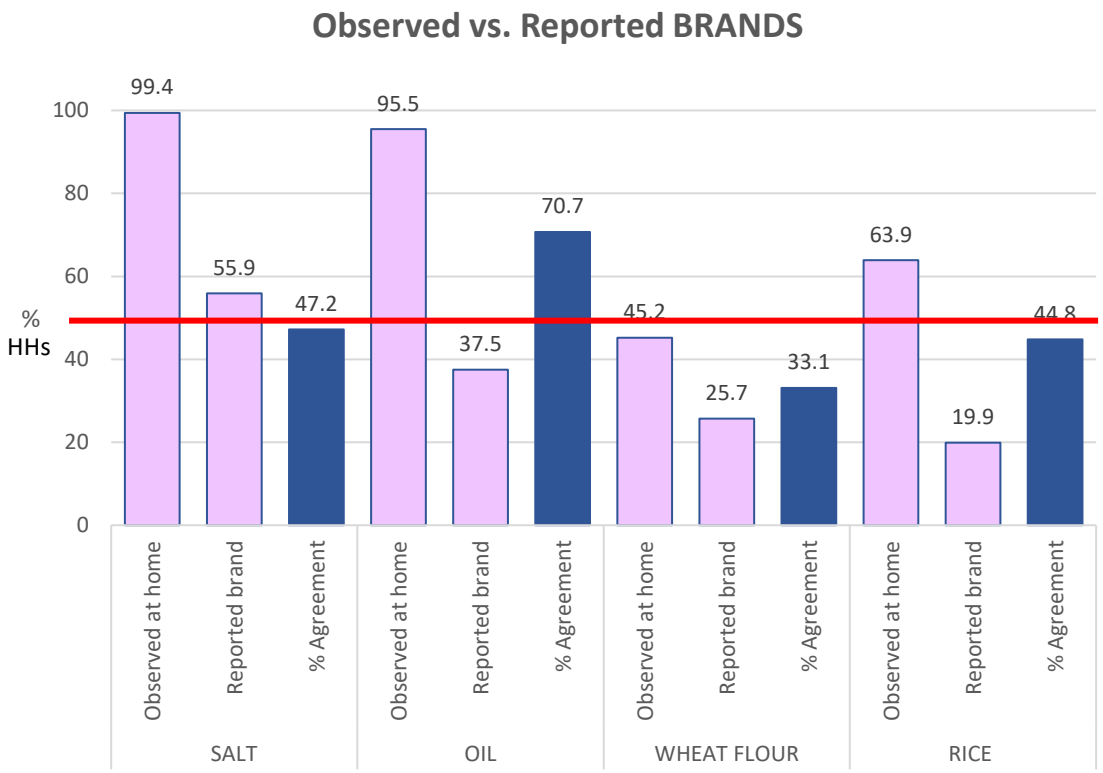


Testing of measures in methods-focused HH coverage survey in Bangladesh, 2025

- Administered revised survey questions for each food vehicle (i.e., salt, rice, oil, wheat flour)
- Compared brand reporting vs. observation recording

Key findings from formative research

- **Sources (retail):** shop categories (e.g., stores, permanent/non-permanent markets, kiosks) were not consistently understood
- **Food vehicle (FV) types**: many types of FVs (e.g., 35 types of rice in BD, 8 types of cooking oil in ET)
- **Brands**: 100s of brands, and few can recall. <50% agreement on reported vs. observed brand names except for cooking oil
- **Fortification statements or logos**: common for cooking oil but never for wheat flour
  - "Fortified" or "added nutrients" terms hardly ever understood



Takeaway: Simplifying LSFF coverage questions

- Minimum set of LSFF coverage questions for each food vehicle **submitted to DHS-9.**
  - ✓~2 questions for indicator of **fortifiable food coverage**
  - ✓~2 questions to ask about food available at home, to obtain **sample for testing**
  - ✓<u>If</u> **brand name** desired (linkage to producer-level data), recommend data based on observation <u>not</u> reported.

Question	Response Options	Skip pattern
1.1 Does your household use cooking oil to prepare or add to foods at home?	Yes..... 1 No..... 2	2⇨go to 2.1
1.2 May I see the main cooking oil that is used for most meals in your household?	Yes..... 1 No..... 2	1⇨go to 1.3A 2⇨go to 1.3B
1.3A When your household got this cooking oil, where did your household get it from?	Purchased from market/shop/kiosk/wholesaler/street vendor/[insert other local places]..... 1 Received from food aid/social protection program..... 2 Homemade or obtained from local farm or local small factory/processor..... 3 Other (specify): _____..... 6 Don't know/remember..... 8	1 or 2 ⇨go to 1.4 3, 6 or 8 ⇨go to 2.1
1.3B The <u>last time</u> your household got cooking oil, where did your household get it from?	Purchased from market/shop/kiosk/wholesaler/street vendor/[insert other local places]..... 1 Received from food aid/social protection program..... 2 Homemade or obtained from local farm or local small factory/processor..... 3 Other (specify): _____..... 6 Don't know/remember..... 8	go to 2.1

Overall Takeaways

- We need more research to improve **how we measure coverage**, as each intervention has a unique considerations.
- We will never develop the *perfect* household survey questions but strengthening the **evidence base** for accurate measurement is necessary.
- Context matters, but global/expert consultation and consensus are needed for **standard measures** to allow comparisons across countries and comparability over time.

Q&A

IUNS-ICN 2025

International Congress of Nutrition
24-29 August 2025 | Paris, France

SUSTAINABLE FOOD FOR GLOBAL HEALTH

Collecting more with less

Learning from experiences implementing nutrition intervention coverage modules and mobile phone approaches

Swetha Manohar, International Food Policy Research Institute
Melinda Munos, Johns Hopkins University

INTERNATIONAL FOOD POLICY RESEARCH INSTITUTE
IFPRI

JOHNS HOPKINS BLOOMBERG SCHOOL of PUBLIC HEALTH

icddr,b

NO CONFLICTS OF INTEREST TO DISCLOSE

Overview

- **Why** use population-based surveys to measure nutrition intervention coverage?
- **What** are some key considerations around survey design?
- **How** can we “count” the costs for in-person surveys?
- **What** methods exist to improve efficiency of household survey data collection?

Why use population-based surveys to measure nutrition intervention coverage?

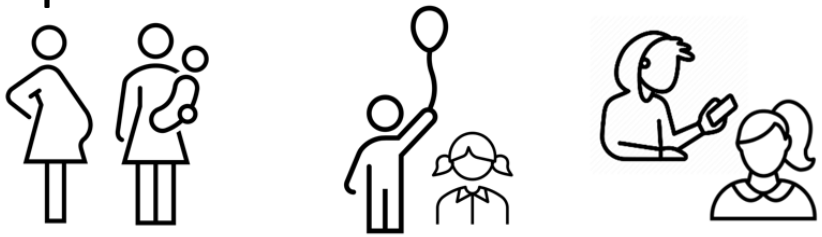
- Many nutrition interventions and behaviors **happen in the home & community** rather than health facilities
- Information about receipt of interventions needs to be **collected from individuals**
- Population-based surveys:
  - ✓ provide **representative estimates**
  - ✓allow for **equity analyses**
  - ✓allow for **co-coverage analysis**

What are key survey design considerations for measuring nutrition intervention coverage?

- **Prioritization** of which interventions & target populations to include
- **Sampling considerations**
  - Needed level of precision
  - Level of representativeness (e.g. state, district)
  - Target population for each intervention- can be narrow (e.g., diarrhea treatment in last 2 weeks)
  - To get adequate # of individuals in each target population may need to ⬆ HHs visited
    - Each HH usually has multiple individuals in target populations
    - Who can report on these interventions in the household?
      - Straightforward, e.g., breastfeeding practices
      - More complex, e.g., participation in social protection programs

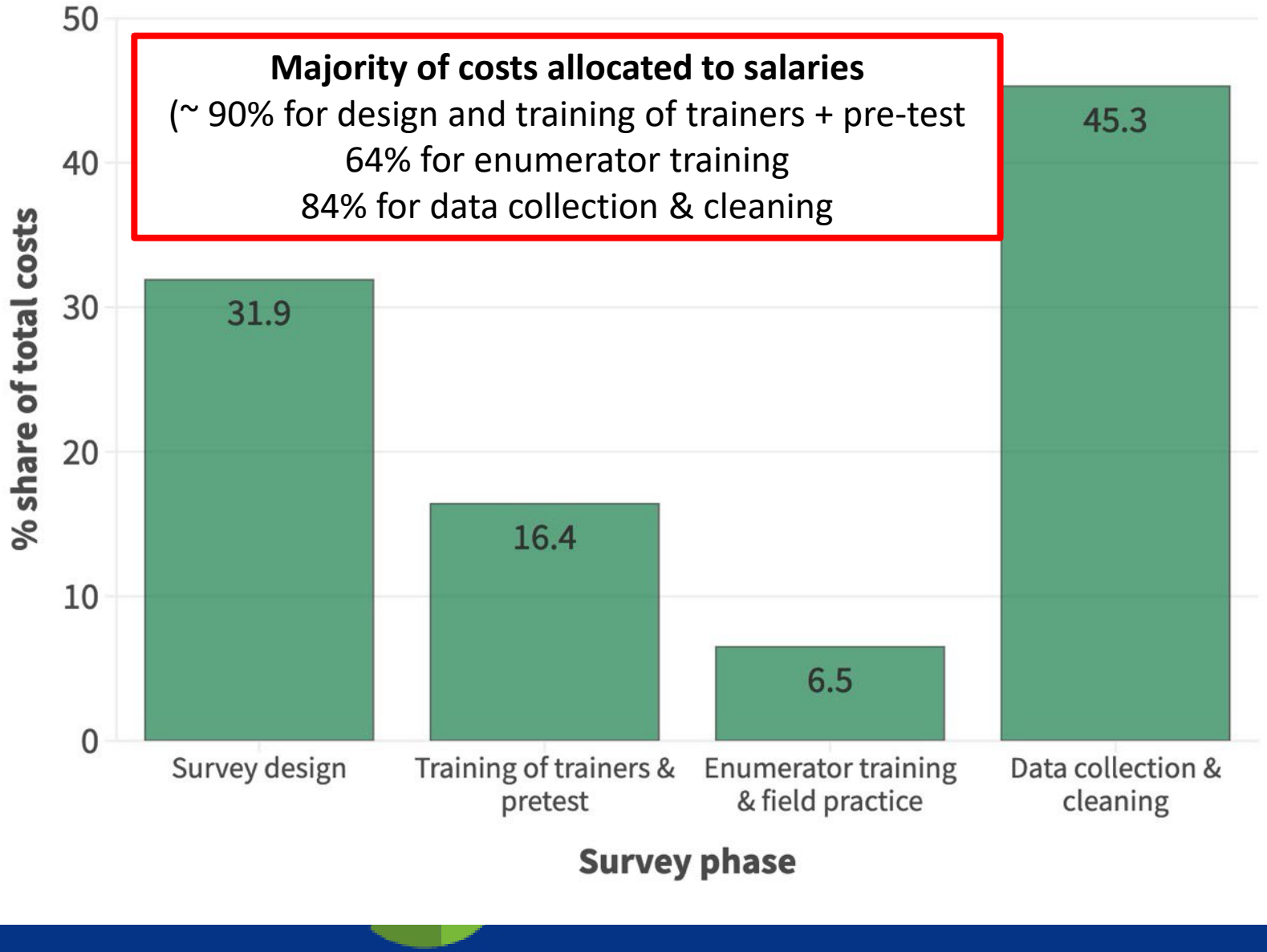
One Nutrition Coverage Survey (ONCS) Bangladesh, 2025

- **Methods- focused, cross-sectional survey**
- **4 districts** in 4 divisions
- Multi-stage cluster sampling
  - ✓PPS (164 EAs), simple random sampling (n= 3496 households)
- Data collection: coverage of nutrition interventions mapped to national policy/ program (multi-sectoral)
- Key populations of interest



- **Monetary costs by study phases:**
  - ✓Design
  - ✓Training of trainers & pre-testing
  - ✓Data collection & data cleaning
  - ✓Data Management & Analysis
  - ✓Dissemination
- **Non-monetary costs**
  - ✓Perceived level of effort
  - ✓Time burden to respondent
  - ✓Respondent fatigue

Share of total costs for ONCS by survey phase



Data source: expenditure reports using budget template

Rating level of effort for ONCS modules

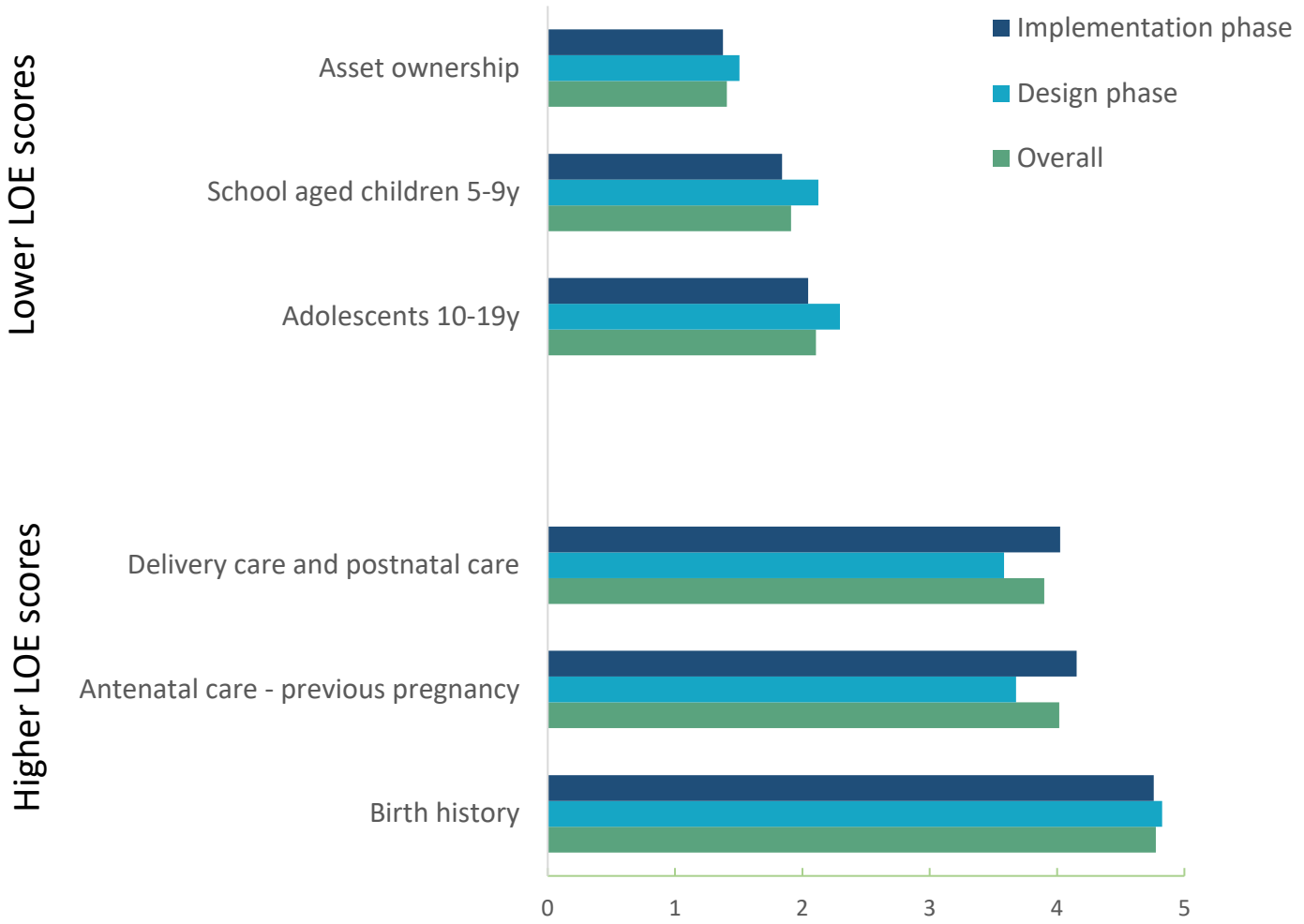
26 survey modules

Dimensions of efforts

- Challenging to customize (0-5)
- Length (0-5)
- Exogenous topic (0-5)
- Changes in survey design/eligibility (0-5)
- Increases sample size/design (0-5)
- Extra logistic (0-5)
- Burden on training (1-5)
- Burden on supervision (0-5)
- Burden on data processing & analysis (0-5)
- Burden on respondent (1-5)

Rated by team members

- Diet Quality Questionnaire (DQQ)-Adolescent



Survey duration: Average time per respondent type

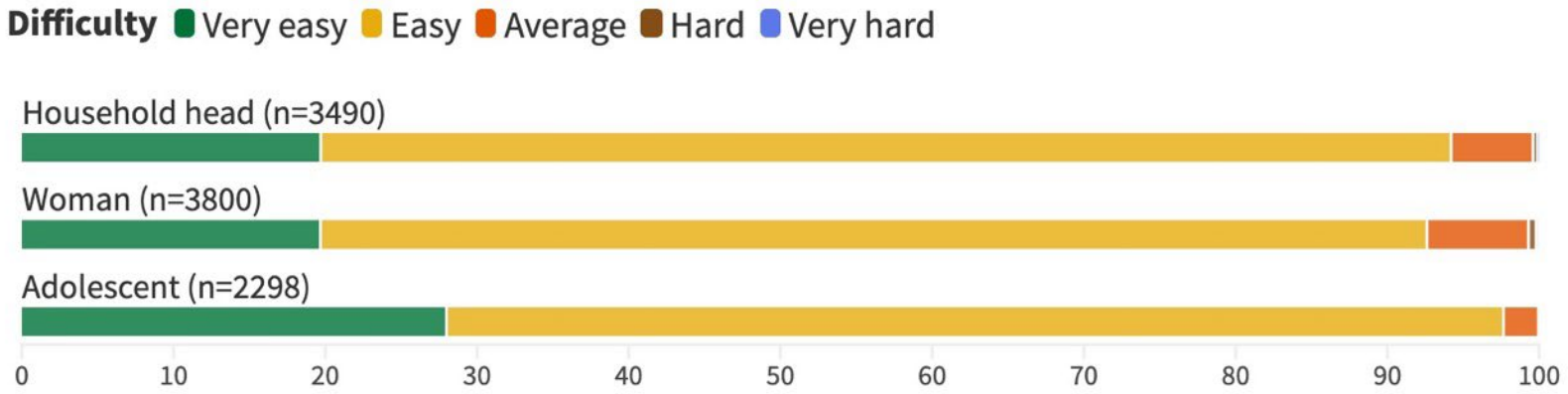
Interview duration by respondent type

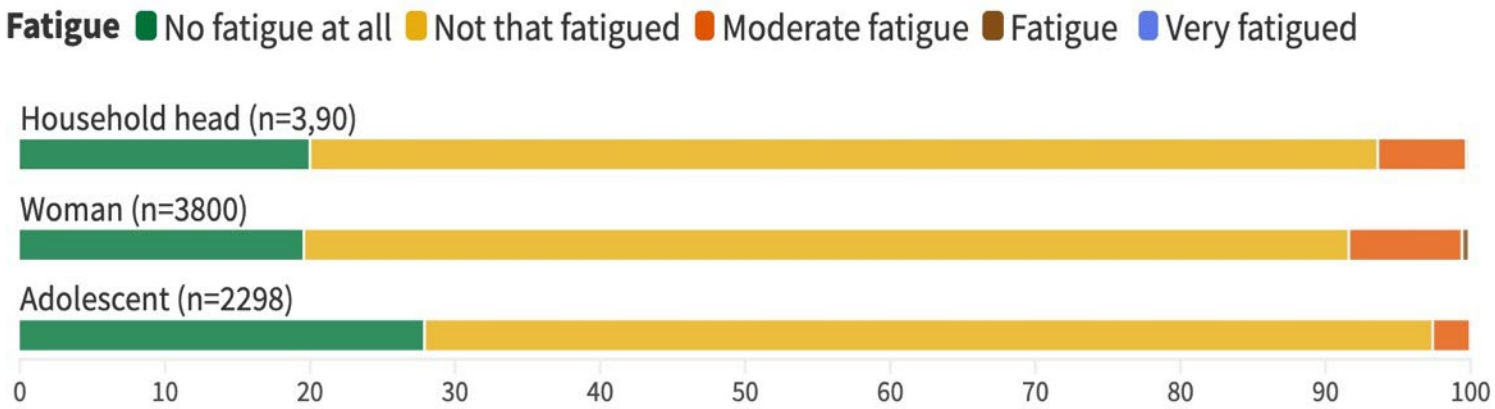
Respondent type	Respondents	Interview duration, mins
	n	Mean (SD)
Household head	3493	17.0 (9.0)
Person responsible for shopping	3483	6.0 (4.0)
Woman of reproductive age (WRA), 15-49y		
WRA + married adolescent. 10-14y	3798	17.9 (20.1)
Non-preg WRA*	3424	1.1 (1.7)
Currently preg WRA*	382	9.5 (5.9)
WRA* with birth in the past 2y	530	21.2 (10.6)
WRA* with birth in the past 9y	1,735	3.8 (4.3)
Adolescent 10-19y	2,298	2.6 (2.5)
Caretaker of children 0-9y	50	5.0 (3.9)

Data source:
CAPI time stamp

*WRA = Women of reproductive age, Includes married adolescents, 10,14y

Respondent burden (self reported)





- Overall, the survey was considered a low burden to respondents
- Significant correlation between survey duration and burden specifically for women

How might we collect nutrition coverage data more efficiently?

This is our focus today

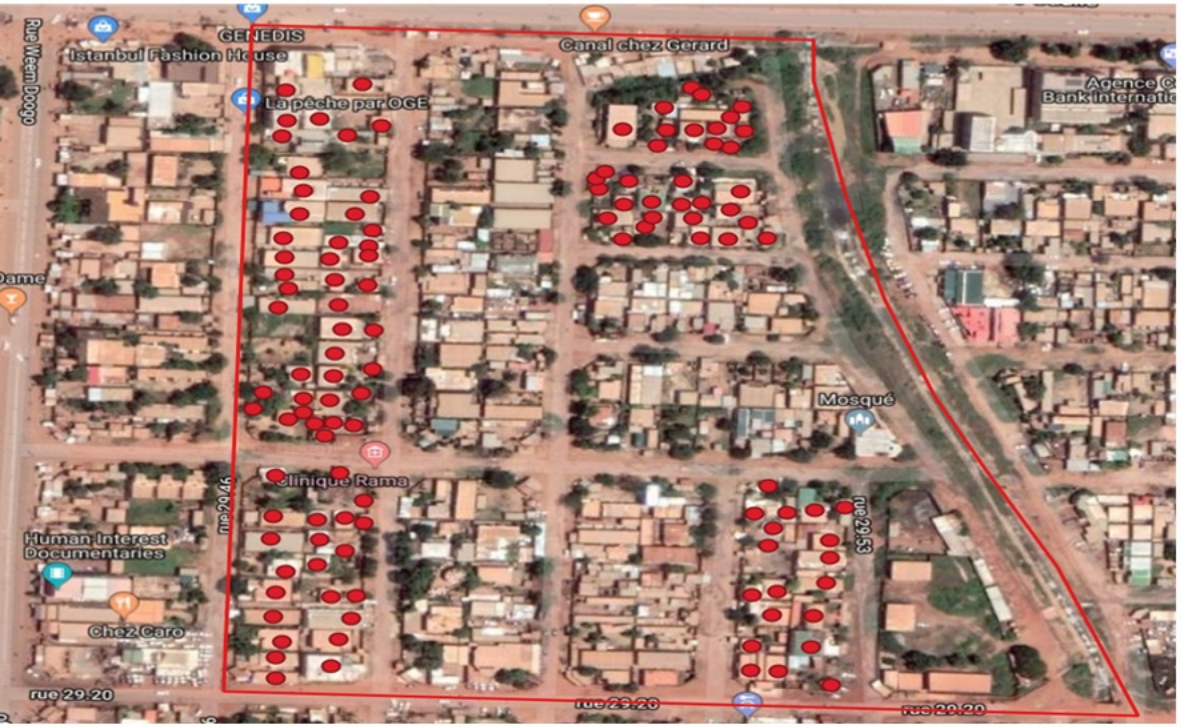
1. Collect in-person data more efficiently (sampling innovations; comprehensive surveys; standard indicators/questions/ methods)
2. Move some in-person data collection to mobile phones
3. Move some in-person data collection to health facilities
4. Piggyback on other platforms for data collection

All of these have advantages, drawbacks, and specific use cases; none will work for every indicator

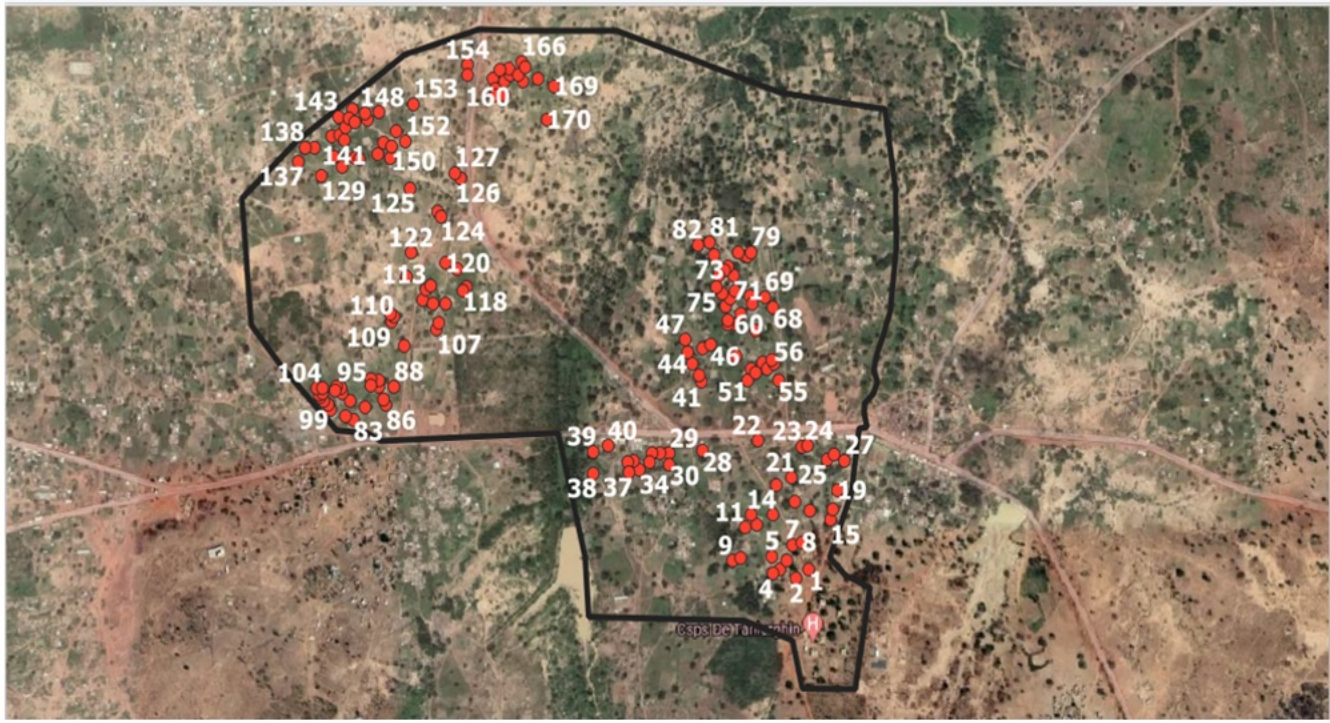
Collect in-person data more efficiently

Example: using satellite data to support HH listing stage

Example in urban areas

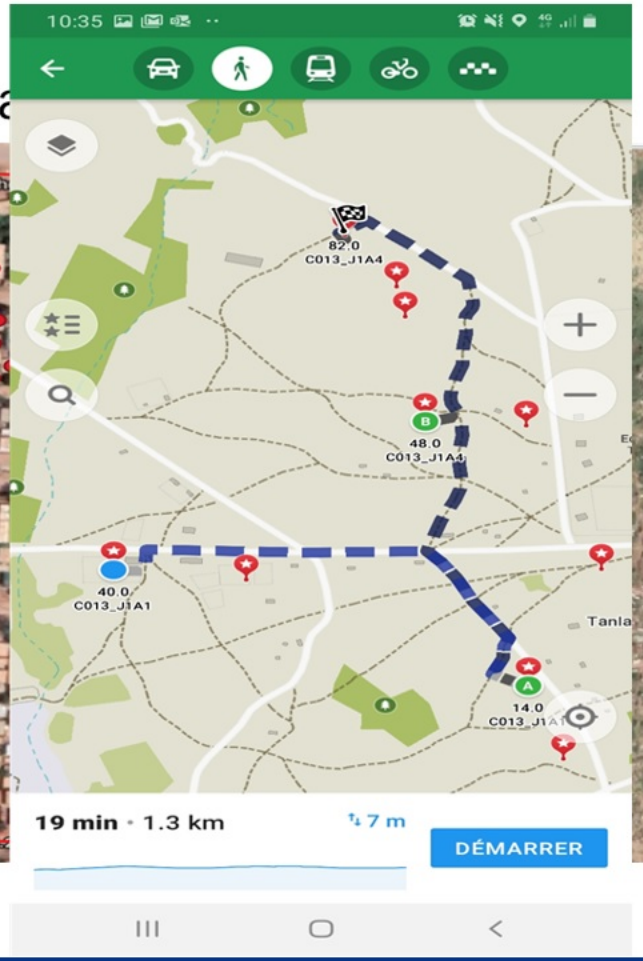


Example in rural areas

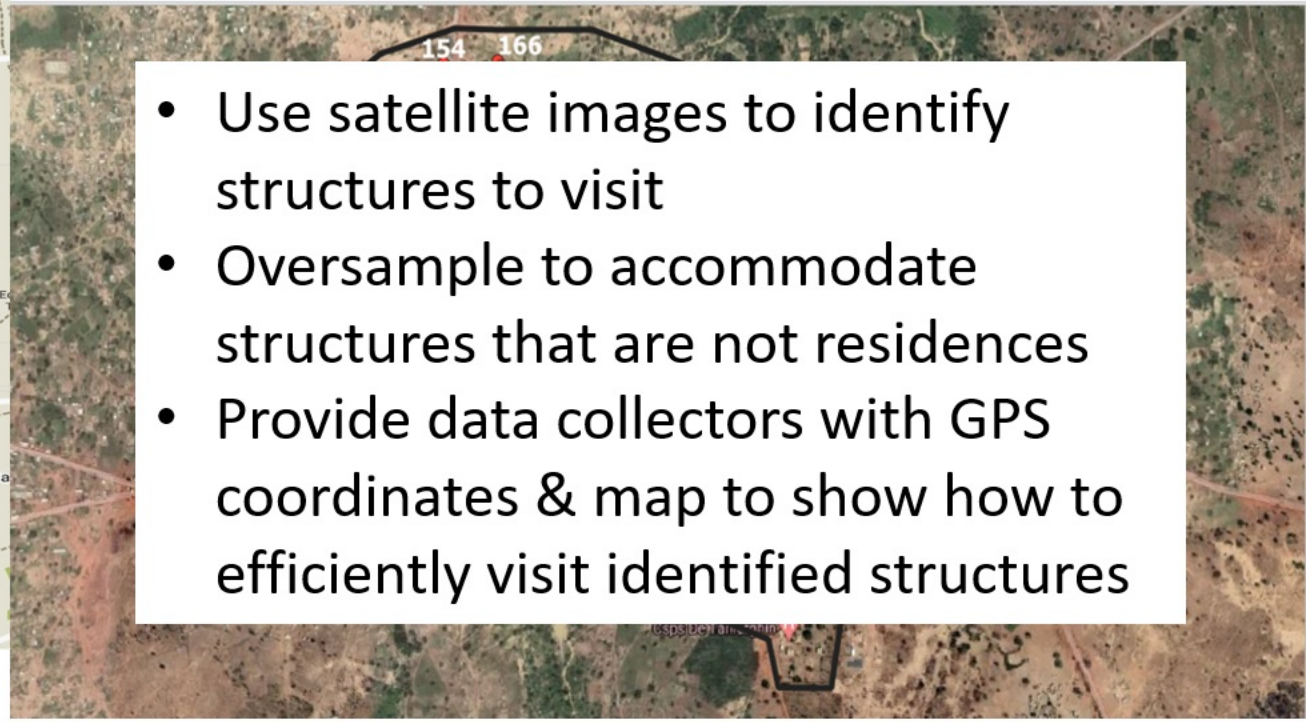


Collect in-person data more efficiently

Example: using satellite data to support HH listing stage



Example in rural areas



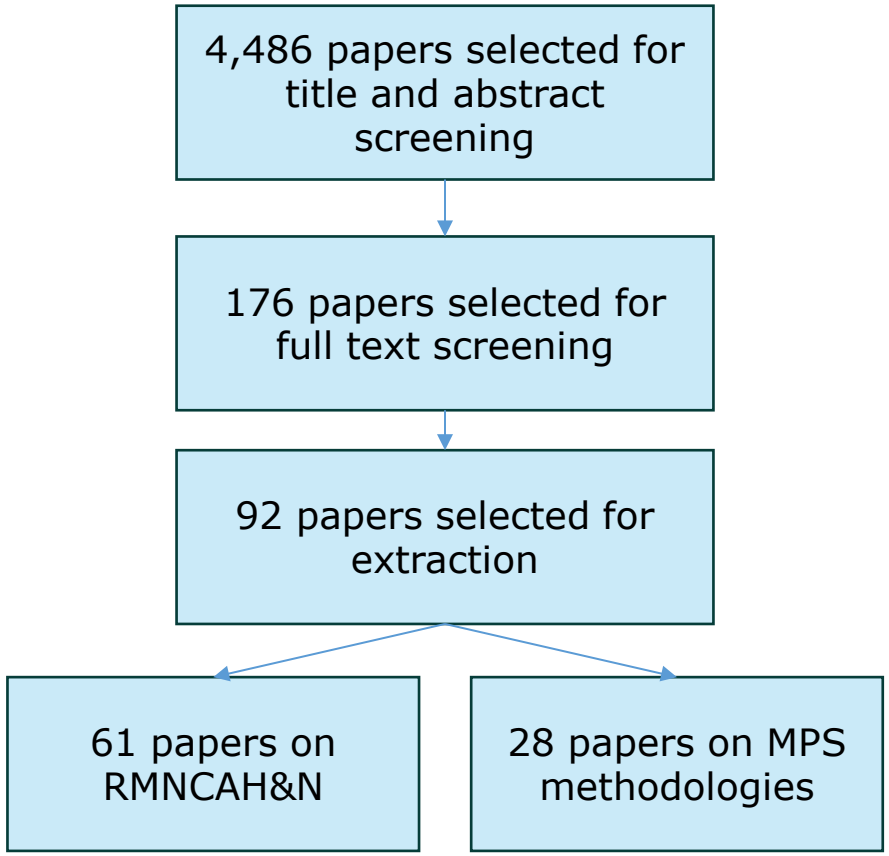
- Use satellite images to identify structures to visit
- Oversample to accommodate structures that are not residences
- Provide data collectors with GPS coordinates & map to show how to efficiently visit identified structures

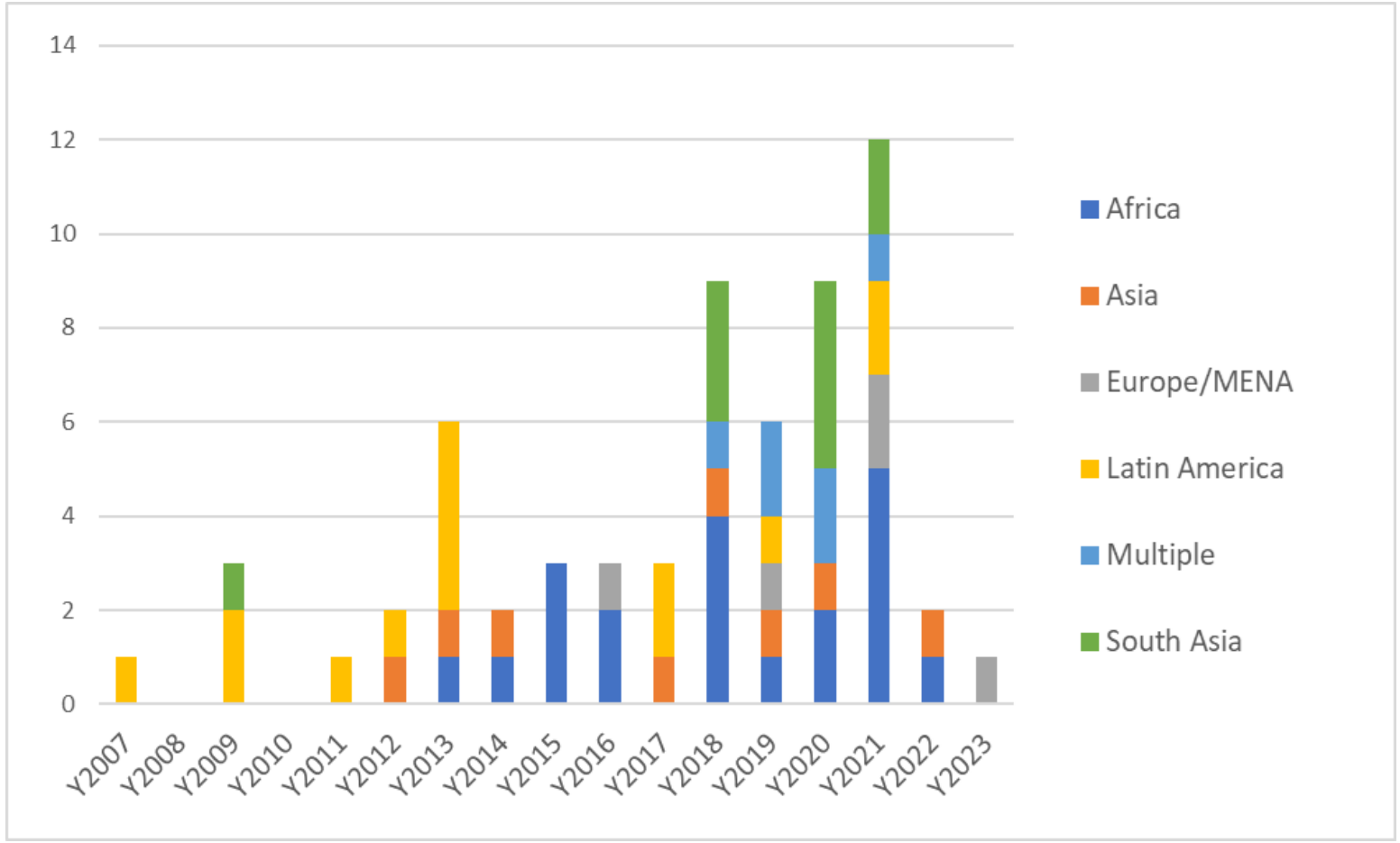
Move from in-person to mobile phone surveys (MPS)

- Rapid rise of mobile phone technology presents a potential opportunity to collect rapid, cost-effective data in LMICs
- Questions about when & how MPS will obtain valid measures of intervention coverage
  - Gender gap in mobile phone ownership/access
  - Socio-demographic inequities in mobile phone ownership
  - MPS differ from in-person surveys in many ways, including questionnaire construction, sampling, interview modalities, analysis, and data use

When does the cost, speed, and quality/validity of mobile phone surveys support their use for nutrition data collection?

Use of MPS for reproductive, maternal, child and adolescent health & nutrition indicators has increased over time (preliminary data)





Reaching a representative sample is a particular challenge for MPS measuring maternal and child nutrition indicators

	Gujarat		Telangana		Uttar Pradesh	
	Current study	NFHS-5	Current study	NFHS-5	Current study	NFHS-5
Sample size	1048	33,343	1027	27,518	996	93,124
Mother's age (years)						
15-19	1.0	15.6	1.6	12.3	0.6	21.0
20-24	49.3	16.1	44.8	14.9	35.4	18.5
>24	50.1	68.2	53.9	72.7	63.7	60.6
Mother's education (number of years of schooling completed)						
No schooling	12.7	20.9	1.9	32.6	11.9	28.6
<5y	8.8	7.1	1.5	3.2	2.9	2.3
5-9y	49.7	38.2	11.7	18.7	39.8	29.8
10-11y	12.8	12.4	32.8	19.0	13.2	11.7
12y or more	15	21.3	50.1	26.5	30.6	27.6

Takeaways

- Decisions during the survey design phase can help reduce the cost & increase the efficiency of nutrition coverage data collection
- Nutrition coverage questions have low respondent burden when asked in a nutrition-focused survey (vs. a longer multi-topic survey)
- Mobile phone surveys may be used to collect nutrition intervention coverage data in some contexts but more evidence is needed to support implementation decisions
- Need more evidence on **cost**, **time**, and **quality/validity** of different approaches to support decisions about how to collect nutrition coverage data

Q&A

IUNS-ICN 2025

International Congress of Nutrition
24-29 August 2025 | Paris, France

SUSTAINABLE FOOD FOR GLOBAL HEALTH

Implementing co-coverage and composite coverage estimation for multisectoral nutrition interventions

Phuong Hong Nguyen, International Food Policy Research Institute

INTERNATIONAL FOOD POLICY RESEARCH INSTITUTE
IFPRI

JOHNS HOPKINS BLOOMBERG SCHOOL of PUBLIC HEALTH

Ethiopian Public Health Institute

icddr,b

Reducing malnutrition in key populations requires receipt of multiple interventions, often delivered by different sectors

To prevent or reduce vitamin A deficiency in young children

Health

Industry

To improve pregnancy & birth outcomes during ANC

Health

Social protection

To reduce anemia in women of reproductive age

Health

Industry

How do we estimate whether target populations are being reached with multiple interventions?

Estimating coverage with multiple interventions

Is there a single household survey that measures coverage of all interventions of interest? *(e.g. ANC)*

CO-COVERAGE

directly measured data on all interventions received by individuals & HH

SIMPLE COUNTS/ MORE TRANSPARENT

Are coverage data for each intervention available – but spread across different data sources? *(e.g. Vitamin A)*

COMPOSITE COVERAGE

estimates from different sources need to be at the same admin or sub-group level (e.g. urban/rural)

OFTEN REQUIRES MORE ADVANCED ANALYTICAL METHODS

DataDENT is developing generalized stepwise methods for co-coverage & composite coverage analysis

Countdown to 2030
Women's, Children's & Adolescents' Health

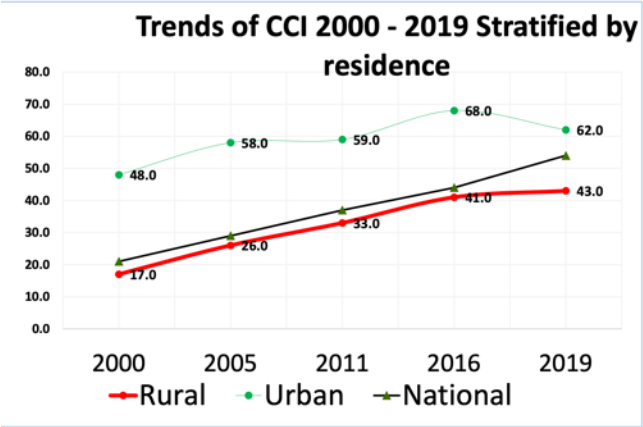


Figure: Ethiopia CCI Trends (2000-2019)

- Building from CD 2030 work on co-coverage & Composite Coverage Index (CCI) for Universal Health Care
- Most recent CCI Includes 11 interventions
- Used for global & national monitoring

DataDENT Generalized Approach

1. Identify concept for aggregated indicator
2. Select data source(s) and indicators
3. Decide on approach to weighting
4. Calculate aggregated indicators
   - *Manage missing data (composite)*
   - *Apply weights*
   - *Normalize and scale for comparability*
   - *Calculate confidence intervals*
5. *Validate against outcome (as feasible)*

https://www.countdown2030.org/wp-content/uploads/2024/02/CAM-2023-Ethiopia-Analysis-Results.pdf

Conceptual framework: examples of how to define indicators

By life stage
Interventions recommended for: • Pregnant women • Children 6-23 months • Across continuum of care: maternal and child • Adolescents • Women of Reproductive age (pre-pregnancy)

By public health program or problem
Interventions to address: • Stunting reduction • **Anemia control (WRA / entire population)** • Control of Vitamin A deficiency in children

Selecting the nutrition interventions to include in the co-coverage / composite coverage indicator

- Review global or national nutrition policy/strategy to identify interventions
- Map availability of coverage data for each intervention across dataset(s)
- Decide what to include in aggregated indicators
  - *For co-coverage approach* may not be able to include every intervention in policy, but should be sufficient for meaningful aggregated indicator
  - For *composite coverage approach* may need to use statistical approaches to fill data gaps
    - e.g. if one dataset has state level representative data & another rural/urban representative data

Weighting individual intervention estimates

- Weights can be used in co-coverage or composite coverage analysis
- Weighting is used if certain interventions are considered more (or less) important in the aggregated indicator
- Weighting is not necessary but might be preferred
- Weights can be determined by multiple factors – often will be a judgement call related to a more specific use case

Comparative analysis: anemia control

Country	Co-coverage data source	Composite coverage data sources*
Ethiopia 	• EPHI National Food & Nutrition Baseline Survey 2023	• 2016 DHS • 2019 DHS • 2015 Micronutrient Survey • 2021/22 Socioeconomic Panel Survey
Bangladesh 	• One Nutrition Coverage Survey 2025	• 2022 DHS • MICS 2019

**it is also possible to use administrative data for composite coverage analysis*

CO-COVERAGE: Selecting and weighing indicators from ONCS 2025 for anemia control program

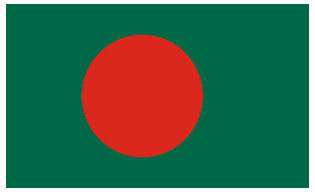
INDICATOR (Y/N)	SECTOR	CATEGORY	SURVEY POPULATION
Attended 4+ ANC visits	Health	Preventive care	Last pregnancy <2y
Started ANC in 1st Trimester	Health	Preventive care	Last pregnancy <2y
Received preventive deworming	Health	Preventive care	Last pregnancy <2y
Regularly used mosquito net	Health	Preventive care	Last pregnancy <2y
Took iron tablet/syrup 90+ days	Health	Supplementation	Last pregnancy <2y
Received cash/ food supplementation	Social protection	SP Transfer	Last pregnancy <2y
Daily or intermittent IFA during lactation	Health	Supplementation	Last pregnancy <2y
Child iron tablet or syrup (6-23m)	Health	Supplementation	Child 6-23 months
Child preventative deworming (12-23m)	Health	Preventive care	Child 12-23 months
HH-level cash or food assistance	Social protection	SP transfer	Household
Improved water sources	WASH	WASH	Household
Basic handwashing facility	WASH	WASH	Household
Improved sanitation	WASH	WASH	Household
HH received any NSA supports	Agriculture	NSA	Household
HH with fortifiable wheat flour and oil	Industry	Food fortification	Household

CO-COVERAGE: approaches considered to weight indicators

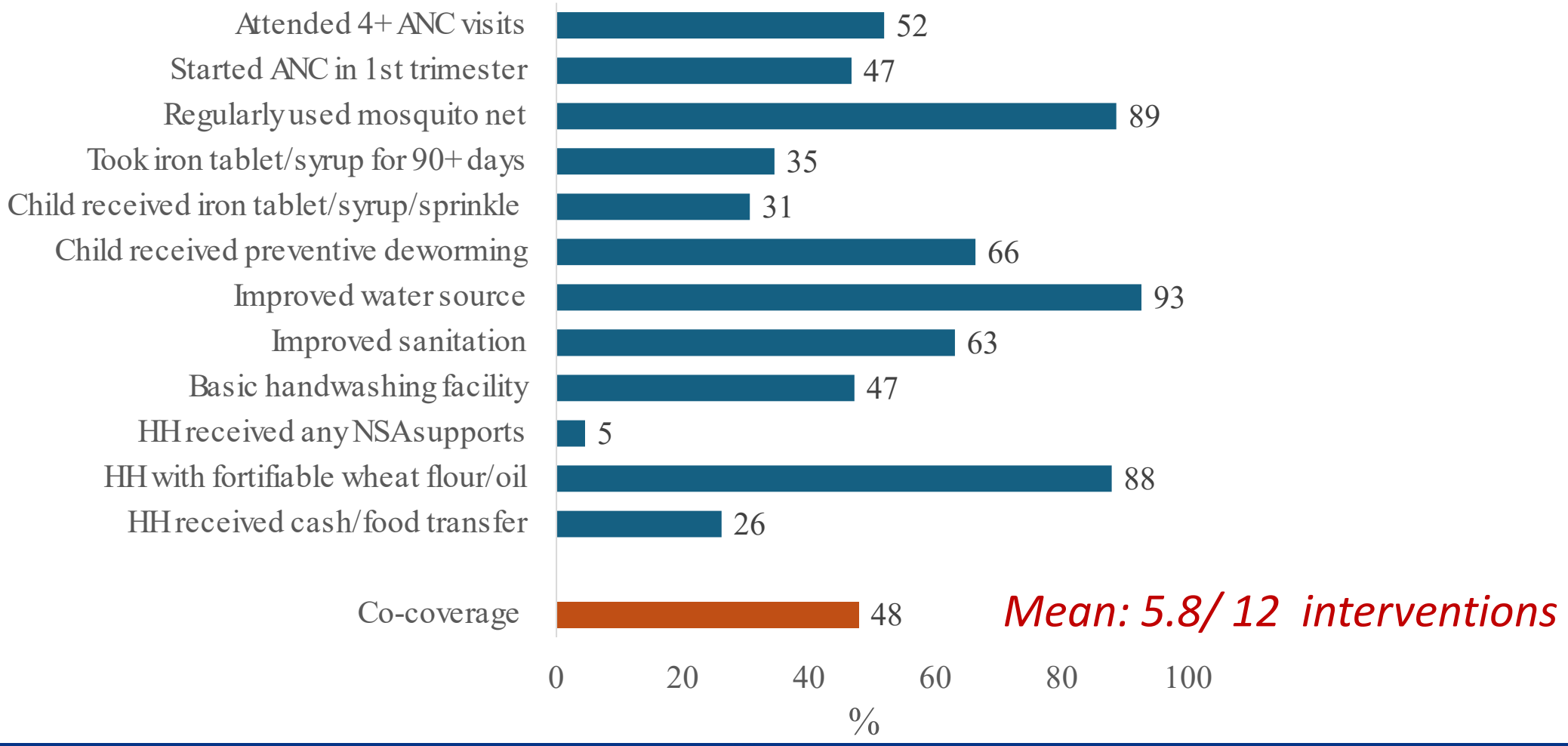
- **Equal (no weights):** every indicator is scored equally
- **Parts of a whole:** sub-indicators (dimensions) of the same intervention/service platform
- **Implementation priority:** level of importance of interventions within multisectoral strategy/policy
  - *e.g., by financial resource investment or extent of implementation*

CO-COVERAGE: Selecting and weighing indicators from ONCS 2025 for anemia control program

INDICATOR (Y/N)	SECTOR	CATEGORY	SURVEY POPULATION	WEIGHT
Attended 4+ ANC visits	Health	Preventive care	Last pregnancy <2y	**0.5**
Started ANC in 1st Trimester	Health	Preventive care	Last pregnancy <2y	**0.5**
Received preventive deworming	Health	Preventive care	Last pregnancy <2y	**1**
Regularly used mosquito net	Health	Preventive care	Last pregnancy <2y	**1**
Took iron tablet/syrup 90+ days	Health	Supplementation	Last pregnancy <2y	**1**
Received cash/ food supplementation	Social protection	SP Transfer	Last pregnancy <2y	**1**
Daily or intermittent IFA during lactation	Health	Supplementation	Last pregnancy <2y	**1**
Child iron tablet or syrup (6-23m)	Health	Supplementation	Child 6-23 months	**1**
Child preventative deworming (12-23m)	Health	Preventive care	Child 12-23 months	**1**
HH-level cash or food assistance	Social protection	SP transfer	Household	**1**
Improved water sources	WASH	WASH	Household	**0.5**
Basic handwashing facility	WASH	WASH	Household	**0.5**
Improved sanitation	WASH	WASH	Household	**1**
HH received any NSA supports	Agriculture	NSA	Household	**1**
HH with fortifiable wheat flour and oil	Industry	Food fortification	Household	**1**



CO-COVERAGE: individual & aggregated estimates for anemia control program



Mean: 5.8/ 12 interventions

COMPOSITE COVERAGE: Selecting and weighing indicators for anemia control among pregnant women in Ethiopia

INDICATOR	SECTOR	CATEGORY	SURVEY POPULATION	DATA SOURCE
Attended 4+ ANC visits	Health	Preventive care	Last pregnancy <2y	2019 DHS
Started ANC in 1st trimester	Health	Preventive care	Last pregnancy <2y	2019 DHS
Deworming	Health	Preventive care	Last pregnancy <2y	2016 DHS
Nutrition counseling from health worker	Health	Counseling	Last pregnancy <2y	2019 DHS
Took iron tablet/syrup 90+ days	Health	Supplementation	Last pregnancy <2y	2019 DHS
Received cash or food assistance	Social protection	SP transfer	Last pregnancy <2y	2021/22 SES Panel Survey
Food items fortifiable with micronutrients (oil, wheat) in HH	Industry	LSFF	Household on day of survey	2015 MN Survey

COMPOSITE COVERAGE: engaged country stakeholders & global experts about weighting

Option 1: Policy-based approach (country stakeholder engagement)

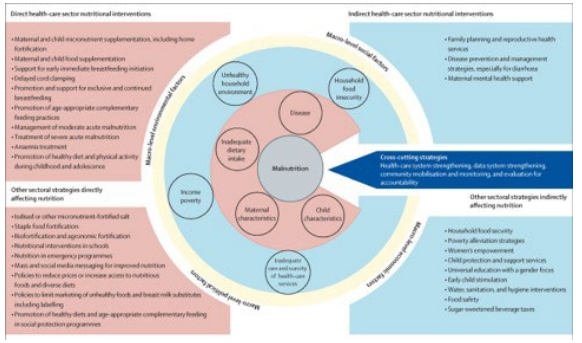
- *decide to give equal weight to all interventions included in policy*

Option 2: Relative effectiveness on nutrition outcome (global expert opinion)

- *experts gave each intervention 0-4 weight – took average*

Option 3: Using direct/indirect framework (global expert opinion)

- Health sector direct: 3 weight (e.g. IFA/MMS supplement)
- Health sector indirect: 2 weight (e.g. Family Planning)
- Other sector direct: 2 weight (e.g. Food Fortification)
- Other sector indirect:1 weight (e.g. WASH)

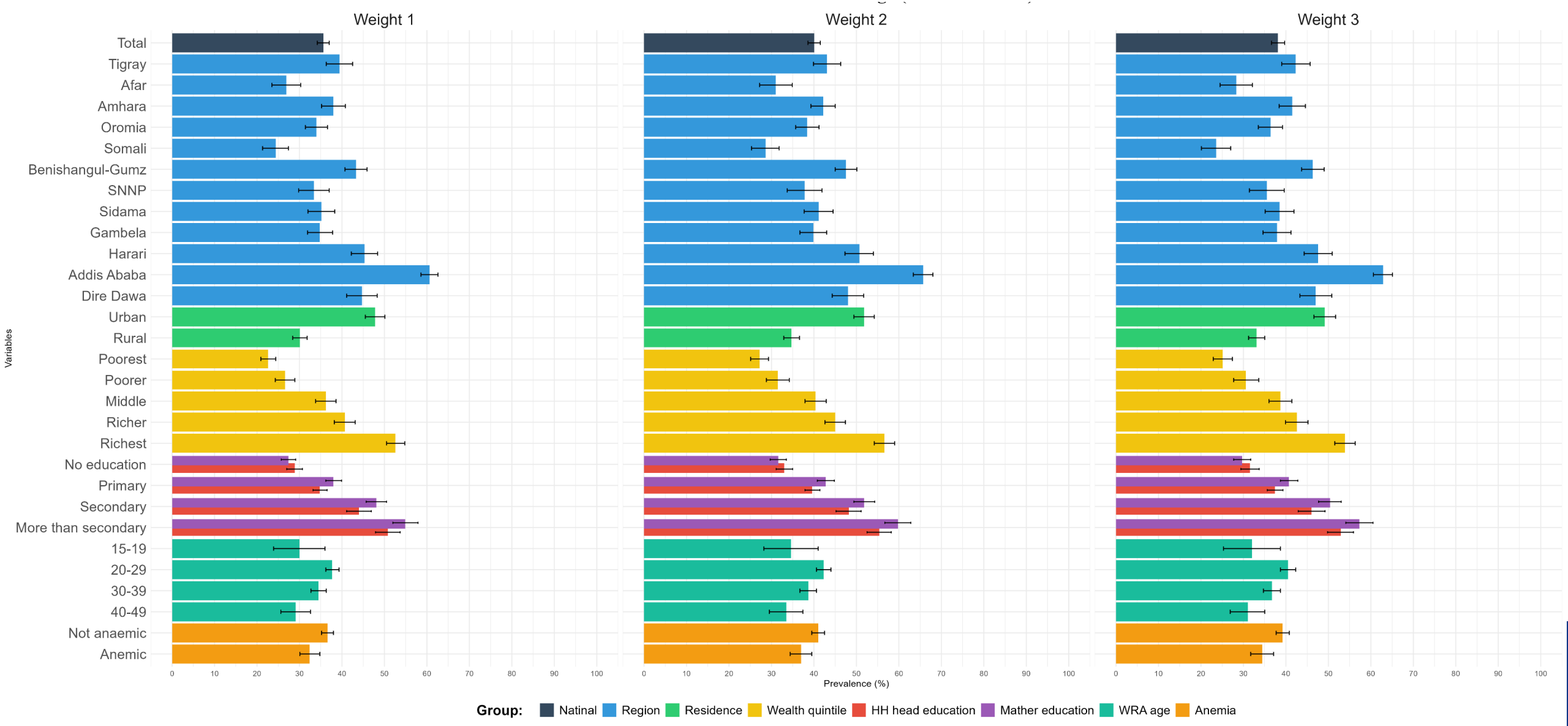


Keats E et al. **Effective interventions to address maternal and child malnutrition: an update of the evidence** The Lancet Child & Adolescent Health, Volume 5, Issue 5, 367 - 384

COMPOSITE COVERAGE: comparing weighting options

INDICATOR	SECTOR	CATEGORY	**Option 1**	**Option 2**	**Option 3**
Attended 4+ ANC visits	Health	Preventive care	0.5	0.5	1
Started ANC in 1st trimester	Health	Preventive care	0.5	0.5	1
Deworming	Health	Preventive care	1	1	2
Nutrition counseling from health worker	Health	Counseling	1	2	3
Took iron tablet/syrup 90+ days	Health	Supplementation	1	2	3
Received cash or food assistance	Social protection	SP transfer	1	1	1
Food items fortifiable with micronutrients (oil, wheat) in HH	Industry	LSFF	0.5 oil 0.5 wheat	1 oil 1 wheat	1 oil 1 wheat

COMPOSITE COVERAGE: Comparing aggregated estimates by weighting option



Next steps: work in progress

- Complete analyses for additional aggregated indicators
  - Stunting reduction
  - Vitamin A control
- Validation:
  - Compare aggregated estimates from co-coverage vs composite coverage within each country
  - Compare aggregated indicators to nutrition outcomes (Ethiopia only)
- Release guidance note & publications on methods

Q&A

IUNS-ICN 2025

International Congress of Nutrition
24-29 August 2025 | Paris, France

SUSTAINABLE FOOD FOR GLOBAL HEALTH

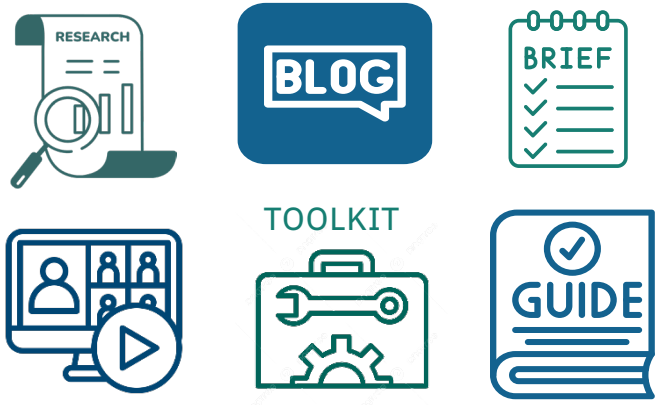
Wrap-up

Policy implications & recap

Masresha Tessema, Ethiopian Public Health Institute

Find all DataDENT tools & resources related to intervention coverage on our website www.datadent.org

1. Scan QR code



2. Select TOPIC filters

- ❑ Data Analysis
  - Co-coverage and Composite Coverage
- ❑ Intervention Coverage
  - Large Scale Food Fortification
  - Maternal Micronutrient Supplementation
  - MIYCN Counseling
  - Nutrition Sensitive Social Protection
  - School Feeding

3. Follow us on social media

Stay up to date about new outputs added to our website

DataDENT

@data_dent

@datadent. bsky. social

Data for Nutrition has moved to LinkedIn

- Data for Nutrition Community of Practice is now hosted as a LinkedIn Group

- Share updates on activities & outputs related to building stronger nutrition data value chains across LMIC
- Ask for feedback from community members
- Share employment & training opportunities
- Sponsor a DfN webinar- we provide hosting & production support to community members from LMIC who want to reach others via an online event

LinkedIn

Join the Group

YouTube

Access webinar recordings

Data DENT

IUNS-ICN 2025

Oral and Poster Presentations

• Nutrition-sensitive social protection program coverage: Using mixed methods to develop new measures for household surveys, **Sumanta Neupane,** IFPRI	**SOAP23**	**Tuesday 26 Aug 16:45 - 18:15 CET**
• One Nutrition Coverage Survey - Learnings from a methods-driven household survey to estimate co-coverage and equity of multi-sectoral nutrition interventions, **Swetha Manohar,** IFPRI	**SOAP29**	**Wednesday 27 Aug 11:15 - 12:45 CET**
• Measuring coverage of large-scale food fortification at the household level: limitations and opportunities, **Samuel Scott,** IFPRI	**OAP67**	**Friday 29 Aug 08:00 - 09:30 CET**
• Improving Measurement of Maternal Micronutrient Supplement Coverage, **Shelley Walton,** Johns Hopkins BSPH	**EPO1_093**	**Interactive Terminal**
• Assessing Co-Coverage of Multi-sectoral Nutrition Interventions: A Scoping Review of Analytical Approaches and Evidence-Based Indicator Selection, **Phuong Hong Nguyen,** IFPRI	**EPO5_251**	**Interactive Terminal**