



Real-time Monitoring Setup & Data Quality

How can we collect data for food security analysis from places that are too remote or dangerous for face-to-face surveys?

How can we collect more frequent data to monitor food security at a cheaper cost?



Remote Data Collection (mVAM)

Mobile surveys

Respondents are contacted on their mobile phones

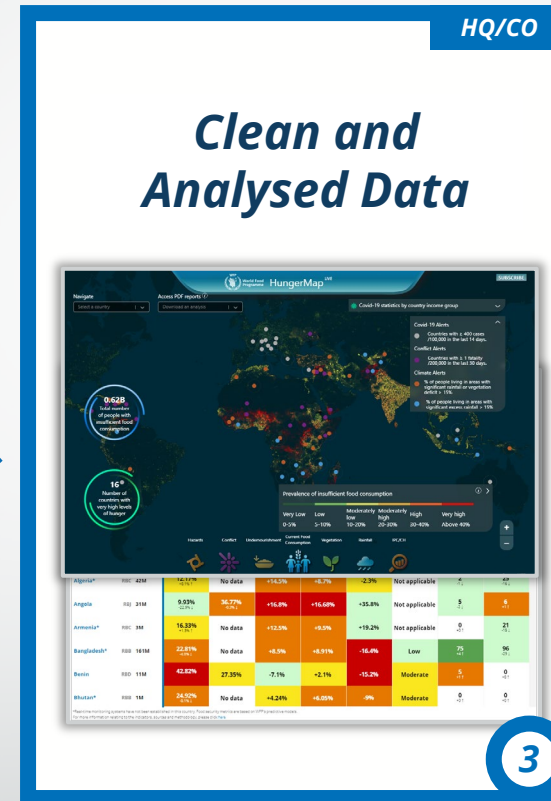
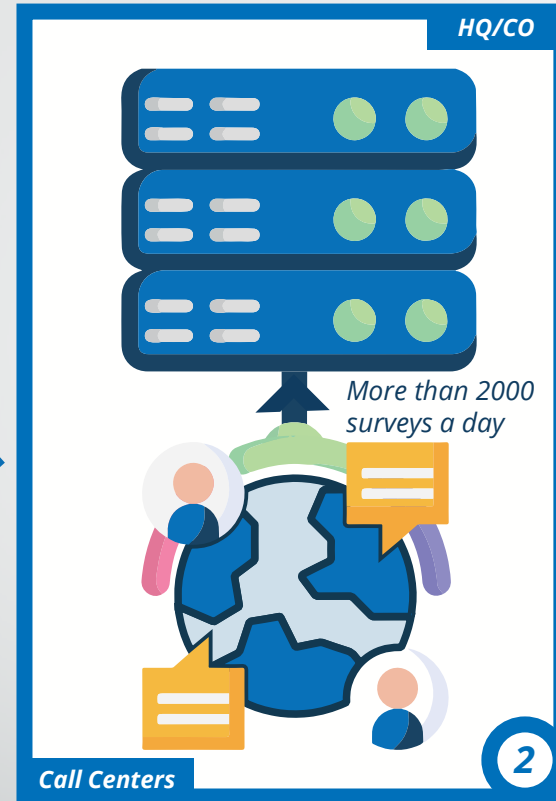
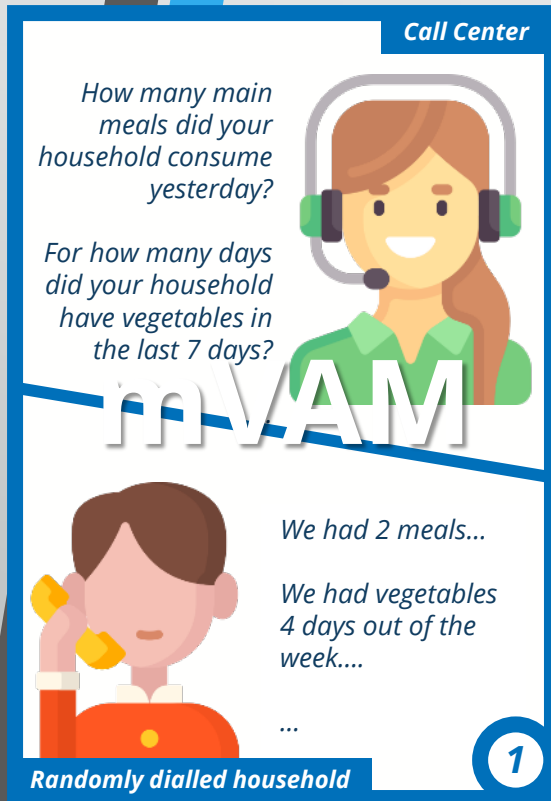


Information collected:

- Food consumption
- Coping strategies
- Food prices
- Market access + availability
- Women's dietary diversity

Real-time Monitoring

How does it work?



Data is collected daily through computer-assisted phone surveys from **local call centers** in 38 countries

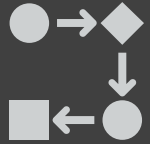
Data flows directly into WFP HQ/CO database for **automated cleaning and analysis** and is **always accessible to COs**.

The analysed results populate the **HungerMap^{LIVE} platform**, **country reports**, as well as **IPC processes**.

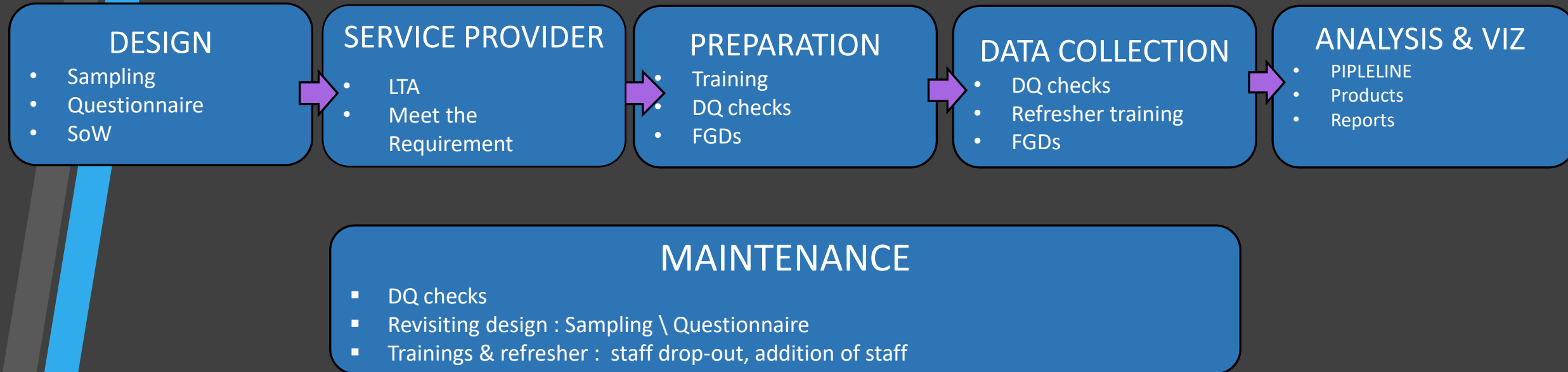
The data is used across the humanitarian sector for **early warning and response**, **resource mobilization**, and **global advocacy**.



System Setup



Remote Monitoring Setup Process



Continuous engagement with the COs and RBs

Continuous engagement with the service providers



Planning & Design



1- Objectives and Background

- What is the objective ?
- What frequency is needed?
- Is it feasible?
- Are local service providers available?
- Is there a global LTA ?



Planning & Design



2- Sample Framework

- **Geographic coverage and targeted population:**
 - Only nationals?
 - Nationals and other nationalities?
 - Other specific groups like beneficiaries, migrants, refugees?)
 - Targeting specific geographic areas or is it a nationwide survey?
 - Households? Individuals (Women, Children)? Key informants?
- **Sampling frame, Size, Quotas:**
 - Sample frame: MNO, RDD, WFP, Panel
 - Size: representative sample (Population, region, district...etc)
 - Quotas: daily, monthly, quarterly (to be monitored)



Planning & Design



3- Questionnaire

- Main food security Indicators (FCS, rCSI, LCSI)
- Demographics (HHH sex, age, education, HH water source, size, housing type, urban/rural)
- Geographic location
- Other questions to fit the context of the country and the objective of the exercise
- Not more than 20-30 minutes



Planning & Design



4- Scope of Work (SoW)

- Final product of the planning and survey design phase
- Include all the requirement that is needed for RTM from all partners (HQ,RB,CO) and service provider.
- Reviewed and cleared by all partners and units involved before proceeding



Service Provider/Call Center Selection



Long Term Agreement (LTA)

- Important to maintain the continuation of the data collection, especially in RTM.
- Prevent any delay in the data collection, especially if it is **daily**.
- Need to meet all the requirements for remote data collection
- Have experience in remote data collection
- The cost per survey
- The country coverage (Global, Regional, Country)



Service Provider/Call Center Selection



Requirements

- Geographic coverage; Region(s)/countries
- Languages
- Methodology/Approach:
 - sample management, phone number management,
 - Job Lot 1 (MNOs), Job Lot 2 (RDD), Job Lot 3 (WFP), Job Lot 4 (Panel)
- Quality assurance mechanisms:
 - Training,
 - Pre-test,
 - Automated dashboard tracker,
 - recordings
- Data delivery and sharing:
 - Raw data should be shared to WFP through an API connected to WFP databases or WFP's MODA on a daily basis
 - Questionnaire logical skips and constraints
- Privacy and data management



Preparation for Data Collection



1- Operator Training

- Prepare training materials and agenda.
- Confirm the date and the number of operators.
- Make sure that you have a list of the operator's names and the languages they speak
- Prepare and review the survey tool content.
- Review the questionnaire translation
- Arrange for some exercises and simulations.
- Training to be conducted by WFP VAM staff (HQ, RB, CO), online or face to face
- Training to be conducted by the service provider on how to use the instrument



2- Pilot Data Collection

- Test the programmed tool (Are all skip patterns working as expected? / Are all questions displayed properly?)
- Each enumerator should complete at least 25 surveys continuous over full 5 days



Preparation for Data Collection



3- Quality Check for Pilot Data

- The targeted calls is achieved.
- Adherence to survey content and duration.
- Clear and understandable language was used.
- Professional attitude and compliance with survey protocols.
- No enumerators bias has been detected through maintaining a consistency in the answers inserted by each enumerator.



4- Post-Pilot Data Quality Check (Second Pilot Data)

- Done for operators who are not cleared in the first stage
- Second thorough refreshing training
- Each operator is required to complete at least 25 interviews
- Reviewed thoroughly by experts at HQ, RB, or CO
- Operators are carefully supervised by the call centre manager WFP representative



Actual Data Collection



1- Data Collection Monitoring

- Continuously monitor the data collection progress in meeting the daily, 10 days, and monthly quota, achieving targets per stratum.
- Communicate any delays in meeting the sampling requirements in a timely manner to the service provider/call center
- Monitoring overall data quality – listening to recording, conduct rapid quality checks on the operator's performance.



Actual Data Collection



2- Data Quality Control

- Check the number of completed surveys
- Ensure that Admin2 classification in Admin1 is aligned with reality
- Check for any duplicate cases
- Check if the respondents completed the surveys and met the eligibility criteria
- Check if there is an overuse of 'Others' or 'refused to answer' or 'Don't know' options
- Check if the number of answer option codes in the dataset is aligned with the survey tool
- Check if there are any counterintuitive or extremely unlikely answers, particularly for food consumption and coping strategies-related questions.
- Check if there are any recurring flags with some particular enumerators.



Data Cleaning, Analysis, and Visualization



1- Data Cleaning

- Screening data
- Diagnosing Data
- Treatment of data
- Recoding data
- Indicators and weights computation
- Documenting changes



2- Data Analysis

- Automated analysis of the data through Hunger Monitoring Unit's pipeline in HQ. Python code that is prepared by the Data Science and Software Developer teams.
- Weighted results produced on a daily basis for the main food security indicators (FCS, rCSI, LCSi), market access, and other variables of the CO interests.
- Global and regional technical support to accommodate any necessary adjustments in the analysis window or the sampling weighting plan.



Data Cleaning, Analysis, and Visualization



3- Data Visualization

1. Handled by the Software Developer team

- Hunger Map ^{Live}
- Insight reports
- Global food crisis dashboard

2. Handled by Real-time Monitoring team

- Tailored analysis and presentation according to RB/CO requests



Maintenance



Data Quality Checks

Automated data quality check dashboard is in progress, to capture and alarm any data issues (Sample quotas, Outliers, Operator bias)

Revisiting design : Sampling \ Questionnaire \ Weighting

Monitoring the sample quota achievement

Trainings & refresher : staff drop-out, addition of staff



Data Quality Checks



Pilot Data Quality Checks

- Check the number of completed pilot surveys for each operator (at least 25 each)

Operator Number of Interviews		
Operators	Freq.	Percent
LB01	40	16%
LB02	30	12%
LB03	18	7%
LB04	40	16%
LB05	25	10%
LB06	26	10%
LB07	26	10%
LB08	7	3%
LB09	40	16%
Total	252	100%



Pilot Data Quality Checks

- Check the consistency of the daily call for each operators (avoid more than three days gap of data collection)

ObsDate	MZ001	MZ006	MZ007	MZ011	MZ014	MZ017	MZ018	MZ019	Total
06/09/2022	5	7	5	7	1	1	0	0	26
07/09/2022	2	2	2	7	3	9	0	1	26
08/09/2022	3	11	8	0	1	3	0	2	28
09/09/2022	6	2	4	2	1	6	6	3	30
10/09/2022	3	1	3	0	0	0	0	2	9
11/09/2022	5	0	0	3	0	0	0	3	11
12/09/2022	3	0	0	7	12	11	0	8	41
13/09/2022	2	7	4	5	9	7	1	2	37
14/09/2022	4	3	1	8	12	6	0	2	36
15/09/2022	3	2	0	2	3	2	0	2	14
16/09/2022	14	15	12	8	12	14	0	12	87
17/09/2022	12	5	6	4	16	8	0	10	61
18/09/2022	10	10	5	4	11	0	0	4	44
19/09/2022	15	10	10	0	11	2	8	2	58



Pilot Data Quality Checks

- Check outliers results for the main food security indicators (FCS, rCSI, LCSi) and inconsistency for each operator

lcsen_crisis_childoutschool	No-did not need	25%	16%	6%	29%	19%	27%	18%	30%	69%	85%	26%	0%	28%
	No-already used	0%	2%	1%	3%	0%	0%	1%	0%	1%	0%	2%	0%	1%
	Yes	42%	12%	29%	33%	30%	30%	36%	28%	24%	14%	29%	23%	28%
	Not Applicable	33%	70%	64%	35%	51%	43%	45%	42%	6%	1%	43%	77%	44%
lcsen_em_begged	No-did not need	14%	18%	9%	26%	16%	19%	22%	14%	7%	92%	35%	1%	22%
	No-already used	1%	2%	0%	2%	0%	0%	0%	0%	0%	0%	2%	0%	1%
	Yes	24%	10%	12%	8%	12%	8%	8%	12%	2%	3%	6%	1%	9%
	Not Applicable	62%	71%	80%	65%	72%	74%	69%	73%	90%	5%	57%	98%	68%
lcsen_em_illegalact	No-did not need	10%	8%	3%	22%	9%	19%	9%	7%	5%	87%	12%	0%	15%
	No-already used	0%	1%	1%	1%	0%	0%	0%	1%	0%	0%	1%	1%	0%
	Yes	27%	9%	17%	16%	11%	9%	10%	16%	4%	5%	14%	13%	13%
	Not Applicable	62%	82%	80%	62%	80%	73%	82%	76%	91%	8%	73%	87%	72%

FCG by Operator												
fcg	ETHB06	ETHB07	ETHB10	ETHB24	ETHB26	ETHB32	ETHB39	ETHB41	ETHB49	ETHB51	ETHB52	Overall
Acceptable	50%	21%	48%	58%	27%	92%	89%	83%	79%	81%	40%	60%
Borderline	40%	46%	16%	29%	36%	8%	11%	11%	13%	19%	44%	25%
Poor	10%	33%	36%	13%	36%	0%	0%	6%	8%	0%	16%	15%
Poor+Borderline	50%	79%	52%	42%	73%	8%	11%	17%	21%	19%	60%	40%

Average Daily Consumption by Operator												
OperatorID	ETHB06	ETHB07	ETHB10	ETHB24	ETHB26	ETHB32	ETHB39	ETHB41	ETHB49	ETHB51	ETHB52	Overall
FCSStap	6.35	5.96	5.40	6.83	6.32	7.00	6.79	6.39	7.00	7.00	6.12	6.47
FCSPulse	0.55	0.71	1.08	0.96	0.68	6.40	5.79	5.72	5.08	5.70	2.80	3.21
FCS Dairy	3.20	1.04	1.16	2.17	2.14	0.24	0.84	1.00	0.25	0.44	0.76	1.16
FCSPr	1.50	1.13	1.76	1.58	0.73	0.08	0.26	0.72	0.25	0.15	0.24	0.75
FCSVeg	5.15	1.29	2.24	4.42	0.64	3.24	5.16	4.28	4.13	4.07	2.52	3.31
FCSFruit	2.20	1.13	1.64	0.83	0.64	1.16	1.53	1.39	0.71	0.93	1.24	1.19
FCSFat	5.80	5.54	5.20	6.00	5.59	5.84	6.00	6.00	5.38	6.30	5.48	5.73



Pilot Data Quality Checks



- Check random recordings for each operator, to make sure they were asking the questions properly



Maintenance Data Quality Checks

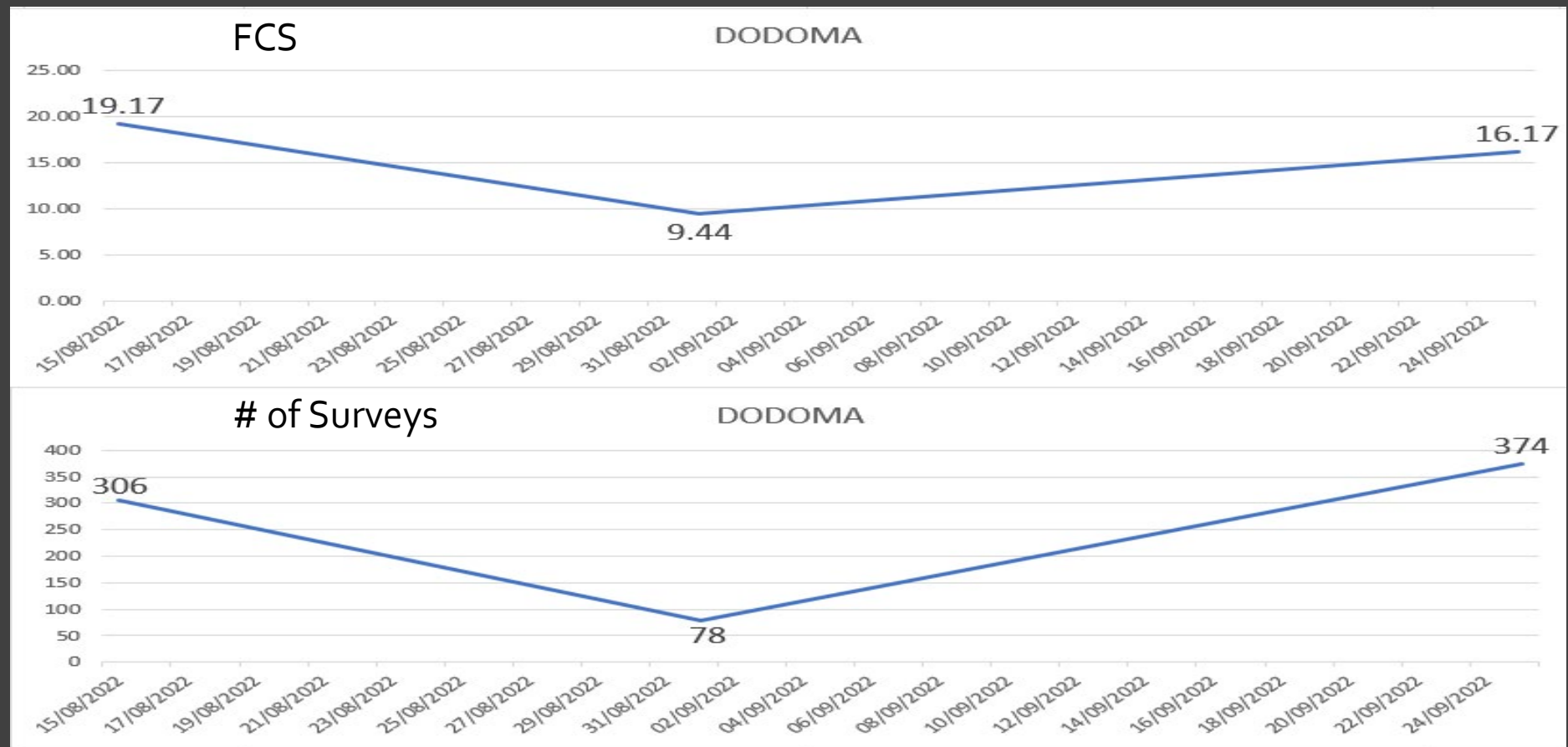
- Fairly distribution of survey collected by operators on Admin 1 level (Region)

ADM1_NAME	Number of Call in each zone									
	E22	E27	E28	E30	E32	E33	E40	E41	E56	E57
ADDIS ABABA	37	0	21	6	23	0	6	43	20	7
AFAR	6	11	14	12	12	31	0	5	9	12
AMHARA	6	27	36	15	15	10	7	26	13	10
BENISHANGUL-GUMUZ	10	16	16	36	12	4	1	15	6	7
DIRE DAWA	34	5	13	13	31	26	11	25	24	2
GAMBELA	27	35	19	41	10	23	0	5	33	12
HARARI	27	17	17	6	12	20	18	22	17	19
OROMIA	8	22	9	15	16	7	22	7	21	35
SOMALI	10	7	6	0	7	4	102	0	9	12
YEDEBUB SNNPR [SOUTHERN]	12	29	10	27	16	10	2	20	15	22



Maintenance Data Quality Checks

- Monitoring and following up on the daily and 10 days quotas





Maintenance Data Quality Checks

- Monitoring the data pushed into the API - NULL entries appearing on the MDDW module

DM	DN	ER	EL	EM	EN	EO	EP	EQ	ER	ES	ET	EO	EV	
RESPAge	RESPSe	MDDW	MDDW	MDDW	MDDW_NutsSeeds	MDDW	MDDW	MDDW_Pulses	MDDW	MDDW	MDDW	MDDW	MDDW_VitA	
18 F		NULL	NULL	NULL	NULL	NULL	NULL	Yes	NULL	NULL	NULL	NULL	Yes	N
18 F		NULL	NULL	NULL	NULL	NULL	NULL	Yes	NULL	NULL	NULL	NULL	Yes	N
18 F		NULL	NULL	NULL	NULL	NULL	NULL	Yes	NULL	NULL	NULL	NULL	Yes	N
18 F		NULL	NULL	NULL	NULL	NULL	NULL	No	NULL	NULL	NULL	NULL	Yes	N
18 F		NULL	NULL	NULL	NULL	NULL	NULL	No	NULL	NULL	NULL	NULL	Yes	N
18 F		NULL	NULL	NULL	NULL	NULL	NULL	No	NULL	NULL	NULL	NULL	Yes	N
18 F		NULL	NULL	NULL	NULL	NULL	NULL	No	NULL	NULL	NULL	NULL	Yes	N
18 F		NULL	NULL	NULL	NULL	NULL	NULL	No	NULL	NULL	NULL	NULL	No	N
18 F		NULL	NULL	NULL	NULL	NULL	NULL	No	NULL	NULL	NULL	NULL	No	N
19 F		NULL	NULL	NULL	NULL	NULL	NULL	Yes	NULL	NULL	NULL	NULL	Yes	N
19 F		NULL	NULL	NULL	NULL	NULL	NULL	No	NULL	NULL	NULL	NULL	No	N
19 F		NULL	NULL	NULL	NULL	NULL	NULL	No	NULL	NULL	NULL	NULL	Yes	N
19 F		NULL	NULL	NULL	NULL	NULL	NULL	Yes	NULL	NULL	NULL	NULL	Yes	N
19 F		NULL	NULL	NULL	NULL	NULL	NULL	Yes	NULL	NULL	NULL	NULL	No	N
19 F		NULL	NULL	NULL	NULL	NULL	NULL	No	NULL	NULL	NULL	NULL	Yes	N
19 F		NULL	NULL	NULL	NULL	NULL	NULL	No	NULL	NULL	NULL	NULL	Yes	N
19 F		NULL	NULL	NULL	NULL	NULL	NULL	No	NULL	NULL	NULL	NULL	No	N
19 F		NULL	NULL	NULL	NULL	NULL	NULL	Yes	NULL	NULL	NULL	NULL	Yes	N
19 F		NULL	NULL	NULL	NULL	NULL	NULL	Yes	NULL	NULL	NULL	NULL	Yes	N
19 F		NULL	NULL	NULL	NULL	NULL	NULL	No	NULL	NULL	NULL	NULL	Yes	N
19 F		NULL	NULL	NULL	NULL	NULL	NULL	No	NULL	NULL	NULL	NULL	Yes	N



Maintenance Data Quality Checks

- Monitoring and following up on the number of completed surveys for demographic variables (Education level of the Household Head) involved in the weighting methodology

Row Labels	No school	Primary	Secondary	Higher	Total
ITURI	5	11	9	5	30
KINSHASA	3	9	11	6	29
NORD-KIVU	3	4	17	8	32
TANGANYIKA	3	6	18	6	33
Total	14	30	55	25	124



Maintenance Data Quality Checks

- Capturing Outlier results made by a specific operator (FCS, rCSI, etc..)

ADM1_NAME	Prevalance of Insufficient Food Consumption (Poor+Borderline)			Number of Population under Insufficient Food Consumption		
	April4-May3 2022 with OP 7	April4-May3 2022 without OP 7	July3-August1 2022	April4-May3 2022 with OP 7	April4-May3 2022 without OP 7	July3-August1 2022
CABO DELGADO	27%	27%	24%	576739	566450	514787
GAZA	47%	41%	34%	680025	598327	492477
INHAMBANE	24%	20%	19%	342376	280219	268052
MANICA	22%	16%	15%	508578	361538	349393
MAPUTO CITY	42%	31%	25%	513139	376428	310859
MAPUTO PROVINCE	34%	25%	27%	724973	541307	577849
NAMPULA	25%	23%	22%	1404059	1283679	1232902
NIASSA	19%	18%	17%	387738	375393	346231
SOFALA	31%	29%	25%	689982	650147	544758
TETE	24%	19%	18%	824091	656763	594950
ZAMBEZIA	24%	21%	26%	1339298	1185756	1411036
Overall	30%	25%	23%	8707207	7270984	6887307
				Differneces between Auguts and May Insuff. Food Consumption		
				Differences with OP 7	- 1,819,901	
				Differences without OP 7	- 383,678	

Thank you!

Questions?

