



USAID
FROM THE AMERICAN PEOPLE



Monitoring and Evaluation of Fortification Programs and Portfolios

The Role of the HCES



An Imperfect World

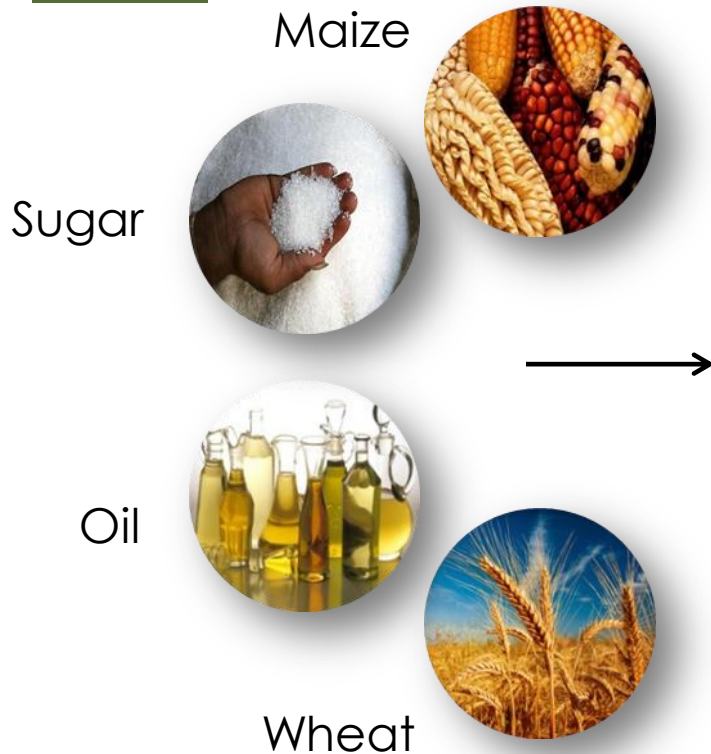
- There is no single reporting system or survey or database that can provide an answer to all of the process, outcome and impact M&E issues about fortification programs.
- Therefore, there is a need to combine different measures from different sources



Government Agencies Involved in Fortification

- MOH
- UNBS, Min. of Trade
- National Drug Authority
- MAAIF
- Uganda Revenue Authority
- District food inspectors
- Private Sector Foundation

Using HCES to Design, Monitor & Evaluate Fortification Programs



**Les
Aliments Enrichis :
les vitamines et le fer
dont vous avez besoin
chaque jour.**

**FARINE
BOULANGÈRE**
Enrichie en Fer
et Vitamine B9

HUILE
Enrichie en
Vitamine A

**LES ALIMENTS ENRICHIS
MIEUX MANGER POUR VOTRE SANTÉ**

The advertisement features a smiling family (a man, a woman, and a child) on the left. On the right, there is a bag of flour, a bottle of oil, and some bread. The background is a bright blue sky.

HCES and Fortification: Program Design and M&E

1. Which food vehicles to fortify and at what levels (design and planning)
2. Do Consumers have inadequate intakes of the targeted micronutrients?
3. Are intended beneficiaries consuming fortified foods in sufficient quantities to expect health improvements (planning and evaluation)
4. Are there changes over time in dietary patterns that warrant a change in food vehicles or fortification levels (monitoring)
5. Calculate % <EAR and %>UL (monitoring)



The Role of HCES in M&E

- Coverage
 - Percent of households consuming the food vehicle (by key household characteristics)
 - Percent and number of key target populations (persons)
- Distinguish all food of a particular type (the vehicle in question) from that which is fortifiable
 - Purchases versus consumption from own production
 - Industrial structure: Need for complementary data in the case of maize



Monitoring fortification


Focus: implementation of a project

- Process evaluation: internal
 - Are the essential activities of fortification being done?
 - Are they being done properly
- Outcome evaluation: external
 - How many people are consuming each fortified food?
 - Who is consuming it?
 - How much of it are they consuming?



Moving from project to program

- Differences:
 - Ownership
 - Financing
 - Governance
 - Perspective: Health impact of a program, from a national, population-based perspective
 - Sustainability



Population-based, country-wide estimated impacts

- Simulating the impacts of fortification
- Single foods
- Multiple foods
- It can include:
 - Biofortified foods
 - Child Days Plus
 - Other interventions for which there is data in the HCES



Impact Indicators

- Baseline intake levels (input data)
- Percent of population consuming
 - Fortification levels (input data)
- Quantity consumed
- Additional intake
- Endline intake levels
- Change in prevalence, change in the intake inadequacy gap

UNPS: Consumption Module

Section 15: Household Consumption Expenditure

Part A: Number of household members present

On average, how many people were present in the last 7 days? In this section children are defined as less than 18 years.

Household Members				Visitors			
Male adults	Female adults	Male children	Female children	Male adults	Female adults	Male children	Female children

Part B: Food, Beverage, and Tobacco (During the Last 7 Days)

Item Description	Code	Did you consume [ITEM] 1= Yes 2= No	How many days was [ITEM] consumed out of the last 7 days?	Unit of Qty	Consumption out of Purchases				Consumption out of home produce		Received in-kind/Free		Market Price	Farm gate price
					Household		Away from home		Qty	Value	Qty	Value		
					Qty	Value	Qty	Value						
1	2	3A	3B	3C	4	5	6	7	8	9	10	11	12	13
Matooke (Bunch)	101													
Matooke (Cluster)	102													
Matooke (Heap)	103													
Matooke (Others)	104													
Sweet Potatoes (Fresh)	105													
Sweet Potatoes (Dry)	106													
Cassava (Fresh)	107													
Cassava (Dry/ Flour)	108													
Irish Potatoes	109													
Rice	110													
Maize (grains)	111													
Maize (cobs)	112													
Maize (flour)	113													
Bread	114													
Millet	115													
Sorghum	116													
Beef	117													
Pork	118													
Goat Meat	119													
Other Meat	120													
Chicken	121													
Fresh Fish	122													
Dry/ Smoked fish	123													
Eggs	124													
Fresh Milk	125													
Infant Formula Foods	126													
Cooking oil	127													
Ghee	128													
Margarine, Butter, etc	129													

56 Food Items

Is it as nutrition sensitive as it could be?

>700
Food Items

HarvestPlus FCT

Nutrient Content per 100g of Edible Food

food_code	food_description	food_state	energy_kcal	calcium_mg	iron_mg	zinc_mg	vit_a_iu
1001	MAIZE GRAIN,WHITE VARIETY,FRESH,RAW	Raw	172.00	3	1.3	1	0
1002	MAIZE GRAIN,WHITE VARIETY,FRESH,BOILED/STEAMED	Boiled	207.00	3	1.5	1.1	0
1003	MAIZE GRAIN,WHITE VARIETY,FRESH,ROASTED	Roasted	224.00	4	1.7	1.3	0
1004	MAIZE GRAIN,YELLOW VARIETY,FRESH,RAW	Raw	172.00	3	1.3	1	101
1005	MAIZE,GRAIN,YELLOW VARIETY,FRESH,BOILED/STEAMED	Boiled	172.00	3	1.2	1	91
1006	MAIZE GRAIN,YELLOW VARIETY,FRESH,ROASTED	Roasted	224.00	4	1.7	1.3	125
1007	MAIZE GRAIN,WHITE VARIETY,DRIED,RAW	Raw	365.00	7	2.7	2.2	0
1008	MAIZE GRAIN,WHITE VARIETY,DRIED,BOILED	Boiled	188.00	4	1.3	1.1	0
1009	MAIZE GRAIN,WHITE VARIETY,DRIED,ROASTED	Roasted	374.00	7	2.6	2.3	0
1010	MAIZE GRAIN,YELLOW VARIETY,DRIED,RAW	Raw	365.00	7	2.7	2.2	214
1011	MAIZE GRAIN,YELLOW VARIETY,DRIED,BOILED	Boiled	188.00	4	1.3	1.1	99
1012	MAIZE GRAIN,YELLOW VARIETY,DRIED,ROASTED	Roasted	374.00	7	2.6	2.3	198
1014	MAIZE GRAIN,WHITE VARIETY,DRIED,FRIED	Fried	397.00	8	2.8	2.4	0
1015	MAIZE GRAIN,YELLOW VARIETY,DRIED,FRIED	Fried	397.00	8	2.8	2.4	210
801007	* MAIZE GRAIN,WHITE VARIETY,DRIED,RAW *BOILED*	Raw	365.00	7	2.7	2.2	0
801010	* MAIZE GRAIN,YELLOW VARIETY,DRIED,RAW *BOILED*	Raw	365.00	7	2.7	2.2	193
	maize_grains		284.31	5.375	2.05625	1.69375	76.9375
1021	MAIZE ON COB,WHITE VARIETY,FRESH,RAW	Raw	172.00	3	1.3	1	0
1022	MAIZE ON COB,WHITE VARIETY,FRESH,BOILED	Boiled	207.00	4	1.5	1.1	0
1023	MAIZE ON COB,WHITE VARIETY,FRESH,STEAMED	Steamed	207.00	4	1.5	1.1	0
1024	MAIZE ON COB,WHITE VARIETY,FRESH,ROASTED	Roasted	224.00	4	1.7	1.3	0
1025	MAIZE ON COB,YELLOW VARIETY,FRESH,RAW	Raw	172.00	3	1.3	1	101
1026	MAIZE ON COB,YELLOW VARIETY,FRESH,BOILED	Boiled	206.00	4	1.5	1.2	109
1027	MAIZE ON COB,YELLOW VARIETY,FRESH,STEAMED	Steamed	206.00	4	1.5	1.2	109
1028	MAIZE ON COB,YELLOW VARIETY,FRESH,ROASTED	Roasted	224.00	4	1.7	1.3	125
	maize_cob		202.25	3.75	1.5	1.15	55.5

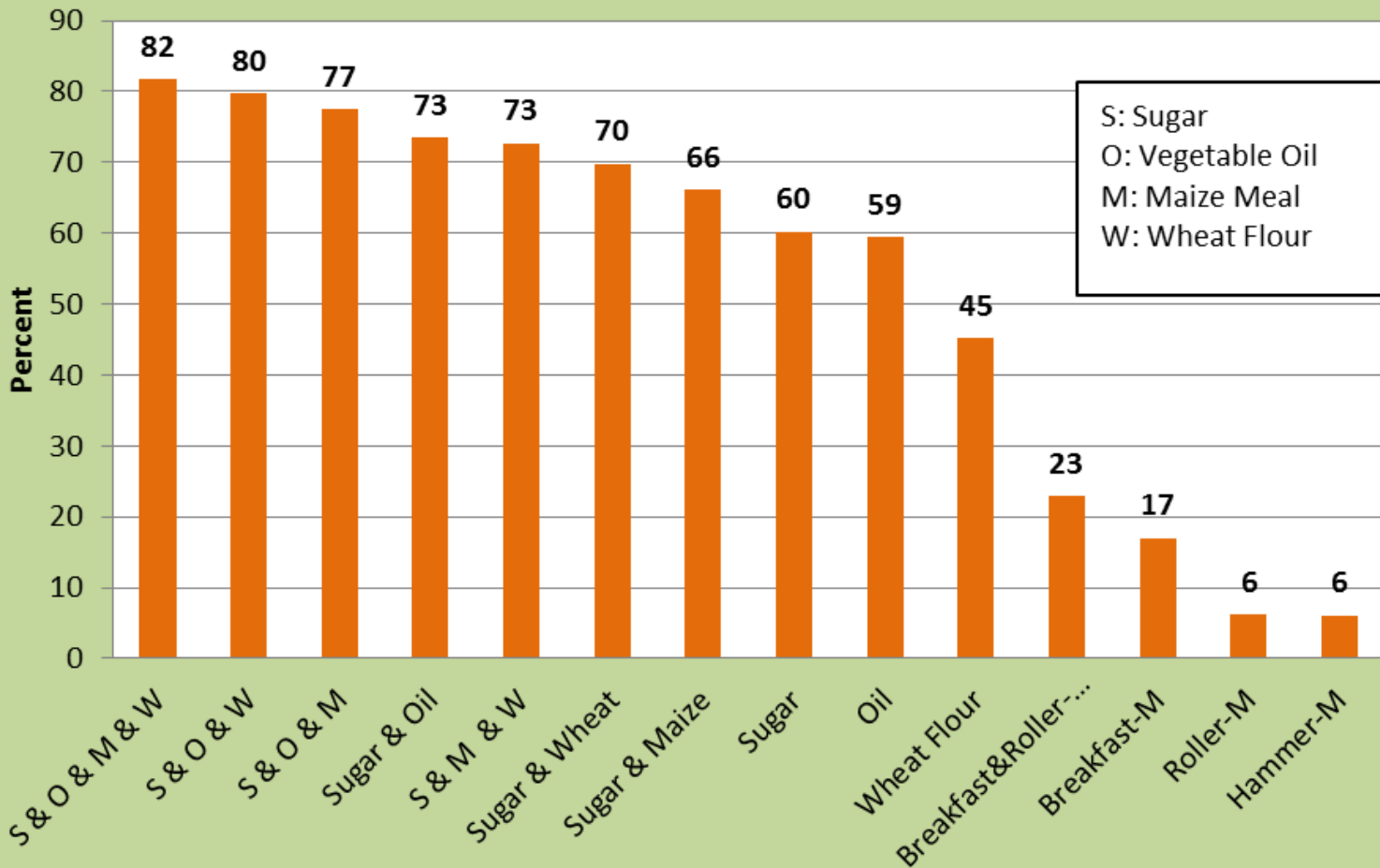


Indicators

- Fortification levels
- Quantity consumed
- Additional intake
- End line intake levels
- Change in prevalence of inadequate intake
- Change in the intake inadequacy gap

Households Purchasing

Percent of Zambian Households Purchasing Potential Fortification Combinations



Percentage of Households Apparently Consuming Potential Food Vehicles and the Average Quantities Apparently Consumed

Fortified Food	Percent of Households	Quantity Consumed (g/ACE/day)			
		Unconditional Averages		Conditional Averages	
		Mean	Median	Mean	Median
1. Sugar	60	20	10	34	24
2. Cooking Oil	59	13	6	22	15
3. Maize (Breakfast + Roller Meal)	23	72	0	313	266
4. Wheat Flour	45	29	0	64	38
5. Sugar and Oil	73	34	19	46	32
6. Sugar and Maize (B+R)	66	92	16	139	39
7. Sugar and Wheat Flour	70	49	20	70	41
8. Sugar, Oil and Maize (B+R)	77	105	26	136	45
9. Sugar, Oil, and Wheat Flour	80	62	31	78	47
10. Sugar, Oil, Wheat Flour, Maize (B+R)	82	134	40	164	65

"Apparent consumption": includes purchases, consumption from own production and received without payment in the past 14 days.

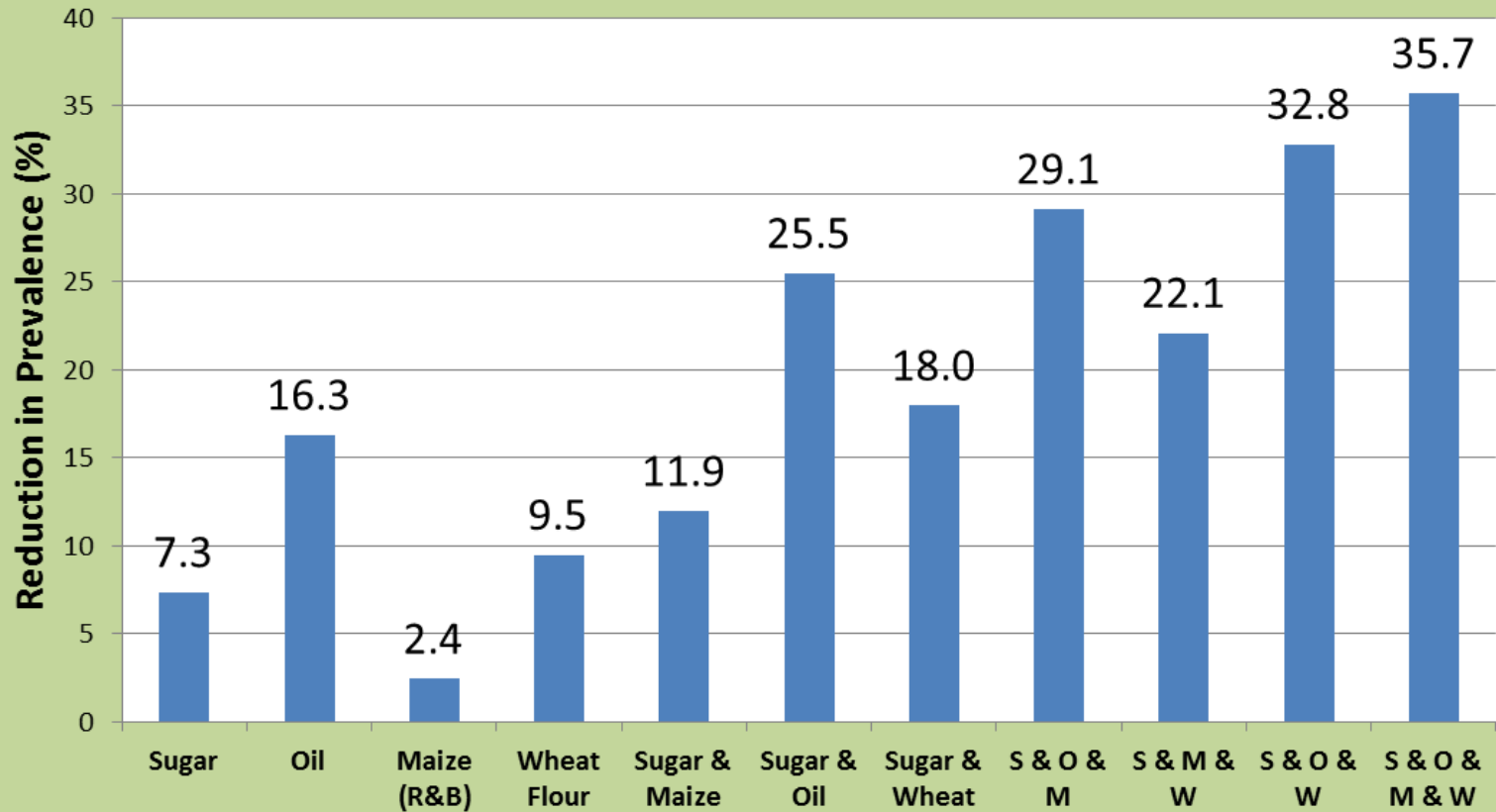
ACE: Adult consumption equivalent.

Source: Authors' calculations based on Zambia LCMS 2006

Fortification Levels (mg/kg)

Vehicle	VA	FE	ZN
Sugar	10	-	-
Oil	30	-	-
Maize Meal	1	12	12
Wheat Flour	-	28.9	-

Reduction in the Prevalence of Inadequate Vitamin A Intake



* Vitamin A fortification of Wheat flour is based on WHO recommendations



Options for measuring impact

- Develop a surveillance system: Special survey, significant new costs
- Use the HCES
- There is a cost-precision tradeoff.
- Is the HCES good enough?
- How might it be improved?

How can HCES be strengthened for M&E?

1. Can HCES measurement of total nutrient intakes be improved
 - By modifying the food list?
 - Identify fewer crop/commodity like items
 - Identify better matches to Food Composition Tables
 - By better capturing food away from home?

How can HCES be strengthened for M&E?

2. Can its measurement of the coverage of fortification vehicles be improved by improving the food list?
Maize meal? (processed foods?)
Wheat flour? (processed foods?)

How can HCES be strengthened for M&E?

3. Can HCES measurement of nutrient intakes among young children be improved?
 - Can the assumption that food is distributed within the household in direct proportion to each member's share of total Adult Consumption Equivalents be improved?

Proposed modifications to the Food lists

- Missing potential FF vehicles should be included in the lists as stand-alone items
 - Wheat flour and wheat products e.g. Biscuits, mandazi, chapatti, donuts, cakes, spaghetti, etc.
 - Maize flour and maize products e.g. porridge, maize cakes, maize snacks (Gorilloz), etc.



Modifications cont'd

- Missing commonly consumed foods; Uganda added 14 new food items

Modifications cont'd

- Brand names for all fortified foods should identified for clarity on reporting- even for voluntary fortification
- Missing quantities for food consumed away form home should be included.

Modifications cont'd

- Information on the pregnancy status and current breastfeeding status for all women of reproductive age
- For children under the age of one, the age should be captured in months as well as their breast feeding status.