




Uganda Fortification Assessment Coverage Tool: (FACT) Overview and Results

Kampala, Uganda 23 May 2016






Background

Background and Rationale

- High burden of malnutrition in Uganda
- National Food Consumption Survey (2008) identified important micronutrient intake gaps
- Mandatory legislation for large-scale fortification of salt, oils and fats, and wheat and maize flour
- No recent data available on:
 - Performance of large-scale fortification programs,
 - Who benefits from fortification programs,
 - If vulnerable populations are being reached, and
 - Household coverage and intake of fortified foods

The Fortification Assessment Coverage Tool (FACT)

Coverage

- Proportion of the population that uses a:
 - Vehicle
 - Fortifiable vehicle (centrally produced)
 - Fortified vehicle

Utilization

- Intake of food from modified dietary recall
 - Household
 - Women of reproductive age; children <2 years of age

Product quality

- Nutrient content (laboratory assessment) of fortified vehicles from community or household samples

“*dietary contribution*”

Sampling

- Large representative sample stratified by factors that might modify coverage, utilization, and risk of inadequate diet such as poverty, region of residence (urban/rural), dietary diversity

Objectives

- 1 To **assess the coverage and consumption** of fortified vegetable oil and fats, wheat flour, maize flour, and salt among households
- 2 To **measure levels of select nutrients** in samples of vegetable oil, wheat flour, maize flour, and salt gathered at the household
- 3 To **estimate the contribution** of fortified vegetable oil, wheat flour, maize flour, and salt among households **to the intake of select nutrients** among women of reproductive age (15-49 years)
- 4 To **evaluate other health and nutrition indicators** and their association with coverage and consumption of fortified foods



**Uganda FACT
Methods & Design**

Survey Design and Sampling

Survey design

- Cross-sectional cluster household survey
- Representative nationally with urban and rural stratification
- Target population: Households and women of reproductive age (15 to 49 years)
- Sample size: 489 women of reproductive age per stratum
 - 526 households per urban stratum, 575 households per rural stratum (1,101 total)

Sampling

A two-stage stratified random sampling strategy was applied:

- First stage of sampling selected 35 PSUs per stratum by probability proportional to size (PPS) sampling
- Second stage of sampling selected 15 or 16 households per PSU by random selection

PSU, Primary Sampling Unit

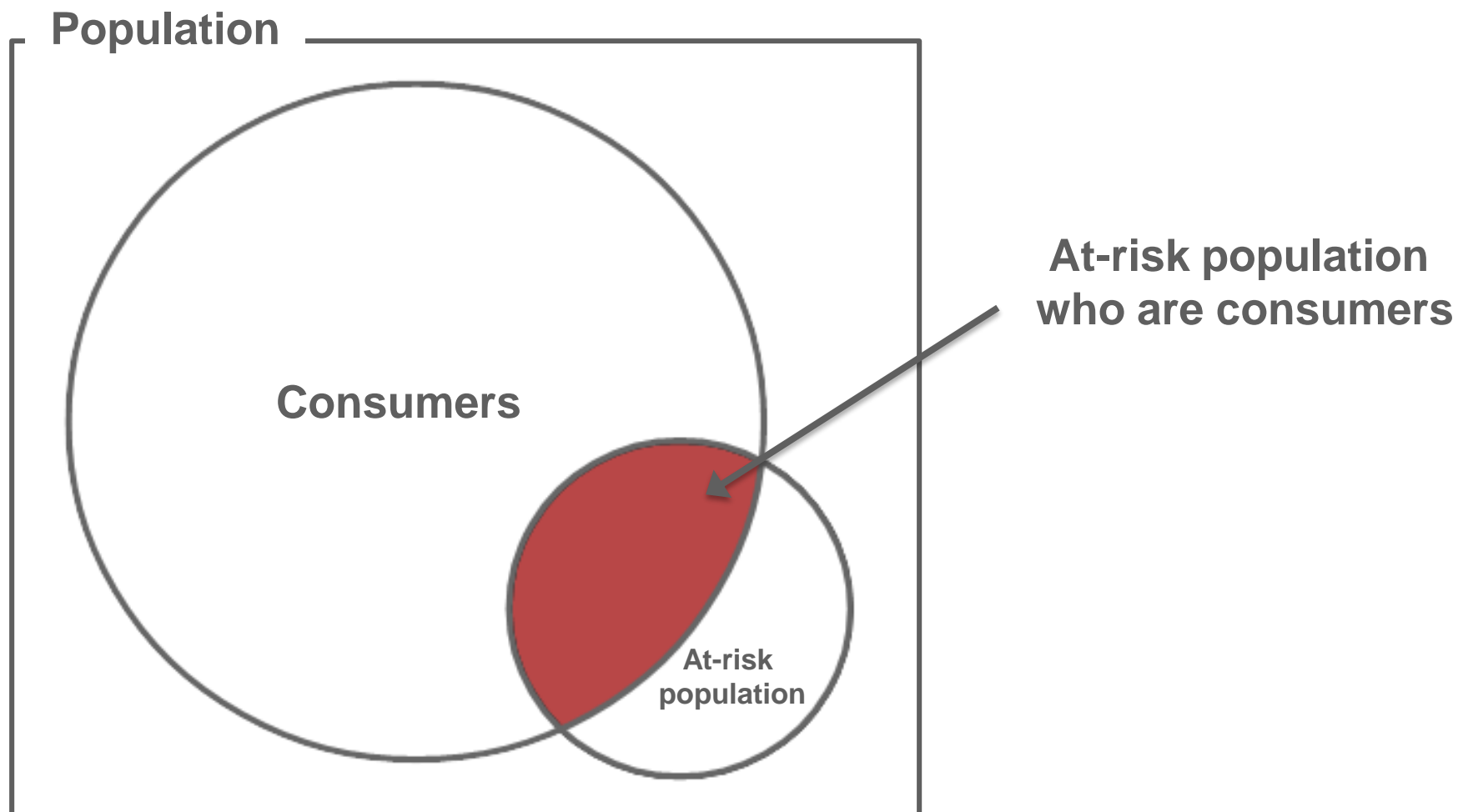
Data Collection

Interview

- Administered questionnaire to participants:
 - Household questionnaire to the person most familiar with food purchasing and preparation for the household (≥ 15 years)
 - Individual questionnaire to all women of reproductive (15 to 49 years)
- Modules included:
 - Demographics
 - Living standards
 - Fortified food use
 - Dietary intake
- Food sample collection of vegetable oil, wheat flour, maize flour, and salt, if available

Indicators of risk

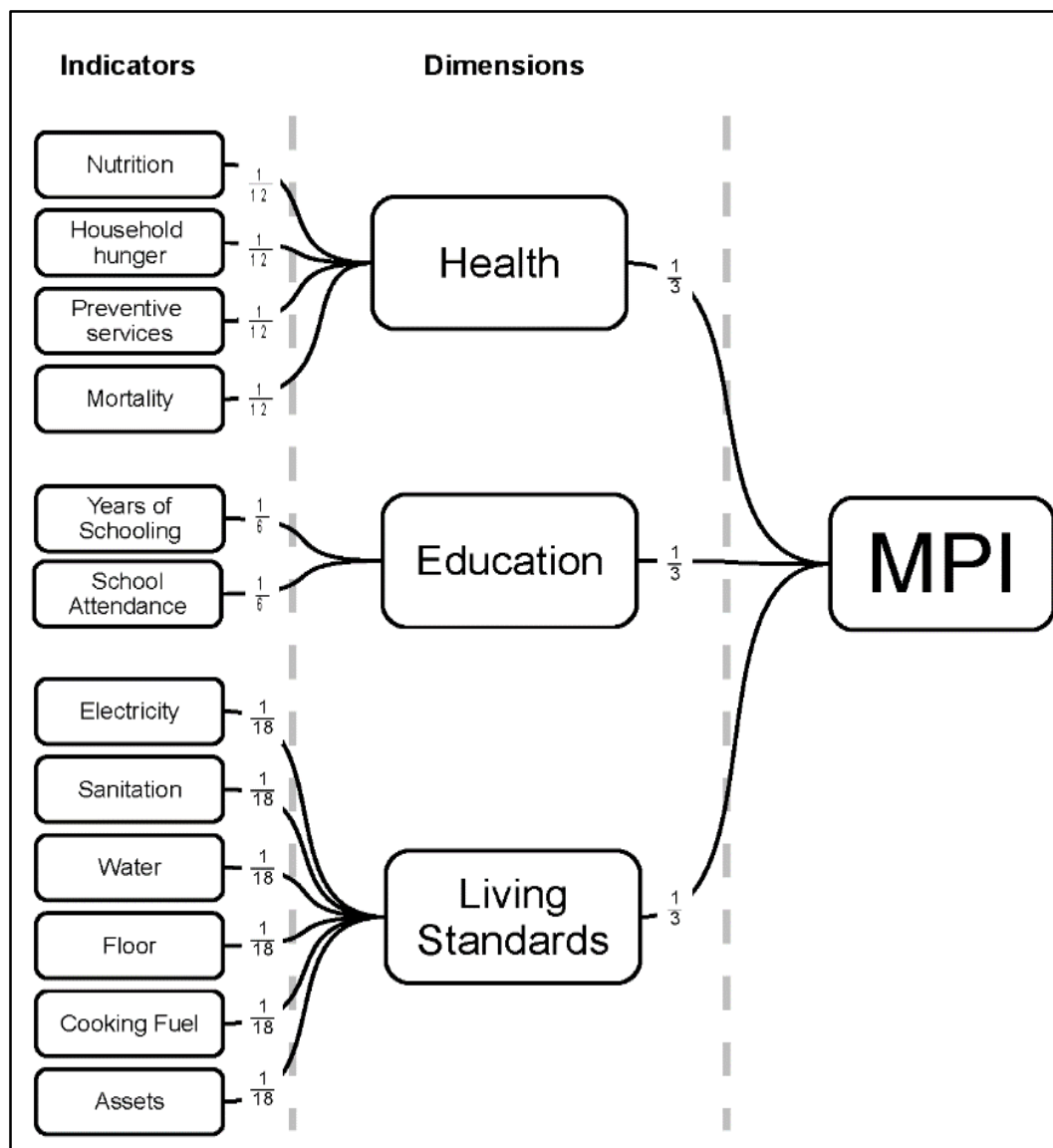
Why assess risk if the intervention is intended for the whole population?



Rural residence



Poverty



Multidimensional poverty index (MPI)

Weighted sum of dimensions of health, education and living standards that are linked to the millennium development goals (MDG).

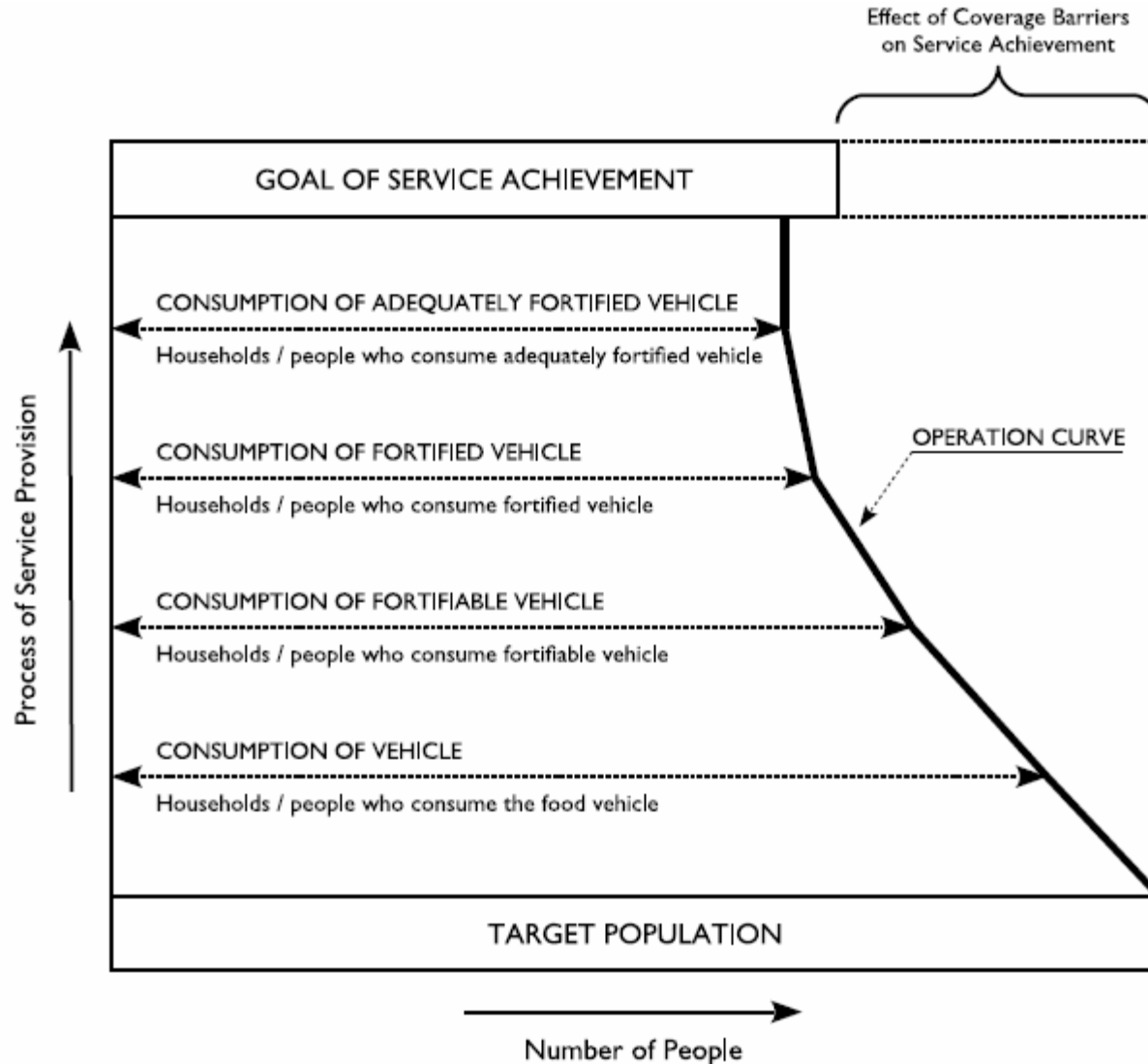
Sensitive measure of *acute poverty* related to Millennium Development Goals

Inadequate women's dietary diversity

	Food groups	Score
FG1 :	Starchy staples	1
FG2 :	Beans and peas	1
FG3 :	Nuts and seeds	1
FG4 :	Dairy	1
FG5 :	Flesh foods	1
FG6 :	Eggs	1
FG7 :	Vitamin-A rich dark green leafy vegetables	1
FG8 :	Other vitamin-A rich vegetables and fruits	1
FG9 :	Other vegetables	1
FG10	Other fruits	1
	Total	10

Indicators of coverage

Adapted Tanahashi coverage model



Assessing coverage of staple food fortification – Step 1 the household

Assessing household coverage and intra-household intakes

If the vehicle is a staple in the household:

What is the main [vehicle] type consumed?

Is [vehicle] fortifiable (i.e. how is it processed, from where?)

Is [vehicle] fortified?

Is [vehicle] adequately fortified?

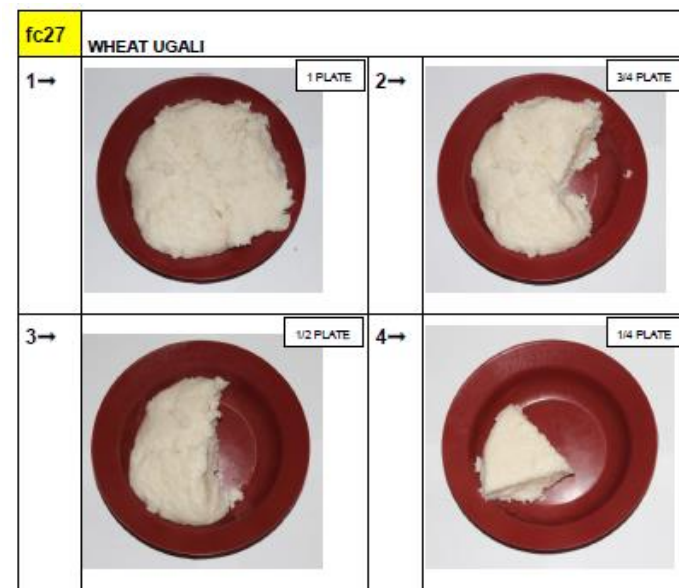
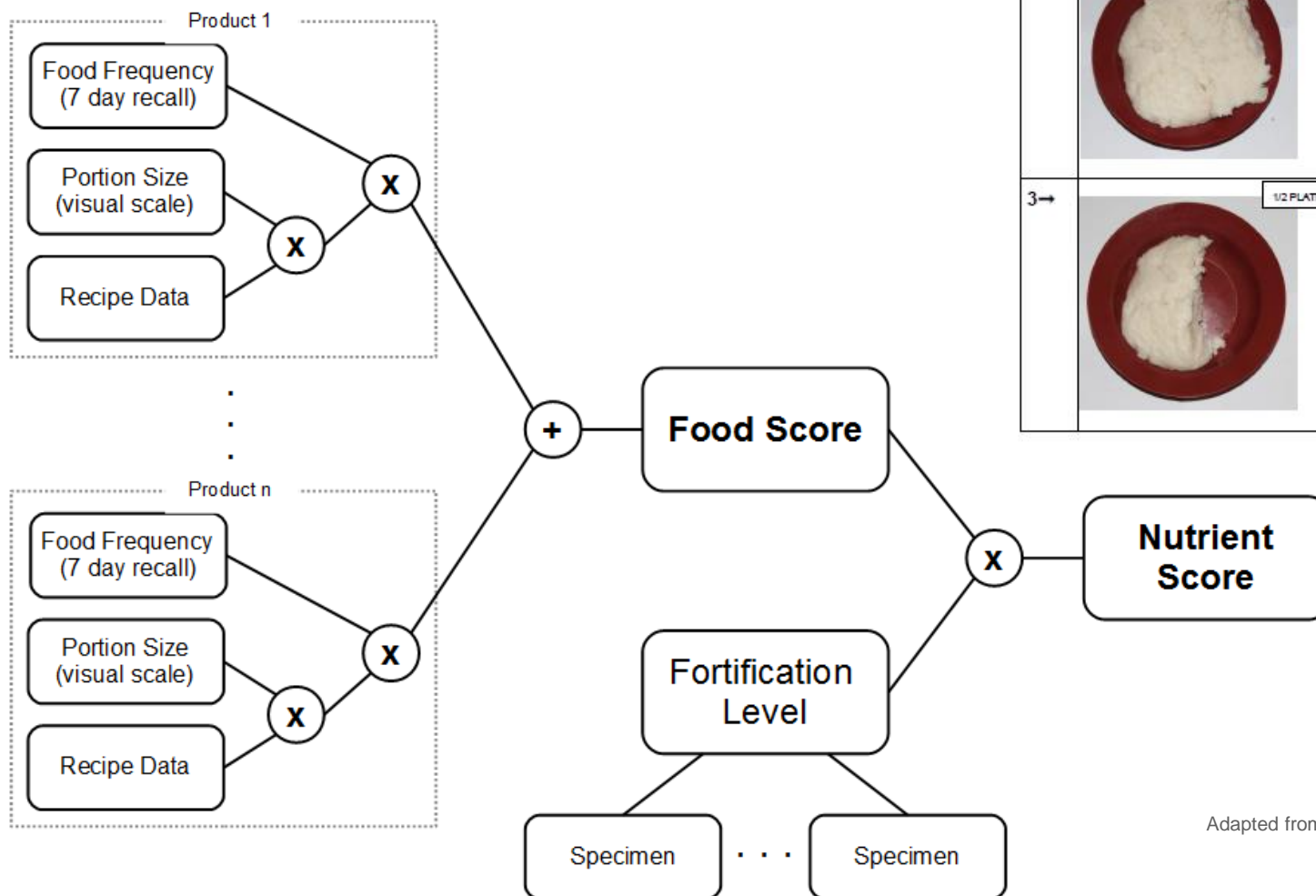
Detailed household roster to calculate intra-household estimates (adult male equivalent (AME) method)

How much is purchased?

How long does the amount last?

Assessing coverage of staple food fortification – Step 2 the individual

Assessing individual coverage and intakes



Adapted from: Margetts BM and Nelson M. (1995)

Determination of fortification status

Fortification status

Household sample provided

- Fortification status confirmed by quantitative lab analysis

No sample provided but brand reported

- Household linked to fortification status of that brand based on median fortification level of all samples collected from that brand by quantitative analysis

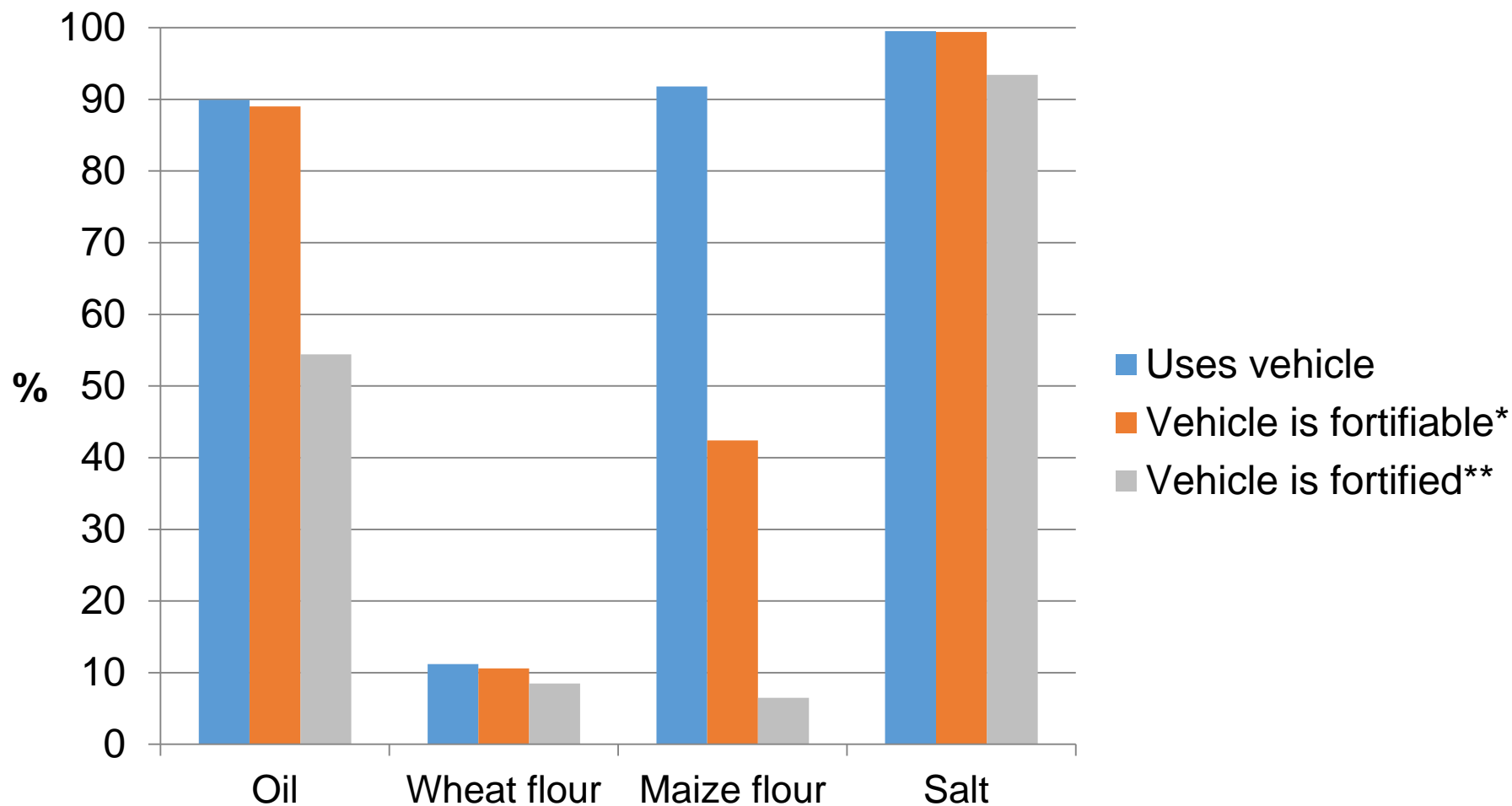
No sample provided nor brand reported

- Fortification status unknown



Household coverage

National coverage, Uganda 2015: Food vehicle usage at household level

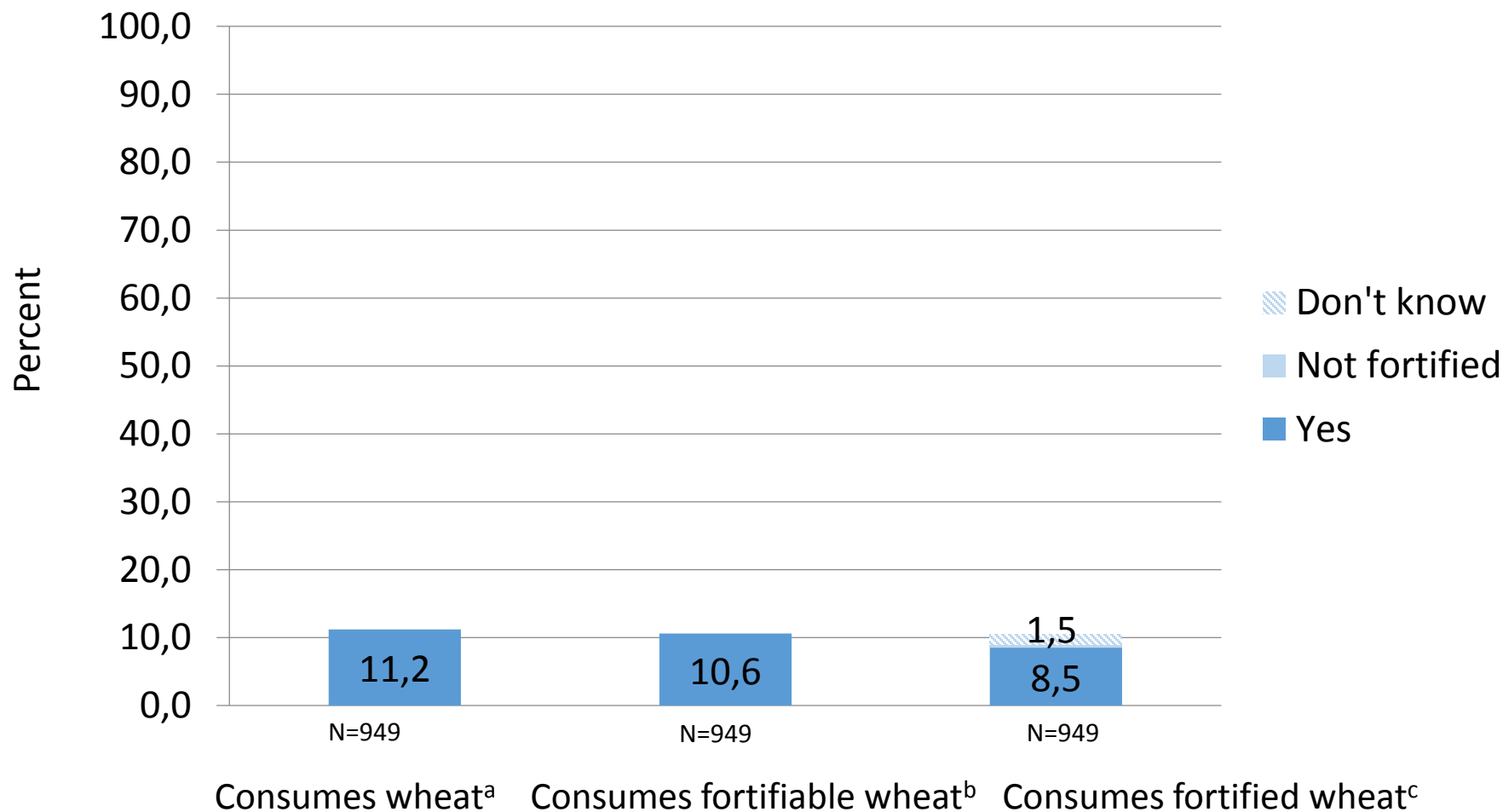


*Fortifiable refers to a food vehicle that was not made at home and is assumed to be industrially processed.

**Households were classified as fortified if they provided a sample or reported consuming a brand that was confirmed to be fortified by quantitative analyses.

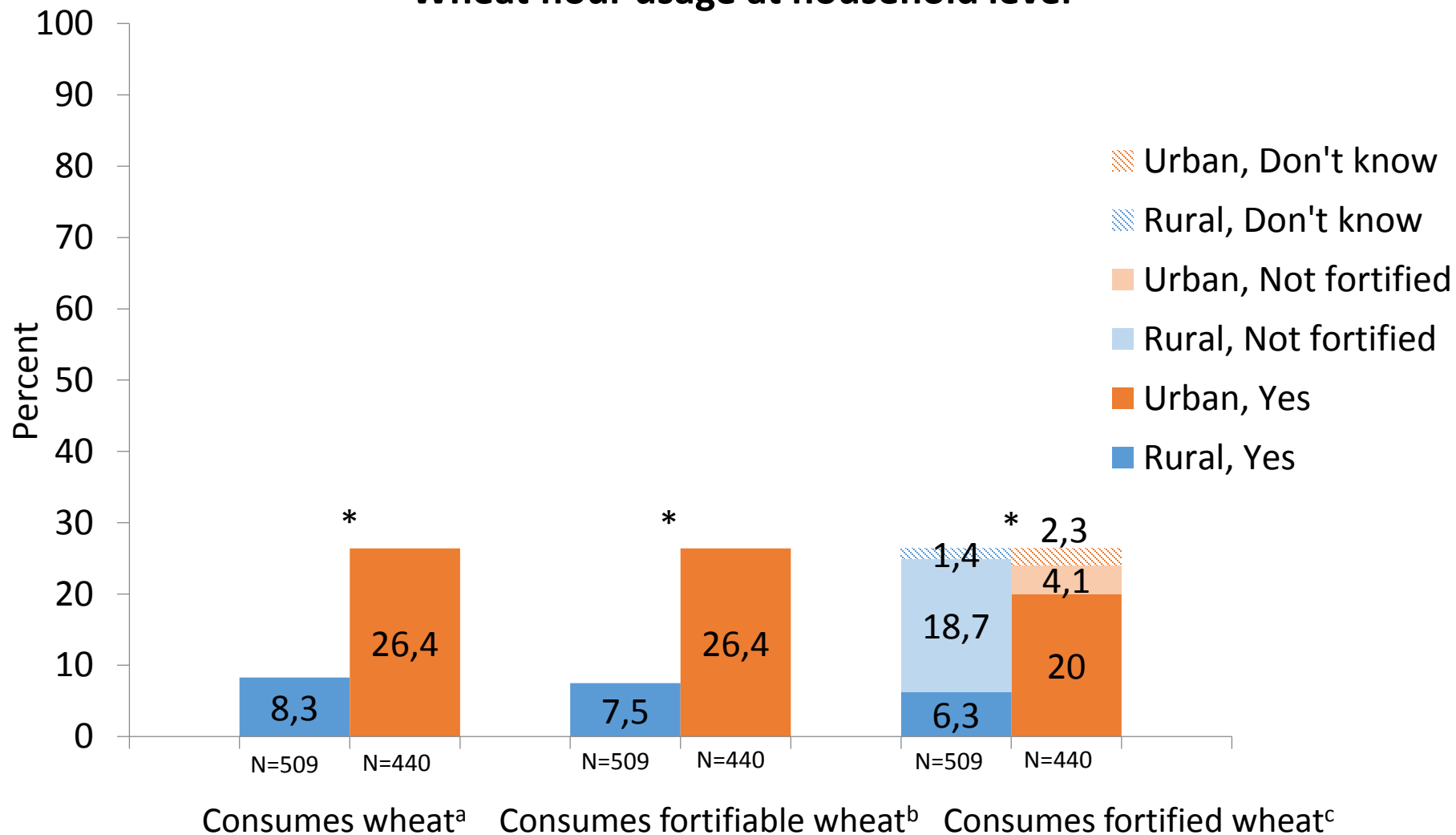
N= 949 for all vehicles.

National Coverage, Uganda, 2015: Wheat flour usage at household level



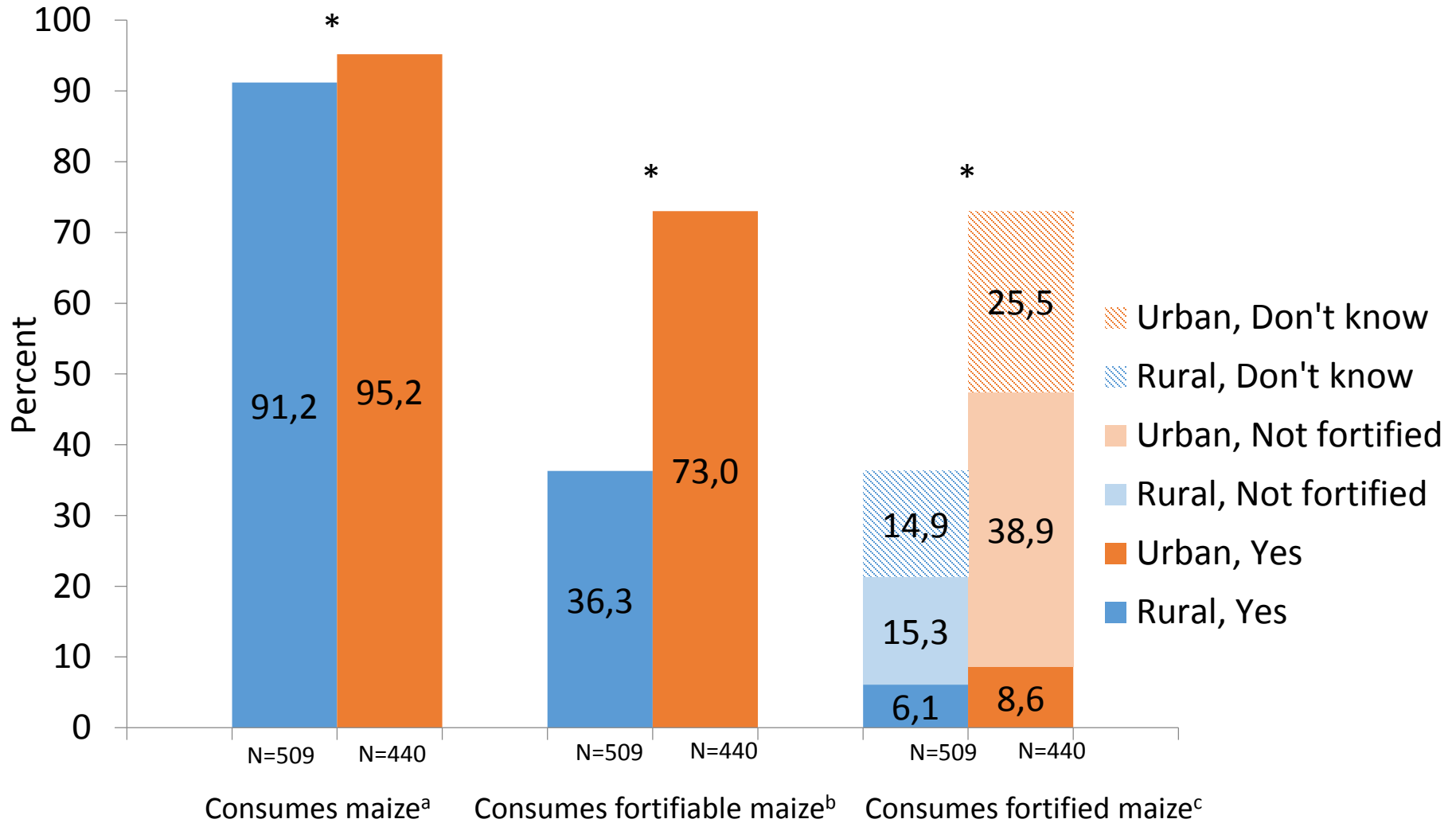
^aReported; ^bFortifiable refers to a food that was not made at home and is assumed to be industrially processed; ^cHouseholds were classified as fortified if they provided a sample or reported consuming a brand that was confirmed to be fortified by quantitative analyses; Don't know refers to a household that could not be classified because no food sample was available and no brand was reported. * P < 0.05

Urban and Rural Coverage, Uganda, 2015: Wheat flour usage at household level



^aReported; ^bFortifiable refers to a food that was not made at home and is assumed to be industrially processed; ^cHouseholds were classified as fortified if they provided a sample or reported consuming a brand that was confirmed to be fortified by quantitative analyses; Don't know refers to a household that could not be classified because no food sample was available and no brand was reported. * P < 0.05

Urban and Rural Coverage, Uganda, 2015: Maize flour usage at the household level

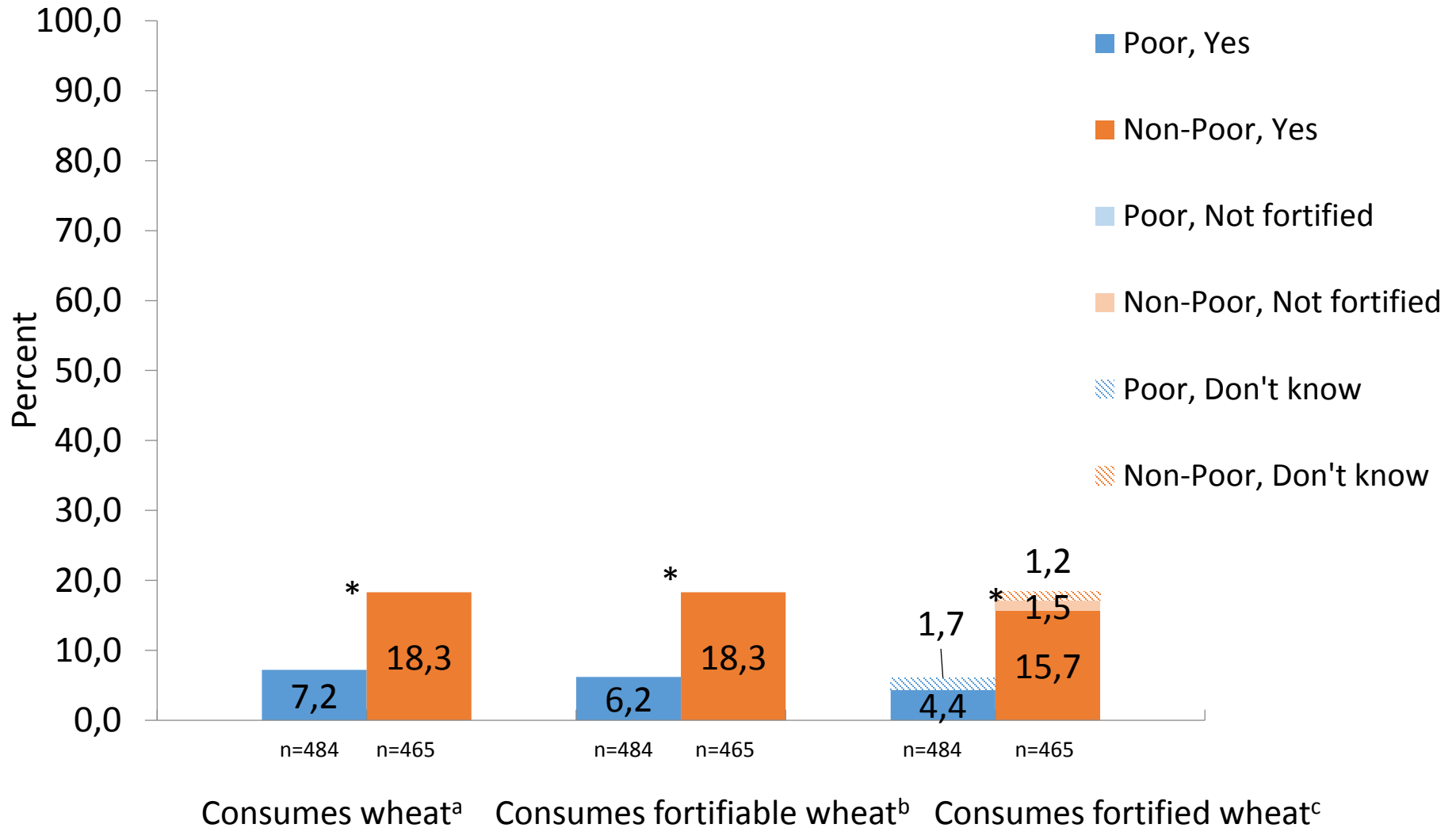


^aReported; ^bFortifiable refers to a food that was not made at home and is assumed to be industrially processed.; ^cHouseholds were classified as fortified if they provided a sample or reported consuming a brand that was confirmed to be fortified by quantitative analyses; Don't know refers to a household that could not be classified because no food sample was available and no brand was reported.



Poverty Risk

National coverage by poverty risk, Uganda, 2015: Wheat flour usage at household level

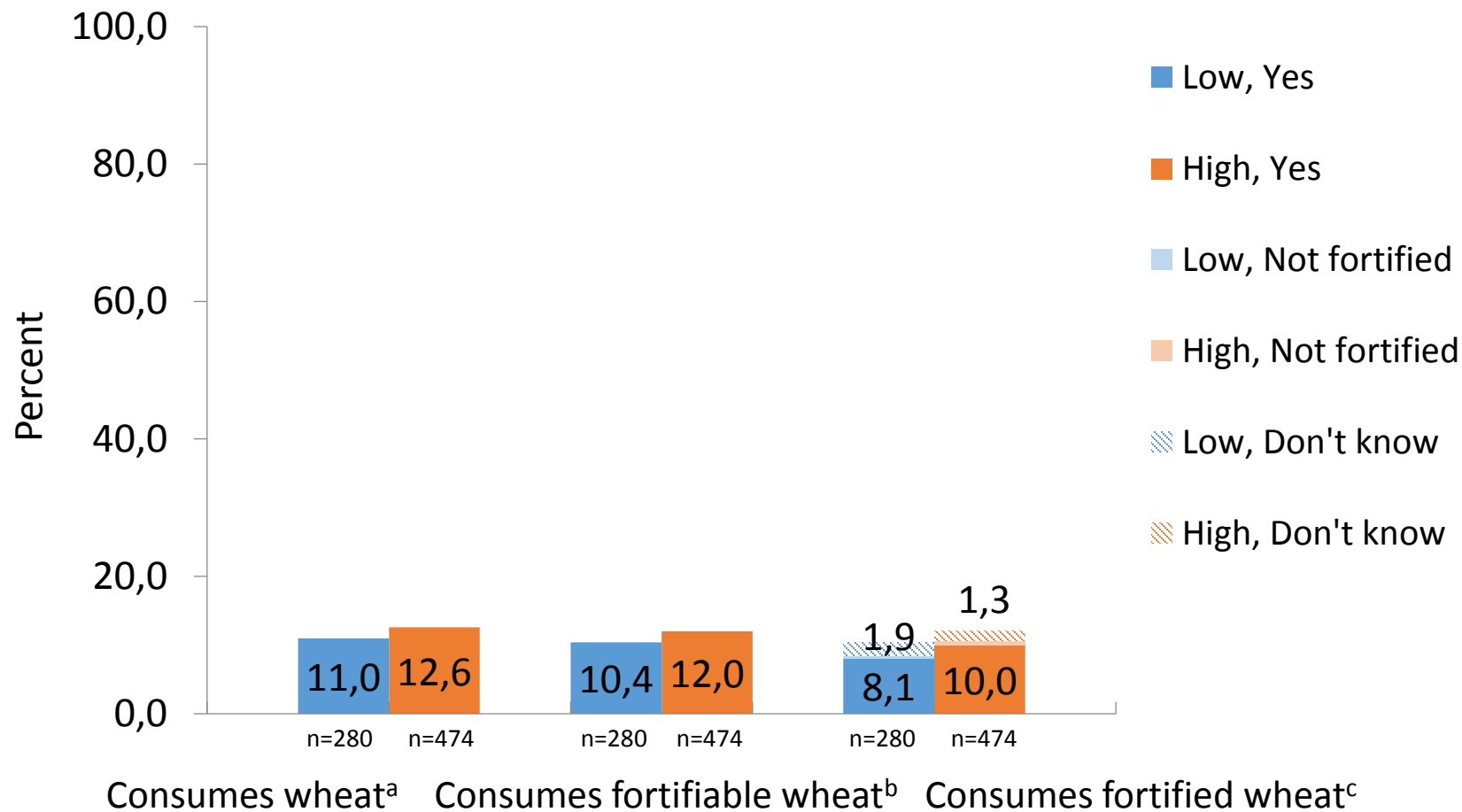


^aReported; ^bFortifiable refers to a food that was not made at home and is assumed to be industrially processed; ^cHouseholds were classified as fortified if they provided a sample or reported consuming a brand that was confirmed to be fortified by quantitative analyses; Don't know refers to a household that could not be classified because no food sample was available and no brand was reported. * P < 0.05

A photograph of a plate of food with various components: a piece of fried fish, a serving of beans, a portion of rice, and some vegetables. A white box with red text is overlaid on the center of the image.

Dietary Diversity

National wheat flour coverage by dietary diversity, Uganda, 2015: Wheat flour usage at household level

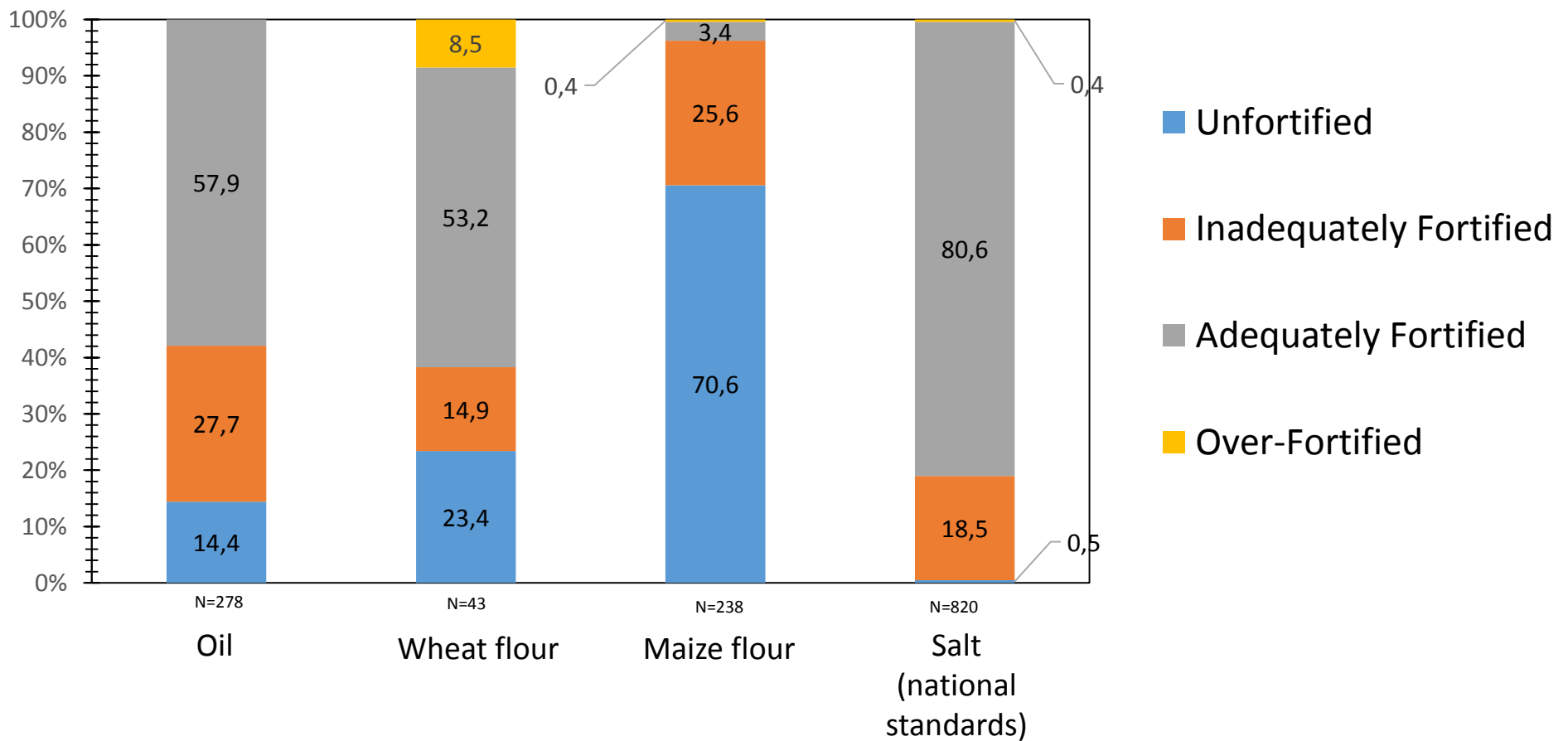


^aReported; ^bFortifiable refers to a food that was not made at home and is assumed to be industrially processed; ^cHouseholds were classified as fortified if they provided a sample or reported consuming a brand that was confirmed to be fortified by quantitative analyses; Don't know refers to a household that could not be classified because no food sample was available and no brand was reported. * P < 0.05

A photograph of three young children standing in front of a shop. The child on the left is wearing a yellow shirt and has their hands clasped. The child in the middle is wearing a red shirt. The child on the right is wearing a light green shirt. In the background, there are shelves with various items, including a scale and some containers. A white banner with red text is overlaid on the bottom of the image.

Adherence to standards

National fortification coverage, Uganda, 2015*



*Based on food samples analyzed for fortification compliance



Consumption patterns

Daily consumption¹ of fortifiable wheat flour by WRA in Uganda, National and by residence

	National
Household assessment	
Fortifiable wheat flour consumed (g/day) ²	127.4 (30.0, 209.6)
Individual assessment	
Fortifiable wheat flour consumed (g/day) ²	24.8 (9.8, 52.2)

WRA, Women of reproductive age (15 to 49 years)

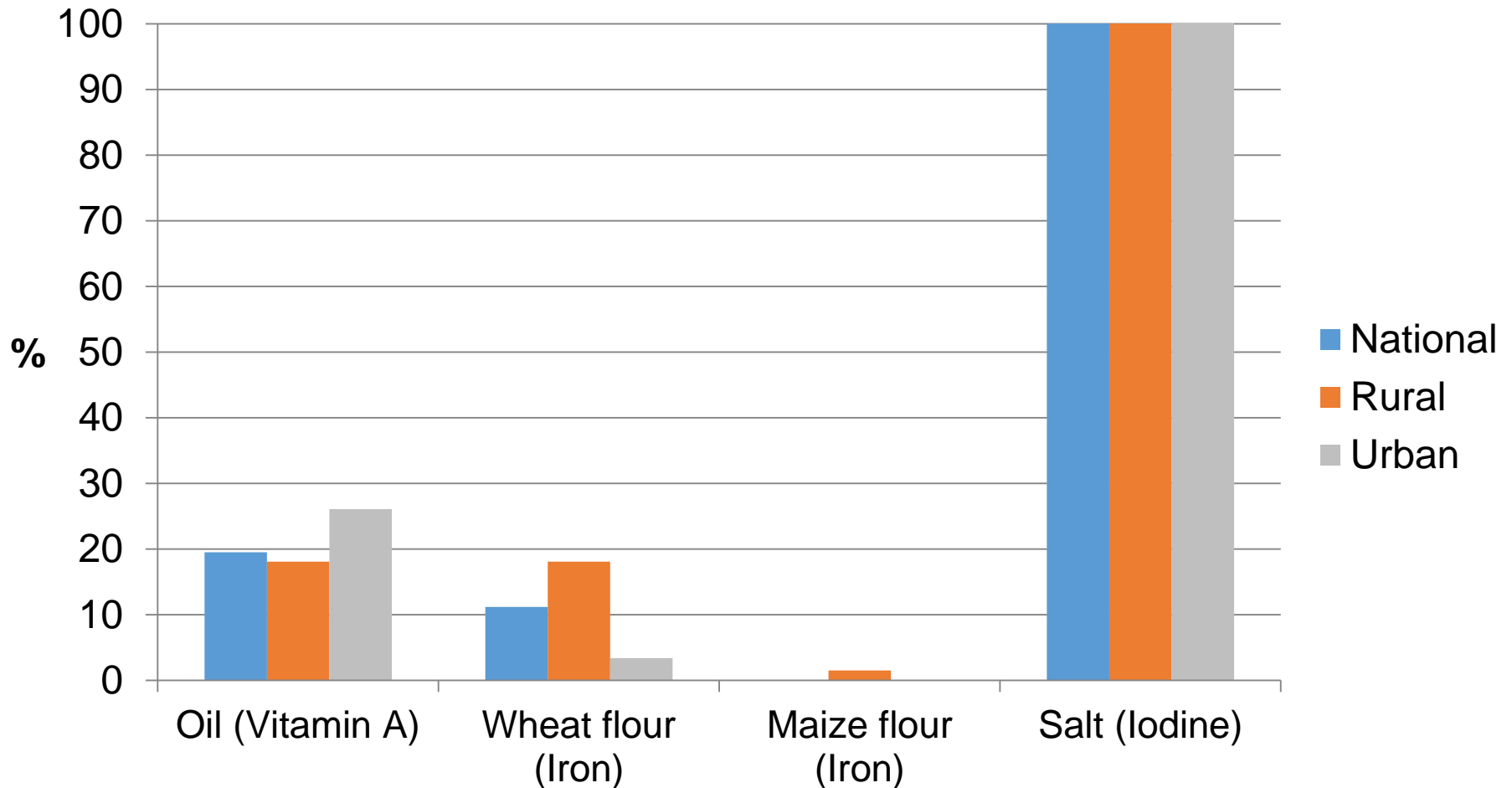
¹Results based on household assessment and adult male equivalent (AME) methodology

²Values shown are median (25%, 75%)



Contribution to dietary intake of micronutrients

Dietary contribution (% RNI) of select nutrients from consumption¹ of fortified foods among WRA in Uganda



Summary of key results

Oil

- There is potential for important contributions to dietary intake of vitamin A from fortification of oil but further efforts are required to improve quality control and enforcement

Wheat flour

- Household wheat flour consumption is lower than other vehicles but quality is good indicating potential for impact among a subset of the population, particularly in urban areas

Maize flour

- Potential for impact from fortified maize flour is higher in urban areas than rural areas, but fortification quality remains a challenge due to many small-scale producers who may not fall under the mandatory fortification legislation

Salt

- Nearly universal coverage of iodized salt; however, salt intakes are above recommended amounts resulting in high dietary contributions of iodine above recommended nutrient intakes (RNI)

Acknowledgements

- Uganda Ministry of Health
- Uganda National Working Group on Food Fortification
- Makerere University, Dept. of Food Technology and Nutrition
- Food Fortification Initiative
- United States Centers for Disease Control and Prevention
- Bill and Melinda Gates Foundation

For more information...

- Full survey report will be distributed in June 2016



Thank You!



Thank You