REPORT

FORTIFICATION ASSESSMENT COVERAGE TOOLKIT (FACT) SURVEY IN AFGHANISTAN, 2017

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Acronyms

AME	Adult Male Equivalents
BFS	Breastfeeding Score
CDDS	Child's Dietary Diversity Score
CBFD	Continued Breastfeeding Diagnostic
CDC	Community Development Council
CSO	Central Statistics Organization
CU5	Children under 5 years of age
DDD	Dietary Diversity Diagnostic
DDS	Dietary Diversity Score
EA	Enumeration Areas
EAR	Estimated Average Requirement
EBF	Exclusive Breastfeeding
FACT	Fortification Assessment Coverage Toolkit
FAO	United Nation's Food and Agriculture Organization
FFQ	Food Frequency Questionnaire
GAIN	Global Alliance for Improved Nutrition
ICFI	Infant and Child Feeding Index
IRB	Institutional Review Board
IYCF	Infant and Young Child Feeding
MDD-W	Minimum Dietary Diversity for Women
MFD	Meal Feeding Diagnostic
MFS	Meal Frequency Score
MOPH	Ministry of Public Health
MPI	Multidimensional Poverty Index
MUAC	Mid-Upper Arm Circumference
NNS	National Nutrition Survey
OSDR	Organization for Sustainable Development and Research
PPM	Parts per million
PPS	Probability proportional to size
PSU	Primary Sampling Unit
UNICEF	United Nations Children's Fund
WHO	World Health Organization
WRA	Women or Reproductive Age (15-49 years)

1. Summary

Micronutrient deficiencies continue to be a major challenge in Afghanistan, a conclusion that is supported by the findings of the 2013 National Nutrition Survey. Malnutrition has serious ramifications on health and development at individual, community and societal levels. The poor, women, children, internally displaced people, and returning refugees are most vulnerable.

Large-scale fortification of staple foods and condiments is a cost-effective, scalable and evidence-based strategy to help address micronutrient deficiencies when it is implemented under the appropriate conditions (WHO and FAO 2006; Horton, Alderman, and Rivera 2008). In Afghanistan, the iodization of salt began in 2003, becoming mandatory in 2011, and it has expanded to include 32 iodized salt factories functioning in 14 provinces. The fortification of wheat flour and oil, on the other hand, remains relatively nascent and is not yet mandatory, although legislation to make it mandatory is currently under review. For the fortification program, the lack of rigorous data on coverage and utilization impedes the ability to identify bottlenecks, make recommendations, and effectively tackle the challenges to fortification in Afghanistan.

The Fortification Assessment Coverage Toolkit (FACT) survey was implemented between January and March of 2017 through a national cross-sectional household survey and a market assessment. The survey aimed to fill these data gaps by providing information on household coverage of fortifiable and fortified foods, as well as the micronutrient contribution from fortified foods for women of reproductive age (15 to 49 years) and children less than 5 years of age. The household survey component covered 2,474 households in rural, urban (non-Kabul), and urban (Kabul) areas, and asked questions on household demographics and characteristics, food security, dietary diversity and nutritional status, awareness of fortification, and purchasing and consumption patterns for fortifiable foods. The market survey covered 12 strategically selected market hubs across the country and aimed to generate comprehensive lists of available brands of salt, oil, and wheat flour. Samples of each brand found in the marketplaces were taken and sent for laboratory analysis to determine the presence of the micronutrient of interest per food vehicle (vitamin A in oil, iodine in salt, and iron in wheat flour).

Awareness of fortification was found to be quite low: 22% of households reported hearing about fortified foods, with higher awareness in Kabul and other urban areas (35% and 33% of households respectively) than in rural areas (20% of households). Of those who reported hearing about fortified foods, 67% associated positive attributes with them.

According to the market survey results, 92 brands of salt, 187 brands of oil, and 153 brands of wheat flour were present in the 12 selected marketplaces. Most of the brands of each food vehicles were imported as opposed to being locally produced. Overall, the level of fortification was found to be inconsistent with the national standards: only 2% of salt brands, 4% of oil brands, and 10% of wheat flour brands were fortified within the standard range. For salt and wheat flour, most brands (71% of salt brands and 51% of wheat flour brands) were fortified to some extent, but only 35% of oil brands were fortified at all.

Household coverage of the food vehicles of interest was expressed as the proportion of total households that (1) consumed the food vehicle (in any form), (2) consumed the fortifiable food vehicle (i.e. it was industrially produced and not made at home), and (3) consumed the fortified food vehicle (i.e. the micronutrient of interest was detected at any level above minimum detection levels and above intrinsic levels for iron through laboratory analysis).

Nationally, consumption of salt and oil in any form was found to be universal (100%) and consumption in their fortifiable forms almost universal (100% for salt and 98.8% for oil). Consumption of wheat flour in any form was slightly lower (91.6%), while consumption in its fortifiable form was substantially lower at 49.7%, reflecting a high proportion of households who make wheat flour at home (i.e. small scale or in-home milling of wheat grains). For all food vehicles, however, consumption of the fortified food was found to be relatively low with only 22.1% of households consumed fortified salt, 30.1% consumed fortified oil, and 18.6% consumed fortified wheat flour. It is important to note that many households were not able to report a brand name for certain food vehicles and as a result there was a high proportion of households with unknown fortification status for many food vehicles when attempting to link the reported brand used in the household to the laboratory analysis of food specimens collected from markets (i.e. 54.6% for salt, 28.2% for oil/ghee and 30.9% for wheat flour); therefore, the consumes fortified food vehicle indicators reported here may be underestimated and should be interpreted with caution.

Micronutrient contribution from fortified foods was expressed as a percentage of the estimated average requirement (EAR) (for iodine and vitamin A) and recommended dietary allowance (RDA) (for iron) among the target population groups. Estimates were made under the current conditions and modelled to assume the foods were fortified in compliance with the Afghanistan national standards. Nationally, fortified salt was estimated to contribute on average 128.2% of the EAR for iodine among children 12-23 months, 162.9% among children 24-59 months, and 137.1% among WRA. When modelled assuming compliance with the fortification standard, these estimates increased to 531.2% among children 12-23 months, 724.0% among children 24-59 months, and 622.1% among WRA. Findings varied significantly across the three strata with rural households receiving the highest contribution to EAR and Kabul households receiving the lowest. Alternatively, fortified oil/ghee currently provides a very small contribution to vitamin A requirements, i.e. on average 0.7% of the EAR for vitamin A among children 12-23 months, 3.2% among children 24-59 months, and 2.7% among WRA. When modelled assuming compliance with the fortification standard, these estimates increased drastically to 99.6% among children 12-23 months, 90.6% among children 24-59 months, and 75.0% among WRA. Currently differences in estimated current contributions to nutrient requirement are significant across strata, with the benefit skewed towards urban areas. However, when modelled assuming compliance, differences across strata were no longer significant. Nationally, fortified wheat flour (from all sources, i.e. prepared at home and outside) was estimated to contribute on average 0.8% of the RDA for iron among children 6-11 months, 2.9% among children 12-23 months, 5.2% among children 24-59 months, and 12.9% among WRA. When modelled assuming compliance with the fortification standard, these estimates increased to 1.7% among children 6-11 months, 5.7% among children 12-23 months, 11.1% among children 24-59 months, and 27.6% among WRA.

In summary, the survey provided evidence that the fortification of salt with iodine and oil/ghee with vitamin A could have a large and immediate impact in the Afghan population. However, for these programs to function optimally, all products (both nationally manufactured and imported) must comply with the fortification standards. Currently, the majority of brands of these foods vehicles are imported and fortified below standards if at all, highlighting the need for efforts to improve compliance. If compliance gaps are addressed, the potential of these programs would be realized and equity gaps, related to vitamin A from oil/ghee specifically, would be resolved. To do this, there is a need for drivers of poor compliance at the production level to be ascertained and addressed through effective corrective actions to increase the availability of appropriately fortified foods. These can include, but may not be limited to, strengthening monitoring and enforcement efforts and the identification and implementation of effective incentives and penalties to drive compliance. A high priority should be placed on continued coordination with countries exporting these products to Afghanistan as imported foods are widely available and consumed across the country.

Alternatively, the prioritization of wheat flour fortification deserves additional analysis since only about half of all households consumed it in a fortifiable form and, if fortified according to standards, it is estimated to provide a significant contribution to iron requirements for WRA, but only a modest contribution for children 24-59 months, and a negligible contribution for children 6-23 months. It is therefore important for future research to determine who benefits and the magnitude of the benefit (by the supply of different micronutrients) of this program in addition to other dietary sources, as well as the real feasibility of it. Consideration for introducing fortification at small-mill may not be a wise decision as the feasibility of such as strategy is very low and there is a high proportion of imported wheat flour available on the market. Alternative targeted strategies may be required for certain population sub-groups that will not be reached by the large-scale wheat flour fortification program.

2. Introduction

In Afghanistan, there are severe vitamin and mineral deficiency problems. Known deficiencies include those of vitamin A, vitamin D, iron, folate and zinc (Aga Khan University, Ministry of Public Health/Afghanistan, UNICEF 2013). Other nutrients, such as vitamin B12, vitamin B2, and calcium may also be insufficient due to the low consumption of foods of animal origin. The 2013 National Nutrition Survey in Afghanistan (Aga Khan University, Ministry of Public Health/Afghanistan, UNICEF 2013) found the prevalence of vitamin A deficiency to be 50.4% among children 6-59 months of age (CU5) and 11.3% among women of reproductive age (15-49 years) (WRA). Vitamin D deficiency was also found to be of significant public health concern with 64.2% of CU5 and 64.7% of WRA being deficient. The same survey found that 13.7% of CU5 and 13.8% of WRA suffered from iron deficiency anemia, and 7.4% of adolescent girls (10-19 years) had folate deficiency. Therefore, micronutrient deficiencies in Afghanistan have serious ramifications on health and development at individual, community and societal levels. The poor, women, children, internally displaced people, and returning refugees are most vulnerable.

Micronutrient fortification of staple foods and condiments is an evidence-based, cost-effective, and scalable strategy to help address widespread micronutrient inadequacies when it is implemented under the appropriate conditions. For fortification programs to achieve impact, however, there must be high coverage and utilization of accessible fortifiable food vehicles, and fortifiable foods must be consistently fortified with the appropriate content of micronutrients by domestic and importing producers.

In Afghanistan, salt, edible oil/ghee, and wheat flour are the target vehicles of large-scale food fortification. Salt iodization started in Afghanistan in 2003 through public-private partnership, and currently there are 32 iodized salt factories functioning in 14 provinces. The salt iodization program became mandatory in 2011 and has been considered successful in the country. According to the National Nutrition Survey 2013 report, around 66% of Afghan families are using iodized salt. By contrast, fortification of wheat flour and oil is relatively nascent in Afghanistan. Wheat flour fortification began in Afghanistan in 2006, starting in five of the major cities (Kabul, Mazar-i-Sharif, Jalalabad, Kunduz and Herat cities) cities through seven flourmills. Currently, there are 25 flourmills involved in the program and the fortified wheat flour has around 5% of market sharing in the five major cities. Fortification of edible oil with vitamins A and D began in 2014 with three companies beginning production. Currently, fortification of wheat flour and edible oil is not mandatory in Afghanistan. Legislation to mandate and regulate the fortification of these two food vehicles is currently under review in the Afghanistan Ministry of Justice.

To date, there is a lack of information available on the coverage and quality of fortified wheat flour and oil at household and market levels, and on the current and potential nutrient contribution of fortifiable/fortified wheat flour, oil and salt to individuals, particularly among population groups at-risk of low micronutrient intakes, such as women of reproductive age and children.

3. The Fortification Assessment Coverage Toolkit (FACT) survey

3.1 BACKGROUND

Between January and March 2017, the Global Alliance for Improved Nutrition (GAIN) and the Organization for Sustainable Development and Research (OSDR) conducted a national cross-sectional survey in Afghanistan with the aim of assessing program coverage and micronutrient contributions of fortified foods. The project joins GAIN's repertoire of such coverage surveys around the globe using the Fortification Assessment Coverage Toolkit (FACT) with the aim of assessing performance of fortification programs, identifying potential barriers related to program coverage, and improving programs based on evidence and analysis of constraints. Such improvements will in turn contribute towards the goal of increasing impact of food fortification.

FACT is a survey instrument that was developed by GAIN for carrying out coverage assessments of both population-based (large-scale food fortification) and targeted (e.g., point-of-use fortificants or supplements) programs. The tool was developed to help stakeholders achieve greater program impact by assessing coverage. GAIN placed a major emphasis on developing a tool that is rapid to implement, analyze and report, while maintaining rigor and low-cost.

3.2 OBJECTIVES

The main objectives of the survey were to determine the coverage and potential contribution of fortified foods to the micronutrient intake among women of reproductive age (15 to 49 years) and children (less than 5 years), respectively, in urban and rural areas of Afghanistan.

Specific objectives of the survey were:

1. To assess the coverage of fortified wheat flour, oil and salt among households;
2. To measure levels of select nutrients in samples of wheat flour (iron), oil (vitamin A), and salt (iodine) collected from markets and assess the level of fortification compared to the national fortification standards;
3. To estimate the consumption of wheat flour, oil, and salt among women of reproductive age (15 to 49 years) and children (less than 5 years);
4. To estimate the contribution of fortified wheat flour, oil, and salt to the intakes of iron, vitamin A, and iodine, respectively, in the diets of women of reproductive age (15 to 49 years) and children (less than 5 years); and
5. To assess other indicators that may be predictive of inadequate micronutrient intake and determine their association with the consumption of fortified foods. These indicators are:
    - Place of residence;
    - Poverty status;
    - Minimum women's dietary diversity; and
    - Infant and young child feeding practices.

4. Methodology

4.1 OVERVIEW

The FACT survey in Afghanistan was comprised of two components: (1) a household survey, and (2) a market assessment. Details of the methodology for each component are described below separately.

4.2 SURVEY INSTRUMENTS

The survey instruments were adapted from FACT, which was designed to assess fortification program coverage and utilization (Friesen, VM et al. 2017). Data were collected on demographic and socioeconomic status; education; housing conditions; recent infant and child mortality; water, sanitation, and hygiene (WASH) practice; food security; women's dietary diversity; infant and child feeding practices; maternal and child anthropometry; and coverage and consumption of fortifiable foods (see Household Questionnaire in Annex 1). Brand information and food specimens were collected from marketplaces (see Market Forms in Annex 3). All survey modules (i.e. question and indicator sets) were taken or adapted from validated guidelines where available.

4.3 ETHICAL CONSIDERATIONS AND SURVEY ADMINISTRATION PROCEDURES

Ethical clearance for the survey was obtained from the Institutional Review Board at the Ministry of Public Health (MOPH) (#335543), and approval was obtained from the Assessment and Information Management technical working group of the Public Nutrition Department in the MOPH. Written consent was obtained from the household head and oral informed consent was obtained from the caregiver for herself/ himself and the selected child and recorded on the survey questionnaire. Data were collected by trained enumerators under the supervision of experienced field supervisors. All survey instruments were contextualized and adapted to the local context then translated into Dari language and back-translated into English to ensure correct meanings were retained. Survey instruments were pilot-tested prior to implementation to finalize language, wording, and flow of questions and response options. Interviews were conducted in Dari and data were collected on paper forms, which were reviewed daily by supervisors for completeness and correctness. All personal data collected as part of this survey are stored securely within the GAIN office, are only available to authorised individuals for analytical purposes, and are handled in accordance with data protection best practices. Each respondent was assigned a unique identifier that was used to analyze the data. All anonymized data related to this survey will be made publicly available.

4.4 HOUSEHOLD SURVEY

4.4.1 Survey design and target population

The household survey, conducted in February and March 2017, was a cross-sectional, cluster survey designed to be representative of all households with a child less than 5 years of age at the national level and within each strata (rural, urban (Kabul) and urban other). The target survey population included women of reproductive age (15 to 49 years) and children (less than 5 years). At the

household level, the target population consisted of all households with at least one child less than 5 years of age and the child's caregiver.

4.4.2 Sample size and sampling strategy

To select a representative sample of households, a two-stage stratified random sampling strategy was applied. The sampling frame consists of three strata: 1) rural, 2) urban (Kabul), and 3) urban (other areas) to account for regional differences in food consumption habits.

Census Enumeration Areas (EAs) served as the primary sampling units (PSUs) in the first stage of sampling. The sampling frame of EAs was received from the Central Statistics Organization (CSO) of Afghanistan and consisted of 36,368 EAs across the three strata. Before the sample selection was made, all insecure EAs were removed from the list. Then 35 PSUs were selected from within each stratum (rural, Kabul, other urban) using probability proportional to size (PPS) for a total of 105 PSUs, which were spread across 25 provinces of Afghanistan. Following the first stage of sampling, 5 of the selected PSUs in the rural stratum were identified as insecure due to accessibility restraints and were subsequently replaced out of the remaining non-selected rural PSUs using simple random sampling.

In the second stage of sampling, households with at least one child less than five years of age were listed within each selected PSU. The households were identified through a mapping exercise with the Community Development Council (CDC), or shura. Out of this list, 24 households were then randomly selected using the interval method for a total of 2,520 households.

If the CDC did not know whether a household had a child less than 5 years of age or not, the household was included in the list and given equal chance of being randomly selected. If during data collection, a selected household did not have a child less than 5 years of age, then the questionnaire was not completed. No replacement households were selected for any reason.

4.4.3 Data collection procedures

At the household, the head of the household was asked to complete the household roster and a child currently under the age of five years was then randomly selected from the roster, and the primary caregiver (i.e. the person responsible for caring for and feeding the child on most days) was asked to complete the household questionnaire. Written consent was obtained from the household head and oral consent was obtained from the primary caregiver. Up to three attempts were made to interview the eligible caregiver if she/he was absent at the time of the first visit. If on the third attempt the caregiver was not available then the interview was not conducted and no replacement households were selected.

4.5 MARKET SURVEY

4.5.1 Survey design

The market survey was designed to collect data on the presence of salt, oil/ghee, and wheat flour brands in the markets and the micronutrient content determined per brand.

4.5.2 Selection of market sites

Twelve main provincial market hubs were purposively selected for brand registration and food sample collection in the market assessment due to their regional representation, high estimated market volumes, high population density, and proximity to the selected PSUs (Figure 1).

1. Kabul
2. Jalalabad
3. Gardez
4. Chaharikar
5. Puli Khumri
6. Fayzabad
7. Kunduz
8. Mazar-I Sharif
9. Maymana
10. Herat
11. Kandahar
12. Lashkarga

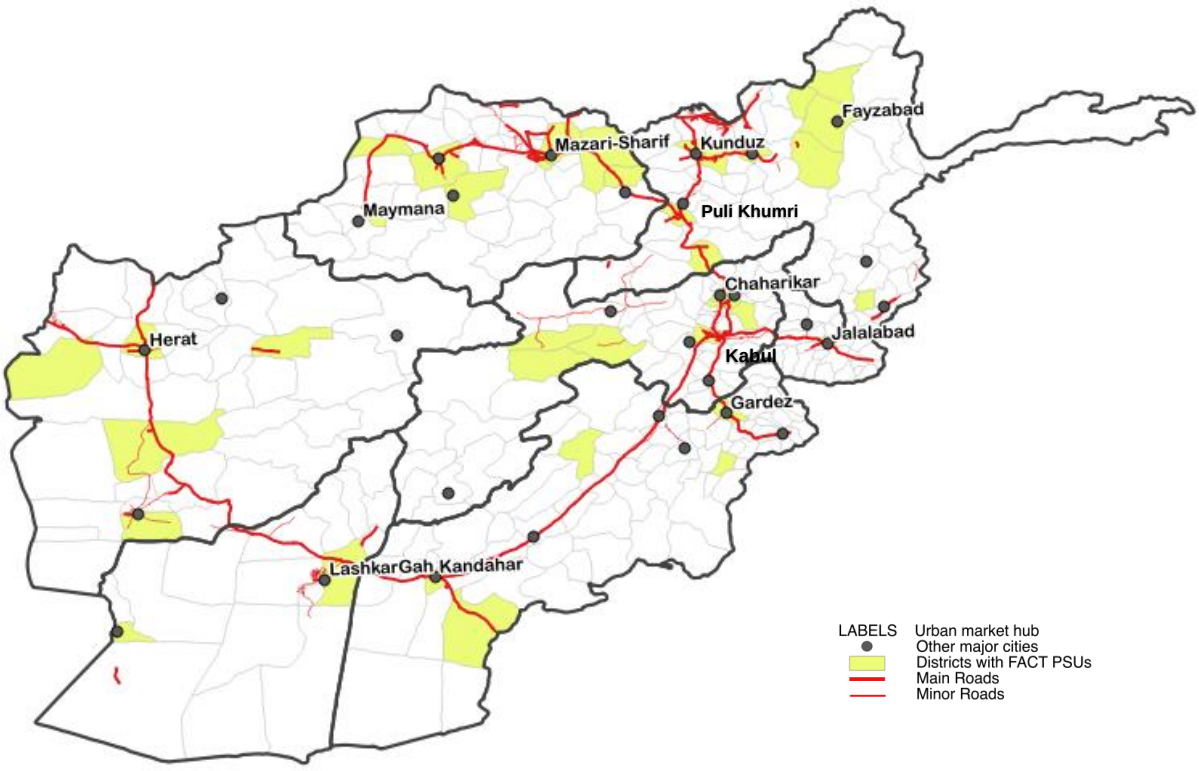


Figure 1 Selected sites for market survey, Afghanistan, 2017

4.5.3 Data collection procedures

The market assessment was comprised of two main components: (1) presence in the market (brand registration), and (2) food specimen collection for laboratory analysis.

Presence in the market

On the first day of arrival in each market hub, the supervisor identified (with assistance from the CDC, if necessary) the main market place, or site with highest concentration of retail outlets. Within this market place, the goal was to visit at least one of each of the following types of retail outlets:

a) Retail shop: A sale outlet offering variety of goods to a local community of area, like convenience store.

b) Supermarket/Superstore: A very large store that sells a wide variety of goods

c) Wholesaler: Intermediary entity in the distribution channel who usually sells to larger quantities to other vendors, not directly to households

The supervisor visited as many outlets as feasible in the time available with the aim of creating a comprehensive list of all available brands of each food vehicle (salt, ghee/oil, and wheat flour) in that market hub. Detailed information about the name, type and location of the retail outlets visited was recorded on Form 1 (Annex 3). Brand registration, including information on brand name, producer, importing company (if applicable), packaging types and sizes available, and whether or not the package included a statement or logo indicating fortification of the contents, was then completed on Forms 2a, 2b, and 2c for wheat flour, ghee/oil, and salt respectively (Annex 3).

Food specimen collection

Specimens were collected in small plastic containers for each available brand of each food vehicle with a target of collecting 12 individual specimens per brand (ideally from different batches, defined by date of production). For wheat flour specimens, between 300 and 500 grams was collected per specimen, for oil/ghee, between 300 and 500 mL, and for salt, between 50 and 100 grams. The aim for food specimen collection was to get 12 specimens per brand. Data collectors were instructed to collect a specific number of specimens per brand per market hub, and any remaining specimens needed would be collected in Kabul.

Once the specimen was transferred to the plastic container, information on batch number and original packaging size and type was taken was registered on Form 3 (Annex 3). In addition, a label with a unique code was affixed to the specimen container and the same number recorded in the appropriate row on Form 3 to ensure identification.

The specimens were covered in black plastic bags, placed in cardboard boxes, and stored in a cool, dark place throughout the storage and transport process in order to ensure that they did not deteriorate under field conditions. The wheat flour and salt specimens were then transported by air to a FARE laboratory in India and oil/ghee samples by land Qarshi laboratory in Pakistan for analysis (see Section 4.8 Determination of Fortification Status for further details).

4.6 SURVEY TEAM STRUCTURE, TRAINING, AND SUPERVISION

4.6.1 Team structure and training

The survey team was recruited and trained by OSDR, with support from GAIN, and included 8 supervisors and 30 data collectors (15 male and 15 female) from across the country. Emphasis in recruitment was placed on familiarity with the community and culture of the targeted areas and fluency in both Pashto and Dari, in addition to prior experience in survey work. The data collectors worked in teams of two, one female and one male.

The four day training was held between 30 January and 2 February 2017 in Kabul, Afghanistan and covered both the household survey and the market survey. After the completion of the classroom training, the team pre-tested the survey instruments and conducted mock surveys in the Kabul area for two days before departing for the field.

Eight supervisors were assigned to cover one to two teams, as appropriate and feasible. Each supervisor was responsible for quality control of data collection in the field, both at the household and in the market. He also took the lead in coordinating with local authorities at the provincial and local levels to ensure the survey could be implemented. In addition, he liaised regularly with the project manager in Kabul in order to communicate travel schedules and to report any problems encountered in the field.

4.7 KEY INDICATOR DEFINITIONS

Indicators of risk

Four indicators of risk that are associated with poor micronutrient intakes were used to assess the relationship between coverage and vulnerability. The risk indicators were:

- Rural residence – defined by the CSOs classification of the EAs as either rural, Kabul, or urban other, from which the sample was then drawn.

- At risk of poverty – defined according to the multi-dimensional poverty index (MPI), which is a composite indicator constructed from indicators on living standards, education, and health and nutrition; households are classified as at risk of poverty if the MPI score is greater than or equal to one third (Alkire and Santos 2014).

- Low women's dietary diversity – defined according to the minimum dietary diversity for women of reproductive age (MDD-W). Households are classified as having low dietary diversity if the selected caregiver is a women of reproductive age (WRA) who did not meet MDD-W, i.e. meaning she consumed foods from less than 5 food groups out of 10 the previous day [Food and Agriculture Organization (FAO) and FHI 360 2016]. The 10 food groups include grains (white roots and tubers and plantains); pulses (beans, peas and

lentils); nuts and seeds; dairy; meat, poultry, and fish; eggs; dark green leafy vegetables; other vitamin A-rich fruits and vegetables; and other vegetables and other fruits.

- Poor infant and child feeding practices (IYCF) – defined according to the Infant and Child Feeding Index (ICFI), which is an age-specific score calculated as a sum of the age-specific breast-feeding score (BFS), age-specific meal frequency score (MFS) and age-specific dietary diversity score (DDS) (Guevarra, E et al. 2014). Households are classified as having poor IYCF if the selected child has an ICFI score less than 6.

Indicators of coverage

Three measures of coverage were defined according to the Tanahashi coverage framework (Tanahashi 1978; Aaron, GJ et al. 2017) and reported as the proportion of households meeting the criteria out of the total number of surveyed households:

- Consumption of the vehicle – the household consumes the food vehicle;

- Consumption of the fortifiable vehicle – the food vehicle used by the household is processed industrially and hence is well suited to large-scale fortification; and

- Consumption of the fortified vehicle – the food vehicle used by the household is fortified (i.e. it contains any content of added nutrients above the intrinsic levels). Households are classified as consuming a fortified or non-fortified food vehicle based on linking the reported brand to the results of the laboratory analyses of food specimens analyzed from that brand. Households for which a brand could not be determined were classified as unknown fortification status in the analyses. For more information on analysis of micronutrients see section 4.8.

Indicators of consumption and micronutrient contribution

The daily amount of fortifiable food vehicle consumed per individual was estimated and used in conjunction with the micronutrient content results to determine the micronutrient contribution (as a percentage of the estimated average requirements (EAR) values for iodine and vitamin A, and of the recommended dietary allowance (RDA) for iron) coming from consumption of fortified foods among children under five and WRA.

Consumption:

For all food vehicles (wheat flour, oil, and salt), the daily apparent food consumption per individual household member was determined using the adult male equivalent method (AME) (Weisell and Dop 2012). At the household level, the daily quantity of the particular food vehicle consumed was estimated based on the reported quantity purchased and the duration it lasted in the household. Each member of the household was assigned an age- and sex-specific AME and the AMEs were summed together to calculate a household AME. Each individual AME was divided by the household AME and then multiplied by the quantity of food vehicle consumed by the household to calculate the quantity in grams of the food vehicle consumed per day per individual household member. Individuals from households that reported not consuming the particular food vehicle or those with missing information were assigned zero for grams consumed per day.

For wheat flour only, in addition to calculating individual consumption according to the AME method, an individual assessment of the frequency and quantity of foods prepared from fortifiable wheat flour consumed in the past 7 days was conducted to quantify the total daily wheat flour consumed from all sources using a semi-quantitative food frequency questionnaire (FFQ). This method was selected because the majority of people consume prepared wheat flour products made outside the household (e.g. bread) and thus the AME would not reflect total daily wheat flour intake.

The respondent was asked to report whether s/he and the child consumed any of the 20 wheat flour containing foods on the list in the last 7 days. For foods they consumed, the frequency was asked and the typical portion size eaten in one sitting was estimated using a photo album for each food (see example in Annex 2). The grams of flour in each portion size reported being consumed was multiplied by the frequency of consumption to estimate the intake of flour for the individual per week, and then divided by seven to calculate intake per day. A cumulative total of wheat flour consumed in grams per day was obtained by summing all food items containing flour for the individual per day. For any of the 20 foods an individual did not consume or for missing (i.e. frequency or portion size), the grams consumed for that food item were assigned a zero.

The quantity of food vehicle consumed (in grams/day per person) from both the AME and FFQ methods was used to estimate the micronutrient contributions from the fortified food vehicle by multiplying it by a fortification exposure level. For actual estimates, each household was assigned a micronutrient content for each food vehicle based on the measured fortification content of the reported brand used in the household. For households that did not report a brand, the average micronutrient content of all brands of the food vehicle that were found to be present in the nearest market hub(s) to the household was used. For modelled estimates, all households were assigned the target fortification content according to the Afghanistan national standards.

The amount of micronutrient consumed daily was then expressed as a percentage of the EAR or RDA among the population groups. Percentage of EAR was used for iodine and vitamin A because it allows for comparison to the EAR cut-point method, which is recommended to be used when setting goals and evaluating the impact and safety of fortification for these nutrients (WHO and FAO, 2006). The EAR cut-point approach is not recommended for estimating prevalence of inadequate iron intakes among children and WRA because their requirements are not normally distributed; therefore, the percentage of RDA was estimated as an alternative for presenting the iron contribution coming from the fortified foods. EAR and RDA values were taken from the Institute of Medicine Dietary Reference Intakes (Food and Nutrition Board, 2001).

4.8 ANALYSIS OF MICRONUTRIENTS IN FOOD VEHICLES

Food specimens collected from markets were shipped to a reference laboratory for analyses. Salt and wheat flour were analyzed by FARE Labs Food Analysis and Research Laboratory in India, while oil/ghee samples were analyzed by Qarshi Research International in Pakistan. Fortification status was determined for each food vehicle brand by laboratory analyses of micronutrient content in the food specimens.

For salt and oil/ghee, brand-specific composite samples were created by pooling individual samples from the same brand and quantitative analyses were conducted using iodometric titration to determine iodine content in salt, and HPLC to determine vitamin A content in oil/ghee. For wheat flour, first qualitative analyses of individual samples were conducted using the iron spot test (AACC 4040) to determine the presence of added iron. Then brand-specific composite samples were created by pooling individual samples from the same brand that tested positive for added iron in the spot test, and then quantitative analyses were conducted using atomic absorption spectrometry to determine total iron content. An additional composite sample for each type of wheat flour (white or brown) was created using all individual samples that tested negative in the spot test. Negative composite samples were similarly analysed to estimate total intrinsic iron content by type of flour. To determine the average added iron amount in wheat flour, the intrinsic amount of iron found in the unfortified composite samples was subtracted from the total iron found in the fortified composite samples.

Table 1 Standards used for analysis of food vehicle fortification levels, Afghanistan, 2017

Standard	Food Vehicle	Micro-nutrient	Compound	Target content	Target range
Afghanistan National Standard	Salt	Iodine	Potassium Iodate	40 mg/kg	30-50 mg/kg
Afghanistan National Standard	Oil/Ghee	Vitamin A	Retinyl Palmitate	30,000 IU/kg	24,000-36,000 IU/kg
Afghanistan National Standard	Wheat Flour	Iron	NaFeEDTA	15 mg/kg	12-18 mg/kg

4.9 DATA MANAGEMENT AND ANALYSES

4.9.1 Data entry and cleaning

A database was designed by OSDR in MS Access for data entry of the household survey and all household forms were entered over the period of two months, from the beginning of March to the end of April 2017. Double entry of forms was conducted to minimalize the risk of data entry errors. The market forms were initially entered into Microsoft Excel and saved as separate files. All final datasets from OSDR were saved in both Microsoft Excel and SPSS and submitted to GAIN. An iterative process of data cleaning was taken to resolve any inconsistencies seen in the variables after frequencies and distributions were run.

4.9.2 Data analysis

Data analyses were conducted using SAS version 9.4 (SAS Institute, Cary, NC USA) statistical analysis software. Descriptive statistics were applied to assess the structure of the variables and indicators within each stratum and the entire country. Mean (95% confidence interval) or median (25th percentile, 75th percentile) were calculated for each continuous indicator. Frequency tables with percentage (95% CI) were constructed for categorical indicators. For continuous variables, Analysis of Variance (ANOVA) was used to assess means across groups, Wilcoxon rank sum test was used to assess median between two groups, and Kruskal-Wallis test among three groups. For categorical

variables, adjusted chi-square test was used to compare across groups. All parametric analyses were population weighted and account for the complex design of the stratified multi-stage cluster survey. P-values < 0.05 were considered statistically significant.

4.10 LIMITATIONS OF THE SURVEY

4.10.1 Limitations related to design

The results of the survey are representative of households with at least one child under five and are not representative of the entire population. Results for women of reproductive age (WRA) are also not representative of all WRA in the country given that they were not randomly selected. Please refer to section 4.4.1 and 4.4.2 for further details on the sampling strategy.

In terms of the market survey, the design is such that this component can be implemented simultaneously or independently of the household survey depending on the priorities and needs of the country in which FACT is being implemented. As such, the priority is on the strategic selection of market hubs with regional representation, high estimated market volumes, and high population density. In Afghanistan, proximity to selected PSUs was taken into consideration during selection, but selection of a market hub per PSU was not feasible due to time and cost constraints and in the interest of applying the standardized method developed as part of the FACT toolkit. Therefore, results on brand presence in the markets may not be representative of all food vehicle brands available to households in each PSU. In addition, the market survey provides a snapshot in time of presence of brands and therefore may be subject to seasonality of production for different food vehicles.

It should also be noted that the original typology of retail outlets included small retail shops, supermarkets and wholesalers. However, supermarkets were found to be very limited and ultimately none was visited.

In terms of analysis of food vehicles, the added iron contents for wheat flour were based on the nutrient content in samples confirmed to have added iron (via spot test) less an estimate of intrinsic iron based on analysis of unfortified wheat flour types. However, the intrinsic iron content of flour can change from growing season to growing season based on the wheat variety grown, the soil it was grown in, fertilizer application and other factors. The intrinsic iron identified during this survey may vary from the intrinsic content measured at another time.

4.10.2 Limitations related to implementation

The collection of the recommended number of specimens per brand was identified as a major challenge during the survey. To allow for variation in the micronutrient content of a brand, it was recommended that 12 specimens from different batches of production be collected per brand. However, due to time restrictions and the nature of the markets for these food vehicles (i.e. high-volume importation of large containers from the same production batches), it was often not feasible to find 12 different batches of production. In addition, for oil and wheat flour in particular, vendors

sold in very large sizes and were sometimes unwilling to open a new container in order to provide a specimen. As a result, many brands did not have 12 specimens collected. In a few other cases, a brand was identified but sold only in very large containers and therefore no specimens were collected.

When the vendor was willing to provide a specimen from a pre-opened large container, it should be noted that the resulting specimen may have been exposed to heat and sunlight before collection. By contrast, other specimens, particularly for brands predominantly sold in smaller packaging sizes, were collected from sealed packages at the point of retail. Since vitamin A is sensitive to heat and light, the conditions under which some specimens were collected may have affected the results of laboratory analysis.

4.10.3 Limitations related to analysis

The survey was implemented using paper forms and, while efforts were taken to limit the need to handwrite responses by providing pre-filled responses where possible, the plethora of brands on the market meant that data collectors often had to hand write the brand name reportedly used by the household. In addition, since the original packaging was not always available in the household, the data collector often had to write what they heard the respondent say, which resulted in a wide variety of spelling for some brand names.

This challenge seen in the household brand reporting was compounded by the variation seen in spelling in the market survey on the specimen labels and on the market forms. This issue stemmed from the diverse origins of products that results in a variety of languages used on the packaging, the practice of placing import labels over the original packaging in a way that obscured the original packaging information, and/or the challenge of inconsistent approaches to transliteration from Dari to English, all resulting in multiple different spellings of individual brands. In the cases where more than one brand had very similar name or spelling and, between the variation in spelling at the household level reporting and in the market survey, an exact match between household identified brand and the market specimens could not be definitively ascertained, the average fortification level of the two (or more) brands was taken and applied to the household.

The request that the household report the brand most recently purchased or received is subject to recall bias and may not be indicative of the usual brand used in the household. In addition, many households were not able to report a brand and were therefore classified as ‘unknown fortification status’ for the household coverage indicator resulting in potential under-estimation of the true coverage of the fortified food vehicle.

The AME method used to estimate intake of food vehicles is an indirect approach that assumes homogeneous intra-household food distribution based on the person’s adult-male-equivalent number, and which depends on age, sex and physiological status. The individual food frequency recall method used to estimate intake of wheat flour foods has not yet been validated. Both methods are subject to recall bias.

5. Results

5.1 SURVEY POPULATION CHARACTERISTICS

5.1.1 Demographics

Out of the 2,520 selected households, a total of 2,474 were successfully interviewed (98.2% response rate). Of the 46 that were not interviewed, the primary reason for non-completion was refusal.

The median household size was 6.2. On average, there were 1.2 dependents per working person in an Afghan household. Very few households were headed by a woman, although it was slightly more common in urban areas (0.9% in Kabul and 0.4% in other urban areas) compared to rural areas (0%). The average age of the household head was 40.5 years.

Caregivers were identified by the household as the primary person responsible for the care of the randomly selected child. For the entire survey, 0.9% of caregivers were men and 1.9% of caregivers were women not of a reproductive age (i.e. <15 or >49). The rest (2,425 women, 98%) were women of reproductive age (between 15 and 49 years of age). The average age of the reported caregiver was 30.1 years and education was generally quite low (14.2% of all caregivers had at least 5 years of education). This figure dropped to 10.9% in rural areas compared to 26.4% and 42.3% in urban other and Kabul areas respectively.

Of the selected children, 46.1% were female and the average age was 30 months (2 years and 6 months); 6.4% were <6 months, 27.2% were between 6 and 23 months, and 66.3% were between 24 and 59 months.

Table 2 Household and demographic characteristics of the survey sample by place of residence and population group, Afghanistan, 2017[1, 2]

Variable	Median (25%, 75%) or Mean/Percentage (95% CI)				p-value[5]
	National	Urban (Kabul)	Urban (Other)	Rural	
Household	**N = 2474**	**N = 822**	**N = 822**	**N = 830**	
Household size (n), median	6.2 (4.4, 8.1)	6.0 (4.4, 8.0)	5.9 (4.2, 7.9)	6.3 (4.5, 8.2)	0.1132
Household dependency ratio, median[3]	1.2 (0.8, 1.9)	1.0 (0.6, 1.6)	1.2 (0.8, 1.9)	1.2 (0.8, 1.9)	0.4029
Female-headed household, %	0.1 (0.0, 0.2)	0.9 (0.0, 1.8)[a]	0.4 (0.0, 1.0)[a]	0 (0.0, 0.1)[b]	<0.0001
Age of household head (years), mean	40.5 (38.4, 42.7)	41.6 (39.7, 43.4)	38.6 (37.1, 40.0)	40.7 (38.1, 43.3)	0.2770
All caregivers[4]	**N = 2474**	**N = 822**	**N = 822**	**N = 830**	
Age (years), mean	30.1 (29.5, 30.8)	29.8 (29.1, 30.4)	30.7 (29.7, 31.7)	30.1 (29.4, 30.8)	0.4533
≥ 5 years education, %	14.2 (7.3, 21.1)	42.3 (35.7, 49)[a]	26.4 (19.2, 33.7)[b]	10.9 (2, 19.8)[c]	0.0008
Caregivers who are women of reproductive age	**N = 2425**	**N = 810**	**N = 808**	**N = 807**	
Age (years), mean	29.7 (29.2, 30.2)	29.6 (29.0, 30.2)	30.4 (29.5, 31.3)	29.6 (29.0, 30.3)	0.2269
≥ 5 years education, %	14.3 (7.0, 21.5)	42.5 (35.8, 49.1)[a]	26.8 (19.4, 34.1)[b]	10.9 (1.6, 20.2)[c]	0.0012
Child	**N = 2474**	**N = 822**	**N = 822**	**N = 830**	
Age (months), mean	30.0 (28.5, 31.5)	28.9 (27.5, 30.3)	29.7 (27.7, 31.6)	30.1 (28.3, 31.9)	0.6152
Sex female, %	46.1 (42.7, 49.5)	45.4 (40.9, 49.8)	45.7 (41.5, 50.0)	46.2 (42.1, 50.3)	0.9579

[1] Abbreviation: CI, confidence interval

[2] All values are mean, median or percent as indicated, and are weighted to correct for unequal probability of selection. Mean was used as the measure of central tendency for normally distributed continuous variables. Median was used for non-normally distributed variables. Percentage was used for categorical variables.

[3] Household dependency ratio is the number of household members below 15 years of age and above 64 years of age/Number of household members between 15 and 64 years of age.

[4] A caregiver was identified by the household as the primary person responsible for the care of the child that was randomly selected. This could be a man or woman of any age.

[5] Chi-square test was used to compare the means/percentages and Kruskal-Wallis test was used to compare medians of the three groups. For means/percentages, superscript letters denote statistical significance within the groups – between strata with the same letter, there is no statistical significance; between strata with different letters, there is a statistical difference.

5.1.2 Indicators of risk

Rural residence

As the survey was explicitly designed to be stratified by urban (Kabul), urban (other) and rural residence, one-third of the survey population was rural and all results are presented both nationally and by strata.

Poverty

According to the multi-dimensional poverty index (MPI), 63.6 percent of the surveyed households were at risk of acute poverty, with households in other urban areas significantly more likely to be at risk (35.1%) than Kabul households (14.3%), and rural households significantly more likely to be at risk (70.2%) than either other urban or Kabul households (Table 3).

The disparity between rural and urban households (other urban and in Kabul) was notable across all three components of the MPI (living standards, education, and health/nutrition), with rural households significantly more deprived of access to safe drinking water (51.9% with unsafe water), adequate flooring (96.9% with inadequate flooring), adequate cooking fuel (92.3% with inadequate cooking fuel, i.e. dung, wood or charcoal), and household assets (30.8% with <2 assets). In terms of educational attainment, rural and other urban households had significantly lower educational outcomes compared to Kabul (44.6% and 28.4% of households in rural and other urban areas respectively have *no* HH members older than 10 years of age with at least 5 years of education compared to only 15.8% of Kabul households). The difference is not significant between rural and other urban households. Rural households were also significantly more likely to have a household member of school age *not* attending school (58.0%) compared to Kabul households (43.5%), but the difference was not significant between rural and other urban or between other urban and Kabul households. In terms of nutrition outcomes, rural households were also significantly more likely to have a WRA or CU5 who was malnourished based on mid-upper arm circumference measurements (18.4%) compared to Kabul households (8.5%), but the other differences between strata were not significant. While Kabul households were slightly less likely to have a child less than five years of age that died in the past 5 years (4.7%) compared to rural (10.9%) and other urban (11. 1%), the differences between the strata were not significant.

Table 3 Multidimensional poverty index and its component indicators by place of residence, Afghanistan, 2017[1, 2]

Variable	Percentage (95% CI)				p-value[11]
	National N = 2474	Urban (Kabul) N =	Urban (Other) N=	Rural N=	
At risk of acute poverty[3]	63.6 (48.3, 79)	14.3 (10.2, 18.5)[a]	35.1 (26.2, 44)[b]	70.2 (50.5, 89.9)[c]	0.0004
Living standards component					
No electricity	6.9 (2.8, 11)	0.9 (0, 1.9)	6 (1.4, 10.7)	7.4 (2.4, 12.4)	0.1762
Unimproved sanitation[4]	64.4 (46.2, 82.7)	40.5 (32.1, 49)	48 (35.1, 60.9)	67.9 (45.3, 90.6)	0.1019
Unsafe drinking water source[5]	45.6 (27.8, 63.4)	3.9 (1.2, 6.6)[a]	14.6 (6.2, 23.1)[b]	51.9 (29.9, 73.8)[c]	<0.0001
Inadequate flooring[6]	88.3 (84.9, 91.7)	23.7 (14, 33.4)[a]	50.6 (38.7, 62.6)[b]	96.9 (95, 98.7)[c]	<0.0001
Inadequate cooking fuel source[7]	80.6 (76, 85.3)	3.4 (0.2, 6.6)[a]	22.9 (13.4, 32.4)[b]	92.3 (87.9, 96.7)[c]	<0.0001
<2 household assets[8]	27 (16.2, 37.8)	3.1 (0.6, 5.5)[a]	7.8 (4.1, 11.5)[b]	30.8 (17.2, 44.3)[c]	<0.0001
Education component					
No HH member aged 10 years or older has completed 5 or more years of school	41.4 (30.6, 52.3)	15.8 (12.3, 19.3)[a]	28.4 (20.5, 36.3)[b, c]	44.6 (31.1, 58.2)[c]	0.0019
Any household member 5-14 years NOT currently attending school	56.5 (48.7, 64.3)	43.5 (37.8, 49.1)[a]	51.1 (45.3, 56.9)[a, b]	58 (48.5, 67.5)[b]	0.0323
Health and nutrition component					
Child has died in past five years	10.5 (5.6, 15.5)	4.7 (1.8, 7.5)	11.1 (6, 16.1)	10.9 (4.9, 16.8)	0.3005
WRA or child is malnourished[10]	17.2 (11.3, 23.0)	8.5 (4.5, 12.6)[a]	11.3 (7.8, 14.9)[a, b]	18.4 (11.3, 25.6)[b]	0.0258

[1] Abbreviation: CI, confidence interval

[2] All values are percent as indicated and weighted to correct for unequal probability of selection.

[3] Multi-dimensional poverty index score ≥ 0.33.

[4] The household does not have access to an improved sanitation facility, i.e. a flush toilet or latrine, ventilated improved pit or composting toilet, or it is improved but shared with other households.

[5] The household does not have access to safe drinking water, i.e. piped water, public tap, borehole or pump, protected well, protected spring or rainwater, or safe drinking water is more than a 30-minute walk from home (round-trip).

[6] The household has a dirt, sand or dung floor.

[7] The household cooks with dung, wood or charcoal.

[8] From an asset list including: radio, television, mobile/non-mobile phone, bicycle, motorcycle, refrigerator, and/or car or truck.

[9] The household reports either (a) having no food of any kind in the house, going to sleep hungry at night, OR going all day and night without eating at least twice in the last month, or (b) experiencing two of the above three occurrences at least once in the past month.

[10] Mid-upper arm circumference of female caregiver <230 mm or of child under 6 months <115 mm or child 6 months or older <125 mm.

[11] Chi-square test was used to compare the percentages of the three groups. For percentages, superscript letters denote statistical significance within the groups – between strata with the same letter, there is no statistical significance; between strata with different letters, there is a statistical difference.

Women's dietary diversity

Dietary diversity for both women of reproductive age was found to be poor in Afghanistan, i.e. 73.9% of WRA did not meet the minimum dietary diversity threshold of 5 of 10 food groups in the past 24 hours. Furthermore, women from rural households were significantly more likely to have poor dietary diversity (78.4%) than in Kabul and other urban households (40.3% and 54.0% respectively), and had significantly lower consumption of both animal and plant sources of vitamin A (31.0% and 44.3% of rural WRA), as well as of iron-rich foods (18.9% of rural WRA) and zinc-rich foods (18.7% of rural WRA). By comparison, between 62.9% and 68.2% of WRA in urban other and urban Kabul households consumed plant sources of vitamin A and animal sources of vitamin A and between 42.8% and 46.1% consumed iron-rich and zinc-rich foods. The difference was not statistically significant between Kabul and other urban households.

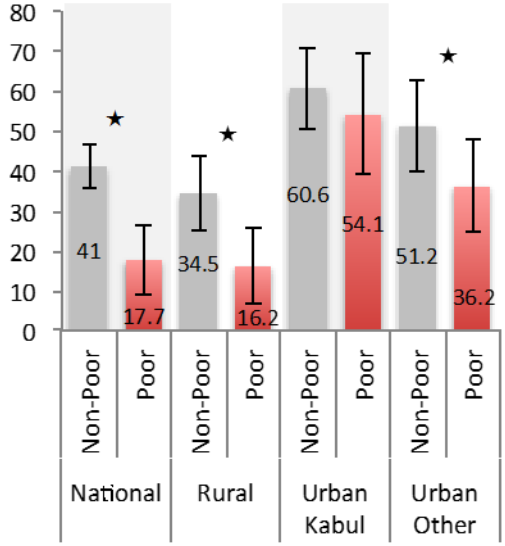
Nationally, WRA from poor households were significantly more likely to have worse dietary diversity (82.3% did not meet the MDD-W threshold) than non-poor households (59.0% did not meet the MDD-W threshold). The difference was also statistically significant between poor and non-poor WRA in rural and other urban areas, but was not statistically significant in Kabul (Figure 2) (see Annex 4 Table 15 for details).

Table 4 Minimum dietary diversity score for women of reproductive age and its components by place of residence, Afghanistan, 2017[1,2]

Variable	Median (25%, 75%) or Percentage (95% CI)				p-value[8]
	National N=	Urban (Kabul) N=	Urban (Other) N=	Rural N=	
Did not meet MDD-W, %[4]	73.9 (65.2, 82.5)	40.3 (30.1, 50.5)[a]	54.0 (43.4, 64.6)[a]	78.4 (67.7, 89.2)[b]	<0.0001
Dietary diversity score, median[3]	2.8 (1.7, 4.1)	4.3 (3.2, 5.3)	3.8 (2.7, 5.2)	2.6 (1.6, 3.8)	<0.0001
Consumed plant sources of vitamin A, %[5]	36.2 (26.4, 46.0)	66.9 (59.2, 74.6)[a]	62.9 (52.8, 73.0)[a]	31.0 (18.8, 43.3)[b]	<0.0001
Consumed animal sources of vitamin A, %[6]	47.9 (39.0, 56.8)	68.2 (60.4, 76.0)[a]	67.7 (58.9, 76.6)[a]	44.3 (33.8, 54.8)[b]	<0.0001
Consumed iron-rich foods, %[7]	22.9 (17.9, 27.8)	46.1 (40.1, 52.1)[a]	43.8 (36.0, 51.6)[a]	18.9 (13.3, 24.5)[b]	<0.0001
Consumed zinc-rich foods, %[8]	22.5 (17.6, 27.4)	43.9 (38.1, 49.7)[a]	42.8 (35.4, 50.3)[a]	18.7 (13.1, 24.4)[b]	<0.0001

[1] Abbreviations: CI, confidence interval; MDD-W, minimum dietary diversity for women of reproductive age
[2] All values are median or percent as indicated and weighted to correct for unequal probability of selection.
[3] Median score based on a score of ten food groups consumed in the last 24 hours: 1) grains, white roots and tubers, and plantains, 2) pulses (beans, peas, and lentils), 3) nuts and seeds, 4) dairy, 5) meat, poultry, and fish, 6) eggs, 7) dark green leafy vegetables, 8) other vitamin A-rich fruits and vegetables, 9) other vegetables, and 10) other fruits.
[3] Consumed at least five food groups out of ten.
[4] Consumed dark green leafy vegetables or other vitamin-A rich fruits and vegetables.
[5] Consumed dairy, organ meats, or eggs.
[6] Consumed flesh meat, organ meat, or fish.
[7] Consumed flesh meat or organ meat.
[8] Chi-square test was used to compare the percentages and Kruskal-Wallis test was used to compare medians of the three groups. For percentages, superscript letters denote statistical significance within the groups – between strata with the same letter, there is no statistical significance; between strata with different letters, there is a statistical difference.

Figure 2 Proportion of women of reproductive age meeting the minimum dietary diversity threshold by place of residence and poverty status, Afghanistan, 2017[1,2]



[1] Consumed at least five based on a score of ten food groups consumed in the last 24 hours: 1) grains, white roots and tubers, and plantains, 2) pulses (beans, peas, and lentils), 3) nuts and seeds, 4) dairy, 5) meat, poultry, and fish, 6) eggs, 7) dark green leafy vegetables, 8) other vitamin A-rich fruits and vegetables, 9) other vegetables, and 10) other fruits.
[2] ANOVA was used to compare the percentages of the two groups. The columns represent the point estimate and the error bars represent the 95% confidence interval around the point estimate. * P-value <0.05. Note that if error bars do not overlap, the difference is statistically significant, however, the inverse is not necessarily true – the difference in the percentages can still be significant even if the confidence intervals overlap.

Infant and child feeding practices

Adequate infant and young child feeding practices is comprised of two components, (1) exclusive breastfeeding practices for children <6 months and (2) good age-appropriate feeding practices (ICFI = 6) for children 6-59 months, further refined for children 6-23 months and children 24-59 months to capture different feeding requirements per the child's age-specific development. According to the survey results, exclusive breastfeeding nationally was 76%, and while slightly lower in Kabul (54.2%) compared to rural and other urban areas (78.4% and 75.3% respectively), the difference was not significant. This represents an improvement in exclusive breastfeeding practices as reported in the National Nutrition Survey (NNS) 2013, which found that 58.4% of children less than 6 months of age were exclusively breastfed. Nationally, 37% of children aged 6 to 23 months and 20% of children aged 24 to 59 months were fed appropriately and the difference between the strata was significant for children aged 24 to 59 months, children 24 to 59 months of age in rural areas were significantly less likely to be fed appropriately in rural areas (17.2% with good ICFI) compared to both Kabul (35.7%) and other urban households (36.7%). This difference is in turn what drives the overall lower proportion of adequate IYCF seen in rural households (58.5%) compared to Kabul (74.4%) and other urban households (62.0%).

Table 5 Infant and child feeding index and its components by place of residence, Afghanistan, 2017[1, 2]

Variable	Median (25%, 75%), Percentage (95% CI)				P-value[7]
	National	Urban (Kabul)	Urban (Other)	Rural	
All children 0-59 months	**N = 2474**	**N = 822**	**N = 822**	**N = 830**	
Inadequate infant and young child feeding (IYCF), %[6]	72.2 (64.4, 80.0)	74.4 (64.8, 84.0)[a]	62.0 (55.5, 68.5)[a]	58.5 (49.3, 67.6)[b]	0.0133
Children <6 months	**N = 159**	**N = 55**	**N = 54**	**N = 50**	
Exclusively breastfed, %	76.5 (63.2, 89.7)	54.2 (36.1, 72.3)	75.3 (60.5, 90.1)	78.4 (62.7, 94)	0.1621
Children 6-23 months	**N = 674**	**N = 236**	**N = 218**	**N = 220**	
Infant child feeding index (ICFI) score, median	4.5 (3.5, 5.3)	4.7 (3.8, 5.4)	4.9 (4.1, 5.4)	4.5 (3.5, 5.3)	0.0009
Good ICFI (ICFI score = 6), %[3]	37.0 (26.2, 47.8)	39.7 (31.3, 48.2)	45.4 (31.3, 59.6)	35.8 (22.5, 49.1)	0.4968
Currently breastfed, %	85.1 (81.0, 89.2)	76.1 (71.4, 80.8)[a]	79.4 (71.2, 87.6)[a, b]	86.4 (81.8, 91.0)[b]	0.0074
Dietary diversity component score ≥ 2, %[4]	14.3 (4.5, 24.1)	14.7 (5.6, 23.9)	10.3 (5.7, 14.8)	14.8 (2.7, 26.8)	0.7494
Meal frequency component score ≥ 2, %[5]	89.6 (80.8, 98.5)	95.6 (90.8, 100.0)	96.2 (93.4, 99.0)	88.4 (77.4, 99.4)	0.1212
Children 24-59 months	**N = 1641**	**N = 531**	**N = 550**	**N = 560**	
Infant child feeding index (ICFI) score, median	4.2 (2.7, 4.9)	4.7 (4.1, 5.3)	4.7 (4.2, 5.3)	4.0 (2.6, 4.8)	<0.0001
Good ICFI (ICFI score = 6), %	20.0 (11.6, 28.5)	35.7 (28.3, 43.0)[a]	36.7 (25.7, 47.6)[a]	17.2 (6.9, 27.4)[b]	0.0056
Dietary diversity component score =3, %	32.7 (18.6, 46.8)	4.7 (2.3, 7.0)[a]	11.8 (6.6, 17.1)[b]	36.8 (19.7, 53.9)[c]	<0.0001
Meal frequency component score ≥ 2, %	99.5 (98.8, 100.0)	99.8 (99.4, 100.0)	98.7 (97.3, 100.0)	99.5 (98.8, 100.0)	0.2956

[1] Abbreviations: CI, confidence interval; ICFI, infant child feeding index; IYCF, infant and young child feeding.
[2] All values are median or percent as indicated, and are weighted to correct for unequal probability of selection.
[3] ICFI score = 6 is equivalent to good practices based on continued breastfeeding, increased dietary diversity, and increased meal frequency based on child's age range.
[4] Good dietary diversity score based on child's age range (≥ 2 food groups for 6-8 months, ≥ 3 food groups for 9-11 months, ≥ 4 food groups for 12-23 months, and ≥ 5 food groups for 24-59 months).
[5] Good mean frequency score based on child's age range (≥ 2 times for 6-8 months, ≥ 3 times for 9-11 months, ≥ 4 times for 12-59 months).
[6] Defined as exclusive breastfeeding for children less than 6 months of age and ICFI score of 6 for children 6-59 months.
[7] Chi-square test was used to compare the percentages and Kruskal-Wallis test was used to compare medians of the three groups. For percentages, superscript letters denote statistical significance within the groups – between strata with the same letter, there is no statistical significance; between strata with different letters, there is a statistical difference.

5.1.3 Fortification awareness and knowledge

Nationally, only 22.3% of households had heard about fortified foods. Of these households, 67.4% reported positive attributes of fortified foods. Positive attributes could include knowledge that fortified foods are "enriched/added micronutrients", "good for health", "better quality", "the food is better for your health than a similar food without the logo", and/or "the food is good for the growth and development of children".

Table 6 Fortification awareness and knowledge by place of residence, Afghanistan, 2017[1, 2]

Variable	National		Urban (Kabul)		Urban (Other)		Rural		p-value[4]
	N	Percentage (95% CI)	N	Percentage (95% CI)	N	Percentage (95% CI)	N	Percentage (95% CI)	
Reported hearing about fortified foods	2474	22.3 (17.2, 27.5)	822	34.6 (26.7, 42.5)[a]	822	33.4 (24.6, 42.3)[a]	830	20.3 (13.9, 26.6)[b]	0.0089
Reported positive attributes of fortified foods[3]	670	67.4 (53.7, 81.1)	256	71.2 (63.4, 78.9)	256	74.7 (64.1, 85.2)	158	65.6 (47.2, 84.1)	0.5685

[1] Abbreviation: CI = confidence interval.
[2] All values are percent as indicated and weighted to correct for unequal probability of selection.
[3] Among households that reported hearing about fortified foods. Positive attributes reported by households include "enriched/added micronutrients", "good for health", "better quality", "the food is better for your health than a similar food without the logo", and/or "the food is good for the growth and development of children."
[4] Chi-square test was used to compare the percentages of the three groups. For percentages, superscript letters denote statistical significance within the groups – between strata with the same letter, there is no statistical significance; between strata with different letters, there is a statistical difference.

5.2 MARKET SURVEY RESULTS

5.2.1 Brand presence in the market

The largest market place was visited in each of the 12 market hubs, with the exception of Herat, where 2 market places were selected, and in Kabul, where four market places were visited. In total, 294 retail outlets were visited (252 retail shops and 43 wholesalers). Across all market hubs, a total of 153 brands of wheat flour, 187 brands of ghee/oil, and 92 brands of salt were identified (Table 7). For oil, 109 brands were ghee, 31 were vegetable oil, 28 were sunflower oil, 7 were corn oil, 1 was olive oil, and for 11, the type was not recorded in the data and therefore was marked as unknown.

Table 7 Retail outlets visited and brands registered by food vehicle and market hub, Afghanistan, 2017

Region	Market Hub	Number of Outlets Visited			Number of Brands Found		
		Retail shop	Super-market	Whole-sale shop	Wheat flour	Oil/Ghee	Salt
Central	Kabul, Kabul	65	0	12	46	95	26
East	Chaharikar, Panjshir	35	0	2	32	45	14
	Gardez, Paktia	10	0	1	17	29	5
	Jalalalabad, Nangahar	16	0	6	18	24	5
Northeast	Puli Khumri, Baghlan	18	0	2	20	37	9
	Kunduz, Kunduz	16	0	2	39	27	11
	Fayzabad, Badakshan	14	0	3	21	20	6
Northwest	Mazar-i- Sharif, Balkh	20	0	1	20	18	23
	Maymana, Faryab	7	0	0	21	9	6
West	Herat, Herat	20	0	8	30	42	4
South	Lashkargah, Helmand	16	0	2	8	16	5
	Kandahar, Kandahar	15	0	4	15	12	6
Total[1]		252	0	43	153	187	92

[1] The total number of brands found across all markets hubs does not equal the total number of unique brands because some brands were found across multiple market hubs.

Of the salt brands found in the markets, 78 (84.8%) were domestically produced while 14 (15.2%) were imported, mostly from Pakistan (6 brands) and Iran (7 brands). One brand was imported from China. In the oil/ghee and wheat flour markets, the opposite was found to be true with the majority being imported: 172 oil/ghee brands (92.0%) were imported, mostly from Malaysia (76 brands) and Russia (29 brands), compared to 14 brands (7.5%) that are domestically produced; 118 wheat flour brands (77.1%) were imported, mostly from Kazakhstan (76 brands) and Pakistan (34 brands), compared to 35 brands (22.9%) that were domestically produced (Table 8).

Table 8 Summary of brands present in the market place by origin of production (locally versus imported), Afghanistan, 2017

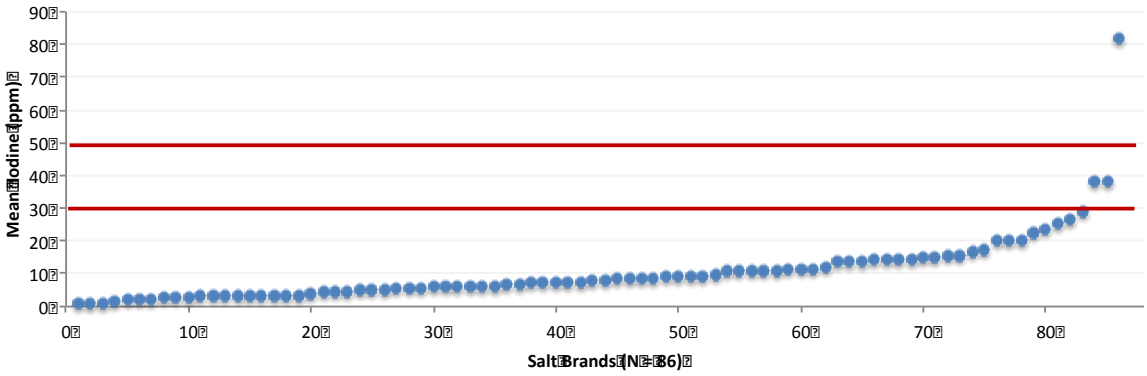
Origin	Salt		Oil/Ghee		Wheat flour	
	N	%	N	%	N	%
Imported	78	84.8	172	92.0	118	77.1
Local	14	15.2	14	7.5	35	22.9
Unknown	0	0.0	1	0.5	0	0.0
Total	92	100.0	187	100.0	153	100.0

5.2.2 Micronutrient content of food vehicles by brand

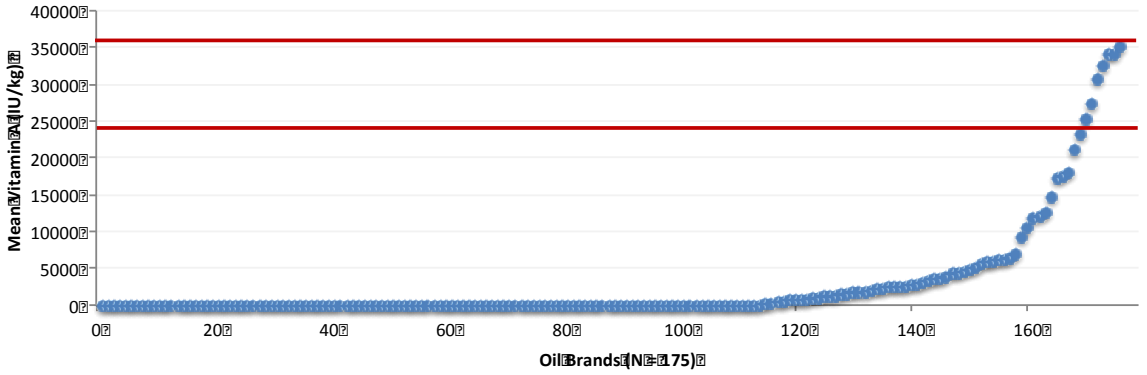
Amongst the brands for which specimens were collected (see section 4.10.2 for discussion of reasons why some brands did not have any samples collected), most brands of salt and wheat flour were being fortified to some extent, 70.9% and 50.7%, respectively. However, for oil/ghee brands, almost two-thirds (65.3%) of brands were not fortified at all (Figures 3 and 4). Nevertheless, currently very low proportions of fortifiable foods that were fortified within the ranges specified in the Afghanistan National Standards: 2.3% of salt brands, 4.0% of oil/ghee brands, and 10% of wheat flour brands. Analysis of the micronutrient content compared to the national standards by country of production can be seen in Table 9.

Figure 3 Micronutrient content of food vehicles by brand compared to the adequate fortification range as defined in the Afghanistan National Standards[1]

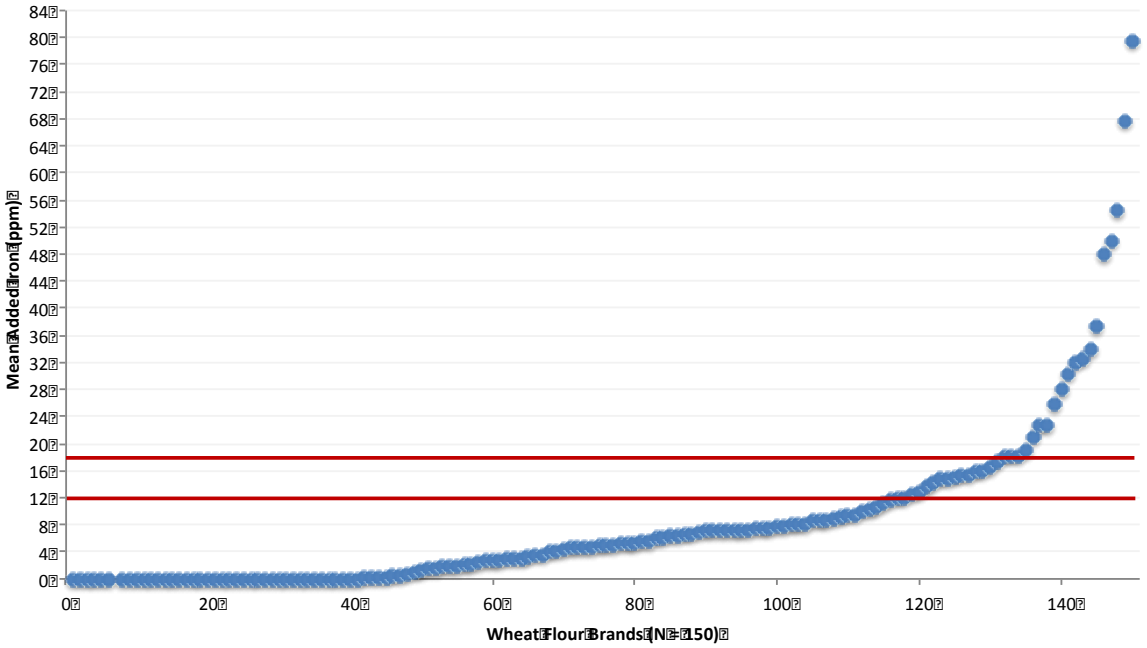
a. Salt



b. Oil

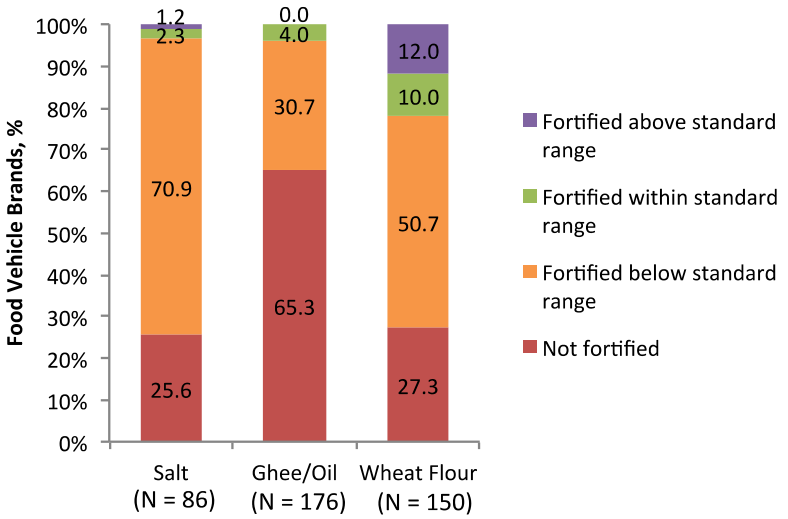


c. Wheat flour



[1] The continuous red lines indicate the range prescribed in the current Afghanistan National Standards, i.e. for salt, 30-50 mg/kg; oil/ghee, 24,000-36,000 IU/kg; and wheat flour, 12-18 mg/kg.

Figure 4 Summary of food vehicles by brand classified according to Afghanistan national fortification standards, Afghanistan, 2017[1]



[1] For salt, “not fortified” is <5 mg/kg, “fortified below standard” is 5 to <30 mg/kg, “fortified within the standard range” is 30-50 mg/kg, “fortified above standard” is >50 mg/kg; For oil/ghee, “not fortified” is 0 IU/kg, “fortified below standard” is 0 to <24,000 IU/kg, “fortified within the standard range” is 24,000-36,000 IU/kg, “fortified above standard” is >36,000 IU/kg; For wheat flour, “not fortified” is 0 mg/kg, “fortified below standard” is 0 to <12 mg/kg, “fortified within standard range” is 12-18 mg/kg, “fortified above standard” is >18 mg/kg.

Table 9 Summary of brands by food vehicle and place of origin classified according to Afghanistan national fortification standards, Afghanistan, 2017[1]

Country of Origin	Total (N)	Classification (N, %)				
		Not fortified	Fortified below standard	Fortified within the standard range	Fortified above standard	Unknown
Salt Brands						
Afghanistan	78	21 (26.9)	52 (66.7)	2 (2.6)	1 (1.3)	2 (2.6)
China	1	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	1 (100.0)
Iran	7	1 (14.3)	4 (57.1)	0 (0.0)	0 (0.0)	2 (28.6)
Pakistan	6	0 (0.0)	5 (83.3)	0 (0.0)	0 (0.0)	1 (16.7)
Total	92	22 (11.7)	61 (32.4)	2 (1.1)	1 (0.5)	6 (3.2)
Oil/Ghee Brands						
Afghanistan	14	6 (42.9)	4 (28.6)	3 (21.4)	0 (0.0)	1 (7.1)
China	2	2 (100.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)
Indonesia	5	3 (60.0)	2 (40.0)	0 (0.0)	0 (0.0)	0 (0.0)
Iran	17	13 (76.5)	3 (17.6)	0 (0.0)	0 (0.0)	1 (5.9)
Kazakhstan	2	2 (100.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)
Malaysia	76	45 (59.2)	26 (34.2)	0 (0.0)	0 (0.0)	5 (6.6)
Pakistan	14	8 (57.1)	3 (21.4)	3 (21.4)	0 (0.0)	0 (0.0)
Russia	29	15 (58.6)	7 (24.1)	1 (3.4)	0 (0.0)	4 (13.8)
Turkey	9	8 (88.9)	1 (11.1)	0 (0.0)	0 (0.0)	0 (0.0)
UAE	15	7 (46.7)	8 (53.3)	0 (0.0)	0 (0.0)	0 (0.0)
Ukraine	2	2 (100.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)
Unknown	2	2 (100.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)
Total	187	116 (61.5)	54 (28.9)	7 (3.7)	0 (0.0)	11 (5.9)
Wheat Flour Brands						
Afghanistan	35	6 (17.1)	12 (34.3)	7 (20.0)	10 (28.6)	0 (0.0)
Iran	1	0 (0.0)	1 (100.0)	0 (0.0)	0 (0.0)	0 (0.0)
Kazakhstan	76	22 (28.9)	47 (61.8)	3 (3.9)	2 (2.6)	2 (2.6)
Pakistan	34	11 (32.4)	11 (32.4)	5 (14.7)	6 (17.6)	1 (2.9)
Tajikistan	3	1 (33.3)	2 (66.7)	0 (0.0)	0 (0.0)	0 (0.0)
Uzbekistan	1	1 (100.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)
Unknown	3	0 (0.0)	3 (100.0)	0 (0.0)	0 (0.0)	0 (0.0)
Total	153	41 (26.8)	76 (49.7)	15 (9.8)	18 (11.8)	3 (2.0)

[1] For salt, "not fortified" is <5 mg/kg, "fortified below standard" is 5 to <30 mg/kg, "fortified within the standard range" is 30-50 mg/kg, "fortified above standard" is >50 mg/kg; For oil/ghee, "not fortified" is 0 IU/kg, "fortified below standard" is 0 to <24,000 IU/kg, "fortified within the standard range" is 24,000-36,000 IU/kg, "fortified above standard" is >36,000 IU/kg; For wheat flour, "not fortified" is 0 mg/kg, "fortified below standard" is 0 to <12 mg/kg, "fortified within standard range" is 12-18 mg/kg, "fortified above standard" is >18 mg/kg.

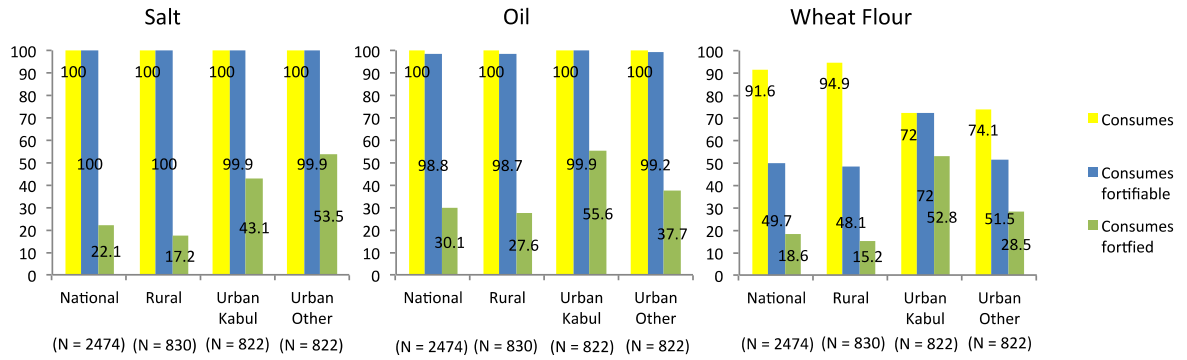
5.3 HOUSEHOLD COVERAGE OF FOODS

Nationally, consumption of salt and oil/ghee was found to be universal (100%) and consumption in their fortifiable forms almost universal (100% for salt, 98.8% for oil). Consumption of wheat flour was slightly lower (91.6%), while consumption in its fortifiable form dropped substantially to 49.7%, reflecting a high proportion of households who make wheat flour at home (i.e. small scale or in-home milling). This lower consumption of fortifiable wheat flour was particularly notable in rural

areas (from 94.9%) who consumed any wheat flour to 48.1% who consumed fortifiable wheat flour) and in other urban households (from 74.1% consuming any wheat flour to 51.5% consuming fortifiable wheat flour). By comparison, there was relatively little change between households that consumed any wheat flour and those that consumed fortifiable wheat flour in Kabul (72.0 and 70.7% respectively) indicating most Kabul households obtain their wheat flour from industrial large-scale production (Figure 5).

For all food vehicles at the national level, household consumption of a fortified food vehicle was relatively low: 22.1% for salt, 30.1% for oil, and 18.6% for wheat flour (Figure 5). It should be noted that the fortification status of salt, oil, and wheat flour was unknown for 54.6%, 28.2%, and 30.9% of households, respectively, as they were unable to report the brand they used last, or the brand they reported was not found in the market survey (see Annex 5 Table 15 for details) therefore the results for the consumes fortified food vehicle indicator may be underestimated and should be interpreted with caution.

Figure 5 Household coverage of salt, oil, and wheat flour by place of residence, Afghanistan, 2017[1,2]



[1] "Consumes fortifiables" means the food vehicle used by the household was industrially processed (i.e. not made at home).
[2] "Consumes fortified" means the food vehicle used by the household was confirmed to be fortified at any level by brand identification and quantitative laboratory analyses. The proportion of households for which fortification status was unknown because no brand was reported or the brand reported was not found in the market survey nationally is: 54.6% for salt, 28.2% for oil, 30.9% for wheat flour.

When results for consumes food vehicle and consumes fortifiable food vehicle are disaggregated by the risk factors of poverty, women's dietary diversity, and IYCF practices, a few statistically significant differences were seen. (Note that disaggregations of results for consumes fortified food vehicle are not presented due to the high proportion of households for which fortification status was unknown.)

Looking at the disaggregation by likelihood of poverty, poor households were significantly more likely to consume wheat flour in any form than non-poor households in other urban areas only, with no significant difference by other strata or in the consumption patterns of fortifiable wheat flour by poor and non-poor households. No significant differences were observed in the consumption of any salt and oil/ghee or fortifiable salt and oil/ghee by poor versus non-poor households across any of the strata.

When disaggregated by IYCF practices, households with inadequate IYCF practices were significantly more likely to consume any wheat flour than households with adequate IYCF in rural and urban areas, and households with inadequate IYCF practices were significantly more likely to consume fortifiable wheat flour than households with adequate IYCF practices in rural areas only.

When disaggregated by women's dietary diversity, households with WRA who did not meet the MDD-W were more likely to consume any wheat flour than households in which the WRA did meet the MDD-W in rural and other urban areas, and in rural areas only, households in which WRA did not meet the MDD-W were more likely to consume fortifiable wheat flour than households in which the WRA met the MDD-W. See detailed results by risk factors for all differences (Tables 23-25 in Annex 4).

5.4 CONSUMPTION OF FORTIFIABLE FOODS

5.4.1 Household level assessment of consumption using the adult male equivalent method

Figure 6 presents apparent consumption patterns of fortifiable salt, oil, and wheat flour by children (6-59 months) and women of reproductive age calculated using the AME method and stratified by residence and age group for children. Daily apparent consumption of fortifiable salt was overall high. Among children at the national level ranged from 4.5 to 11.8 g/day and predictably was lowest among children 6 to 8 months and highest among children 24 to 59 months. WRA consumed 23.5 g/day of fortifiable salt. Differences between the strata were significant for both children and WRA, with salt consumption higher in other urban areas than in Kabul, and highest salt consumption in rural areas.

Daily apparent consumption of fortifiable oil/ghee among children at the national level ranged from 14.9 to 29.0 mL/day, and amongst women of reproductive age was 59.7 mL/day. The differences between the strata were not significant, except for consumption among children 24 to 59 months in rural areas (28.5 mL/day) compared to 30.4 mL/day in Kabul and 32.5 mL/day in other urban areas.

For wheat flour, daily apparent consumption among children ranged from 0.0 to 70.4 g/day, and women of reproductive age consumed on average 0.0 g/day of fortifiable wheat flour. However, when disaggregated by strata, substantially more children consumed fortifiable flour in Kabul, ranging from 66.7 g/day among children 6 to 8 months to 134 g/day among children 24 to 59 months, compared to in rural areas where children 9 and 59 months on average did not consume wheat flour (0.0 g/day) and children 6 to 8 months consumed on average 48.7 g/day. Similarly, WRA in Kabul consumed much more wheat flour per day (275.0 g/day) compared to 119.3 g/day for WRA in other urban areas and 0.0 g/day for WRA in rural areas.

Disaggregated by poverty, an interesting trend emerged for consumption of fortifiable salt whereby children aged 12 to 59 months and WRA in poor household consumed significantly more salt than in non-poor households in rural and other urban areas. The trend is seen again for oil/ghee and wheat flour although only in one strata and among one population group respectively: children 12 to 23 months in poor rural households consumed significantly more fortifiable wheat flour than in non-poor rural households; and children 24 to 59 months in poor rural households consumed significantly more fortifiable oil/ghee than in non-poor rural households (see Annex 4 Table 27).

Similar trends were seen when salt coverage results were disaggregated by IYCF practices and women's dietary diversity. In rural households with inadequate IYCF practices, women and children (except in the age group 9-11 months) consumed significantly more fortifiable salt than those in rural households with adequate IYCF practices. In other urban areas, the same held true when looking at consumption of fortifiable salt by children 9-23 months and WRA, and in Kabul, the pattern was seen again, but only among children 24-59 months. In rural households in which the WRA did not meet the MDD-W (i.e. poor women's dietary diversity), children (except for those 6-8 months and 12-23 months) and WRA again consumed significantly more fortifiable salt than in rural households with good women's dietary diversity. The pattern held again for children 24-59 months and WRA in both Kabul and other urban areas (see Annex 4 Tables 28 and 29).

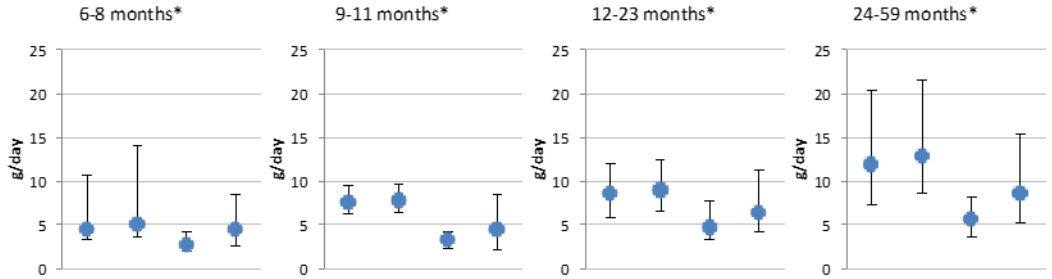
For wheat flour, the same pattern was seen among children 12 to 59 months and WRA in rural and other urban households that reported poor feeding practices and low woman's dietary diversity whereby these population groups consumed significantly more fortifiable wheat flour than in households reporting adequate feeding practices and good women's dietary diversity.

For consumption of fortifiable oil/ghee, the trend was apparent when disaggregating by women's dietary diversity, but not when disaggregated by IYCF practices (see Annex 4 Tables 28 and 29).

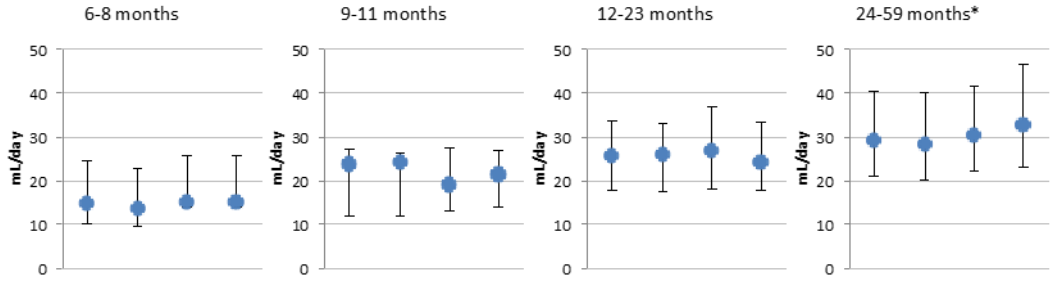
Figure 6 Daily apparent consumption of fortifiable salt, oil, and wheat flour by household assessment using the adult male equivalent method stratified by population group and place of residence, Afghanistan, 2017[1,2,3]

a. Children 6-59 months

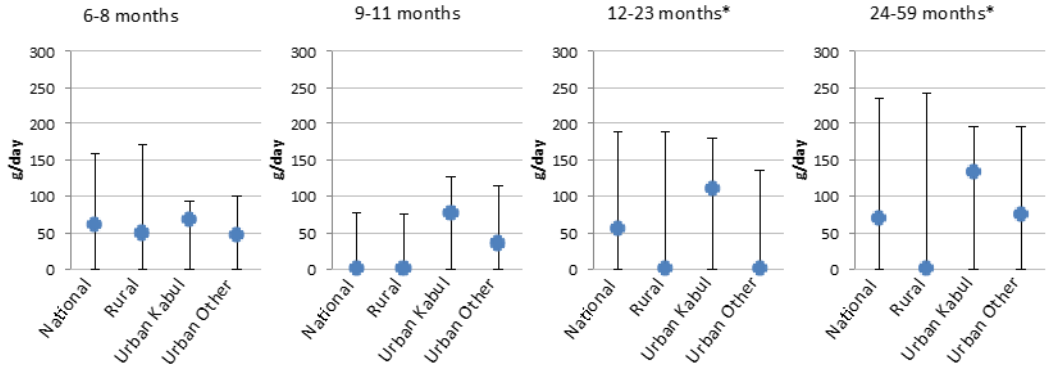
i. Salt



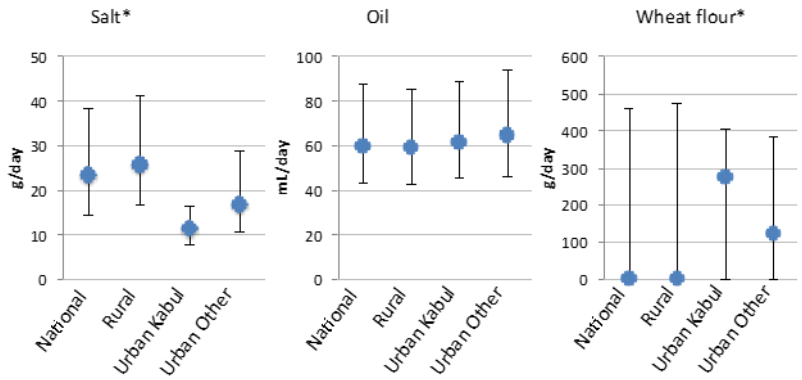
ii. Oil/Ghee



iii. Wheat flour



b. Women of reproductive age (15-49 years)



[1] The point represents the median and the whiskers represent the 25th and 75th percentiles.
[2] Fortifiable refers to a food vehicle that is assumed to be industrially processed (i.e. not made at home).
[3] Kruskal-Wallis test was used to compare the medians of the three groups. * in title denotes significance at p<0.05.

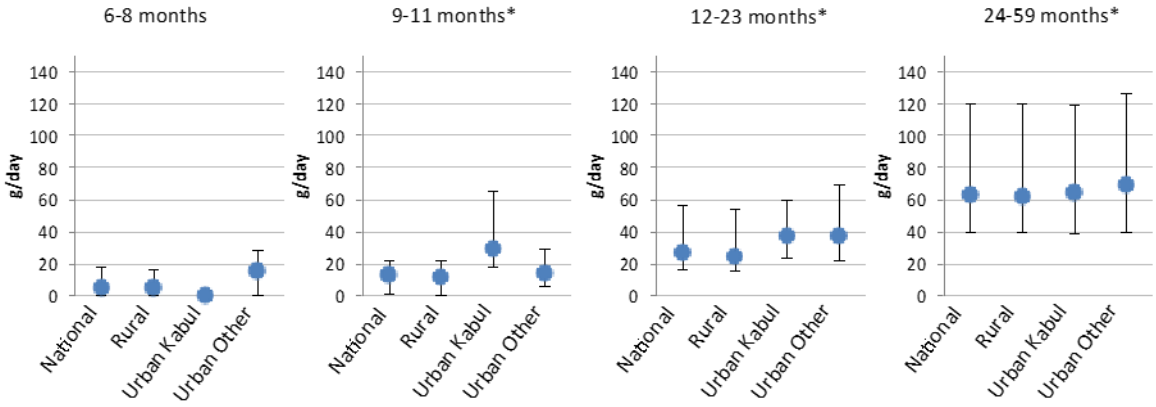
5.4.2 Individual level assessment of consumption using the food frequency questionnaire method

Figure 7 presents consumption patterns of wheat flour by children under five and women of reproductive age calculated using the FFQ method and stratified by place of residence and age group for children. The FFQ method takes into account wheat flour food items made at home and purchased outside the house and approximates total consumption of wheat flour. Daily consumption of fortifiable wheat flour among children at the national level ranged from 5.2 to 62.8 g/day and for women of reproductive age was 262 g/day. By strata, children tended to consume more wheat flour in urban areas (Kabul and other urban areas) compared to rural areas, while for WRA, no significant difference was seen in wheat flour consumption across the three strata, with WRA consuming on average between 263.6 and 257.1 g/day in other urban, Kabul and rural areas.

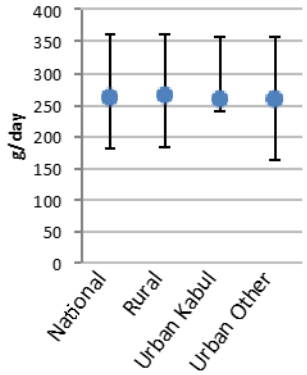
When disaggregated by poverty status, IYCF and women's dietary diversity, the trend that was seen in consumption patterns when calculated by the AME method was reversed when calculated using the FFQ method. In other words, WRA and children tended to consume more fortifiable wheat flour in non-poor households compared to poor, and in households reporting better dietary diversity than those reporting poor dietary diversity (see Annex 4 Tables 27-29). For example, WRA and children 24 to 59 months in non-poor other urban households consumed significantly more fortifiable wheat flour than in poor other urban households; children 24 to 59 months in other urban and rural households (and WRA in just other urban households) reporting poor IYCF practices consumed significantly more fortifiable wheat flour than in households reporting good IYCF practices; and WRA and children 24 to 59 months of age consumed significantly more fortifiable wheat flour in rural and urban other households with WRA who met requirements for minimum dietary diversity than those with WRA who did not in the same strata.

Figure 7 Daily consumption of fortifiable wheat flour by individual assessment using the food frequency questionnaire method stratified by population group and place of residence, Afghanistan, 2017[1,2,3]

a. Children 6-59 months



b. Women of reproductive age (15-49 years)



[1] The point represents the median and the whiskers represent the 25th and 75th percentiles.
[2] Fortifiable refers to a food vehicle that was industrially processed (i.e. not made at home).
[3] Kruskal-Wallis test was used to compare the medians of the three groups. * in the title denotes statistical significance at p<0.05.

5.5 MICRONUTRIENT CONTRIBUTION FROM FORTIFIED FOODS

5.5.1 Household level assessment of contribution using the adult male equivalent method

Micronutrient contribution from consumption of fortified foods per the AME method are expressed as a percentage of EAR for iodine from salt and vitamin A from oil/ghee, and as a percentage of RDA for iron from wheat flour, by population group. Table 10 presents the actual micronutrient contribution (using measured micronutrient content found in the market assessment) and modelled micronutrient contribution (using the target fortification content in the Afghanistan standard).

Fortified salt currently provides a meaningful contribution to iodine requirements across all population groups and strata. Nationally, fortified salt was estimated to contribute on average 128.2% of the EAR for iodine among children 12-23 months, 162.9% among children 24-59 months, and 137.1% among WRA. When modelled assuming compliance with the fortification standard, these estimates increased to 531.2% among children 12-23 months, 724.0% among children 24-59 months, and 622.1% among WRA. These high values are explained by the high daily consumption of salt across all population groups combined with the high target average of iodine in the national standard, i.e. 40 ppm.

Findings varied significantly across the three strata. Fortified salt currently contributed the highest percentage of EAR among those from rural households (i.e., 128.4% among children 12-23 months, 178.5% among children 24-59 months, and 149.5% among WRA), followed second among those from urban (other) households (i.e. 104.1% among children 12-23 months, 128.3% among children 24-59 months, and 111.9% among WRA), and the least among those from Kabul households (i.e. 54.6% among children 12-23 months, 63.7% among children 24-59 months, and 57.4% among WRA) due to differences in consumption patterns. When modelled assuming compliance with the fortification standard, this trend remained across the strata.

Alternatively, fortified oil/ghee currently provides a very small contribution to vitamin A requirements, with the benefit being seen most notably among those in urban areas. Nationally, fortified oil/ghee was estimated to contribute on average 0.7% of the EAR for vitamin A among children 12-23 months, 3.2% among children 24-59 months, and 2.7% among WRA. When modelled assuming compliance with the fortification standard, these estimates increased drastically to 99.6% among children 12-23 months, 90.6% among children 24-59 months, and 75.0% among WRA.

Findings varied significantly across the three strata. Fortified salt currently contributed the highest percentage of EAR among those from urban households (i.e., in Kabul: 12.7% among children 12-23 months and 24-59 months, and 10.0% among WRA; and in urban (other): 8.3% among children 12-23 months, 9.4% among children 24-59 months, and 6.4% among WRA) compared to those from rural households (~1% across all population groups). When modelled assuming compliance with the fortification standard, differences across strata were no longer significant.

Similarly, fortified wheat flour currently provides a very minimal, if any, contribution to iron requirements, with the benefit being seen most notably in Kabul. Nationally, fortified wheat flour was estimated to contribute on average 4.6% of the RDA for iron among children 24-59 months and 0% among children 6-11 months, children 12-23 months, and WRA. When modelled assuming compliance with the fortification standard, these estimates increased minimally among children 12-23 months (11.8%) and children 24-59 months (12.2%), and remained at 0% for children 6-11 months and WRA.

Findings varied significantly across strata among all population groups, except for children 6-11 months. Fortified wheat flour contributed the highest percentage of RDA among those from Kabul households (i.e. 11.0% among children 12-23 months, 10.7% among children 24-59 months, and 12.6% among WRA) compared to 0% among children 12-23 months, 4.1% among children 24-59 months, and 3.5% among WRA in urban (other) households, and 0% among all populations groups in rural households. When modelled assuming compliance with the fortification standard, this trend remained across the strata.

Table 10 Actual and modelled micronutrient contribution from consumption of fortified foods as a percentage of nutrient requirements by household assessment using the adult male equivalent method among children and women stratified by population group and place of residence, Afghanistan, 2017[1,2]

Variable			National		Rural		Urban (Kabul)		Urban (Other)		P-value[4]
			N	Median (25%, 75%)	N	Median (25%, 75%)	N	Median (25%, 75%)	N	Median (25%, 75%)	
ACTUAL											
% EAR of iodine[3] from fortified salt	Children	12-23 mo	424	128.2 (67.7, 177.8)	135	128.4 (70.8, 189.4)	150	54.6 (28.4, 99.6)	139	104.1 (61.5, 178.0)	<0.0001
		24-59 mo	1633	162.9 (88.6, 310.5)	558	178.5 (99.5, 324.4)	530	63.7 (113.9, 31.5)	545	128.3 (75.2, 212.6)	<0.0001
	WRA	15-49 y	2414	137.1 (69.0, 259.5)	804	149.5 (77.5, 287.1)	809	57.4 (28.3, 111.7)	801	111.9 (59.7, 194.6)	<0.0001
% EAR of vitamin A[3] from fortified oil/ghee	Children	12-23 mo	426	0.7 (0.0, 10.0)	136	0.5 (0.0, 7.4)	150	12.7 (0.0, 27.2)	140	8.3 (0.0, 20.9)	<0.0001
		24-59 mo	1641	3.2 (0.0, 12.1)	560	0.9 (0.0, 11.4)	531	12.7 (0.0, 24.9)	550	9.4 (0.0, 20.2)	<0.0001
	WRA	15-49 y	2425	2.7 (0.0, 9.9)	807	1.1 (0.0, 8.2)	810	10.0 (0.0, 21.2)	808	6.4 (0.0, 15.9)	<0.0001
% RDA of iron[3] from fortified wheat flour	Children	6-11 mo	248	0.0 (0.0, 7.5)	84	0.0 (0.0, 7.3)	86	4.3 (0.0, 7.8)	78	1.7 (0.0, 8.1)	0.2329
		12-23 mo	426	0.0 (0.0, 19.9)	136	0.0 (0.0, 20.2)	150	11 .0 (0.0, 20.4)	140	0.0 (0.0, 15.2)	<0.0001
		24-59 mo	1641	4.6 (0.0, 17.8)	560	0.0 (0.0, 18.1)	531	10.7 (0.0, 16.3)	550	4.1 (0.0, 15.6)	<0.0001
	WRA	15-49 y	2425	0.0 (0.0, 21.8)	807	0.0 (0.0, 22.0)	810	12.6 (0.0, 24.0)	808	3.5 (0.0, 17.9)	<0.0001
MODELLED											
% EAR of iodine from fortified salt	Children	12-23 mo	424	531.2 (360.9, 740.6)	135	552.2 (397.6, 762.2)	150	281.5 (210.6, 472.3)	139	394.3 (255.9, 695.3)	<0.0001
		24-59 mo	1633	724.0 (451.8, 1253.1)	558	791.2 (530.0, 1331.5)	530	344.7 (228.4, 498.7)	545	529.3 (321.4, 940.6)	<0.0001
	WRA	15-49 y	2414	622.1 (380.1, 1114.6)	804	674.7 (431.2 (1224.9)	809	318.8 (205.5, 495.2)	801	448.2 (261.5, 778.2)	<0.0001
% EAR of vitamin A from fortified oil/ghee	Children	12-23 mo	426	99.6 (69.1, 130.2)	136	99.7 (67.6, 127.7)	150	104.0 (69.7, 142.7)	140	93.4 (68.6, 129.7)	0.5045
		24-59 mo	1641	90.6 (67.5, 130.9)	560	90.2 (67.5, 127.8)	531	99.6 (72.8, 130.7)	550	102.5 (74.7, 143.9)	0.0903
	WRA	15-49 y	2425	75.0 (50.7, 104.7)	807	74.4 (50.3, 103.1)	810	79.2 (51.7, 114.1)	808	80.7 (52.7, 117.8)	0.6641
% RDA of iron from fortified wheat flour	Children	6-11 mo	248	0.0 (0.0, 15.8)	84	0.0 (0.0, 15.9)	86	10.1 (0.0, 15.8)	78	6.5 (0.0, 15.6)	0.3053
		12-23 mo	426	11.8 (0.0, 40.4)	136	0.0 (0.0, 40.6)	150	23.5 (0.0, 38.3)	140	0.0 (0.0, 29.0)	0.0002
		24-59 mo	1641	12.1 (0.0, 38.8)	560	0.0 (0.0, 39.4)	531	22.4 (0.0, 32.8)	550	12.8 (0.0, 34.7)	<0.0001
	WRA	15-49 y	2425	0.0 (0.0, 46.5)	807	0.0 (0.0, 47.8)	810	26.0 (0.0, 47.0)	808	10.5 (0.0, 41.7)	<0.0001

[1] Abbreviations: EAR, estimated average requirement; RDA, recommended dietary allowance; WRA, women of reproductive age; mo, months; y, years

[2] All values are median as indicated and are weighted to correct for unequal probability of selection.

[3] EAR and RDA values are taken from the US IOM 2001 dietary reference intakes.

[4] Kruskal-Wallis test was used to compare the medians of the three groups.

5.5.2 Individual level assessment of contribution using the food frequency questionnaire method

Micronutrient contribution from consumption of fortified foods per the food frequency questionnaire method are expressed as a percentage of RDA for iron from wheat flour, by population group. The FFQ method takes into account wheat flour food items made at home and purchased outside the house and approximates total daily consumption of wheat flour. Table 11 presents the actual micronutrient contribution (using measured micronutrient content found in the market assessment) and modelled micronutrient contribution (using the target fortification content in the Afghanistan standard).

Fortified wheat flour currently provides a minimal contribution to iron requirements, with the benefit being seen most notably in WRA. Nationally, fortified wheat flour was estimated to contribute on average 0.8% of the RDA for iron among children 6-11 months, 2.9% among children 12-23 months, 5.2% among children 24-59 months, and 12.9% among WRA. When modelled assuming compliance with the fortification standard, these estimates increased to 1.7% among children 6-11 months, 5.7% among children 12-23 months, 11.1% among children 24-59 months, and 27.6% among WRA.

Findings varied significantly across strata among children 12-23 months (2.5% in rural, 3.6%% in Kabul, and 4.5% in urban (other)) and children 24-59 months (5.2% in rural, 4.8%% in Kabul, and 5.2% in urban (other)). When modelled assuming compliance with the fortification standard, this trend remained across the strata.

Table 11 Actual and modelled micronutrient contribution from consumption of fortified foods as a percentage of nutrient requirements by household assessment using the food frequency questionnaire method among children and women stratified by population group and place of residence, Afghanistan, 2017[1,2]

Variable			National		Rural		Urban (Kabul)		Urban (Other)		P-value[4]
			N	Median (25%, 75%)	N	Median (25%, 75%)	N	Median (25%, 75%)	N	Median (25%, 75%)	
ACTUAL											
% RDA[3] of iron from fortified wheat flour[3]	Children	6-11 month	248	0.8 (0.0, 1.3)	84	0.8 (0.0, 1.2)	86	0.8 (0.0, 1.9)	78	0.7 (0.1, 1.9)	0.1549
		12-23 months	426	2.9 (1.5, 6.0)	136	2.5 (1.4, 5.9)	150	3.6 (2.2, 5.7)	140	4.5 (1.8, 7.0)	0.0180
		24-59 months	1641	5.2 (3.1, 9.3)	560	5.2 (3.1, 9.3)	531	4.8 (2.9, 8.0)	550	5.2 (2.9, 10.5)	<0.0001
	WRA	15-49 years	2425	12.9 (8.9, 21.2)	807	13.0 (8.9, 21.4)	810	11.3 (8.9, 18.7)	808	12.1 (7.0, 20.2)	0.7060
MODELLED											
% RDA of iron from fortified wheat flour[3]	Children	6-11 months	248	1.7 (0.0, 2.9)	84	1.6 (0.0, 2.7)	86	1.7 (0.0, 4.3)	78	1.9 (0.3, 4.1)	0.1555
		12-23 months	426	5.7 (3.4, 12.0)	136	5.2 (3.2, 11.5)	150	8.0 (4.9, 12.7)	140	8.0 (4.8, 14.7)	0.0270
		24-59 months	1641	11.1 (6.7, 19.3)	560	11.1 (6.8, 19.2)	531	10.7 (6.5, 18.0)	550	11.2 (6.6, 20.5)	<0.0001
	WRA	15-49 years	2425	27.6 (20.0, 43.8)	807	27.7, 19.8 (44.0)	810	25.3 (19.9, 42.0)	808	25.7 (18.4, 42.8)	0.6983

[1] Abbreviations: RDA, recommended dietary allowance; WRA, women of reproductive age

[2] All values are median as indicated and are weighted to correct for unequal probability of selection.

[3] RDA values are taken from the US IOM 2001 dietary reference intakes.

[4] Kruskal-Wallis test was used to compare the medians of the three groups.

6. Key Findings and Recommendations

Context

According to the survey results, the likelihood of experiencing poverty was widely divergent across places of residence, with rural households being the most likely to experience poverty (64%), followed by households in other urban areas (35%) and finally households in Kabul (14%). The driving factors of the different poverty likelihoods, as measured by the multi-dimensional poverty index, were access to safe drinking water, adequate flooring, cooking fuel, and asset ownership, as well as access to education and proper nutrition, with poorer outcomes across the board for rural households. Eating practices (i.e. dietary diversity for women of reproductive age and infant and child feeding practices for children under the age of 5 years) were found to be significantly worse in rural households compared to other urban and Kabul households.

Key findings

The findings of this survey provided population representative data on coverage and performance of the salt, oil/ghee, and wheat flour fortification programs in Afghanistan, nationally and in rural, urban, and Kabul areas. Additionally, it estimated the current and potential contribution of these fortified foods to intakes of iodine, vitamin A, and iron.

In summary, the survey provided evidence that the fortification of salt with iodine and oil/ghee with vitamin A could have a large and immediate impact in the Afghan population. For salt, findings varied by strata with those from rural households currently receiving the greatest benefit, although all groups currently receiving iodine in amounts greater than the EAR. For oil, findings also varied across strata with benefits currently being higher in urban areas; however, differences across strata were no longer significant when modelled assuming compliance with the standard. For these programs to function optimally, all products (both nationally manufactured and imported) must comply with the fortification standards. Currently, the majority of brands of these foods vehicles are imported and fortified below standards if at all, highlighting the need for efforts to improve compliance. If compliance gaps are addressed, the potential of these programs would be realized and equity gaps, related to vitamin A from oil/ghee specifically, would be resolved.

Alternatively, the prioritization of wheat flour fortification deserves additional analysis since less than half of households consumed it in a fortifiable form, with greater coverage in urban areas, and is estimated to provide only a minimal to moderate contribution to iron requirements among target populations, even if fortified in compliance with the fortification standards. It is therefore important for future research to determine who benefits and the magnitude of the benefit (by the supply of different micronutrients) of this program, as well as the real feasibility of it (considering national production and imported products). Alternative targeted strategies may be required for certain population sub-groups that will not be reached by the large-scale wheat flour fortification program.

Recommendations

Based on the findings described above, several priority recommendations can be made:

1. Drivers of poor compliance at the production level need to be ascertained and addressed through effective corrective actions to increase the availability of appropriately fortified foods. These can include, but may not be limited to, strengthening monitoring and enforcement efforts and the identification and implementation of effective incentives and penalties to drive compliance;

2. A high priority should be placed on continued coordination with countries exporting these products to Afghanistan as imported foods are widely available and consumed across the country. This is critical work that has seen important progress over the years and should continue to receive support;

3. Further research into the feasibility and potential impact of the wheat flour fortification program is needed to determine the benefit of this program in that population. Consideration for introducing fortification at small-mill may not be a wise decision as the feasibility of such as strategy is very low; and

4. Future research is needed to assess the total intake of micronutrients (in particular iron) from all dietary sources, in addition to fortified foods, to determine the extent to which the nutrient gap in the diet could be filled through the current fortification program or if alternative interventions and/or food vehicles are needed for certain nutrients.

These results will be shared with nutrition stakeholders in the country to further guide programming efforts and nutrition policy recommendations.

7. References

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8. Annexes

1. HOUSEHOLD QUESTIONNAIRE

FORTIFICATION ASSESSMENT COVERAGE TOOLKIT (FACT) SURVEY AFGHANISTAN 2017 HOUSEHOLD QUESTIONNAIRE					
dateint	Date of interview	DD / MM / YY ☐☐/☐☐/☐☐			
teamid	Team identifier	☐☐	intid	Interviewer identifier	☐☐
provid	Province identifier	Kabul……01 Badakhshan……02 Balkh……03 Bamyan……04 Daikundi……05 Wardak……06 Herat……07 Farah……08 Kandahar……09 Helmand……10 Kunduz……11 Takhar……12	Nangarhar……13 Kunar……14 Parwan……15 Baghlan……16 Samangan……17 Sare Pul……18 Jowzjan……19 Faryab……20 Paktyka……21 Ghazni……23 Nimrowz……24		☐☐
disname	District name				
nahname	NAHIA				
psuname	PSU name	_____			
psuid	PSU identifier	☐☐	psutype	PSU type	Rural……1 Urban (Kabul)……2 Urban (Others)……3
hhid	Household identifier	☐☐			

Good morning / Good evening Madam / Sir,

My name is [NAME OF INTERVIEWER] and I work for the Organization for Sustainable Development and Research (OSDR). We are currently conducting a survey on the coverage of fortified foods and your household was randomly selected to participate in the survey.

The first part of the interview will be about the composition of the household, including all its members. Then, based on this information, I would like to interview the mother or caregiver of the child less than 5 years of age. If there is more than one child less than 5 years of age then I will select one at random. I will then ask the woman/caregiver of the child some questions about what she and the child ate yesterday and foods purchased and prepared in the household, like salt, wheat flour and oil. At the end I will measure the mid-upper arm circumference of the woman and the child to assess their nutritional status.

We hope you can participate in this survey since the opinions of your household are very important. All information provided by you will be kept confidential.

The questions to you will take about 45 minutes.

Do you agree to participate in this survey? If yes please sign here

_____ _____ _____

Name of participant **Signature** **Date**

_____ _____ _____

Name of fieldworker **Signature** **Date**

.....

IF RESPONDENT AGREES TO BE INTERVIEWED, INTERVIEW CAN BE STARTED.

IF RESPONDENT DOES NOT AGREE TO BE INTERVIEWED →END THE INTERVIEW AND FIND THE NEXT HOUSEHOLD BASED ON THE SAMPLING PROCEDURE

cons1	Written consent to fill in the household roster obtained?	Yes……1 No……..2	If **yes**, start. If **no**, stop here.

FILL IN AFTER COMPLETING QUESTIONNAIRE		
visitno	Number of attempts to visit household (up to three visits)	☐
outhh	Outcome of household questionnaire	Completed.....1 Refused.....2 No eligible respondent at home at time of visit(s).....3 Eligible respondent incapacitated or intoxicated……..4 Dwelling vacant for extended period of time……5 Dwelling destroyed……6 Other:_____.....99
Supervisor check completed (signature): _____		

HOUSEHOLD ROSTER

Please give me the names of the persons who usually live in your household. This will include anybody who sleeps in this household regularly and eats from the same pot of food. Start with the head of the household.

Line no. (lnr)	A. Name	B. Sex (sex)	C. Age *(years OR months)* *Record in months if <5 years or <60 months*		ONLY for persons aged ≥ 5 years	
			Years (agey)	Months (agem)	D. Currently attending school or university/ college? (sch)	E. 5 or more years of education? (edu)
01	Head of household	M…….1 F……..2	☐☐	☐☐	Yes……1 No…….2	Yes……1 No…….2
02		M…….1 F……..2	☐☐	☐☐	Yes……1 No…….2	Yes……1 No…….2
03		M…….1 F……..2	☐☐	☐☐	Yes……1 No…….2	Yes……1 No…….2
04		M…….1 F……..2	☐☐	☐☐	Yes……1 No…….2	Yes……1 No…….2
05		M…….1 F……..2	☐☐	☐☐	Yes……1 No…….2	Yes……1 No…….2
06		M…….1 F……..2	☐☐	☐☐	Yes……1 No…….2	Yes……1 No…….2
07		M…….1 F……..2	☐☐	☐☐	Yes……1 No…….2	Yes……1 No…….2
08		M…….1 F……..2	☐☐	☐☐	Yes……1 No…….2	Yes……1 No…….2
09		M…….1 F……..2	☐☐	☐☐	Yes……1 No…….2	Yes……1 No…….2
10		M…….1 F……..2	☐☐	☐☐	Yes……1 No…….2	Yes……1 No…….2

11		M…….1 F……..2	☐☐	☐☐	Yes……1 No…….2	Yes……1 No…….2
12		M…….1 F……..2	☐☐	☐☐	Yes……1 No…….2	Yes……1 No…….2
13		M…….1 F……..2	☐☐	☐☐	Yes……1 No…….2	Yes……1 No…….2
14		M…….1 F……..2	☐☐	☐☐	Yes……1 No…….2	Yes……1 No…….2
15		M…….1 F……..2	☐☐	☐☐	Yes……1 No…….2	Yes……1 No…….2
16		M…….1 F……..2	☐☐	☐☐	Yes……1 No…….2	Yes……1 No…….2
17		M…….1 F……..2	☐☐	☐☐	Yes……1 No…….2	Yes……1 No…….2
18		M…….1 F……..2	☐☐	☐☐	Yes……1 No…….2	Yes……1 No…….2
19		M…….1 F……..2	☐☐	☐☐	Yes……1 No…….2	Yes……1 No…….2
20		M…….1 F……..2	☐☐	☐☐	Yes……1 No…….2	Yes……1 No…….2
Note: Add a new page if more people in the household						

Check the roster for completion!

und5	Total number of children under 5 years old in the household	☐

Random selection of child and caregiver → Kish table

Age of child (months)	Name of child	Number of household line for child	Number of household line for caregiver

Line child (rand1)	**Line caregiver (rand2)**

Verbal consent of the caregiver obtained?

cons 2	Yes…….1 No…….2	If **yes**, start. If **no**, stop here.

HOUSEHOLD CHARACTERISTICS AND ASSETS			
N°	QUESTIONS	ANSWERS	SKIPS
hc1	Does your household have electricity? *(CIRCLE ONLY **ONE** ANSWER)*	Yes……..1 No……2	
hc2	What fuel does your household mainly use for cooking? *(CIRCLE ONLY **ONE** ANSWER)*	Electricity, Gas, Kerosene ……..……1 Dung, Wood, Charcoal, Other ……..……2	
hc3	What is the main material of the floor of the dwelling? *(OBSERVATION)* *(CIRCLE ONLY **ONE** ANSWER)*	Tiles, Concrete, Wood ……..……1 Dirt, Earth / Sand, Dung, Other ……2	
hc4	Does your household or anyone in the household own a … ? ***(PROMPT FOR EACH ITEM**; RECORD ALL ITEMS OWNED BY HOUSEHOLD OR A MEMBER...)* *(CIRCLE ONLY **ONE** ANSWER FOR EACH ITEM.)*	A. Radio Yes…….1 No…….2	
		B. Television Yes…….1 No…….2	
		C. A mobile or non-mobile telephone Yes…….1 No…….2	
		D. Bicycle Yes…….1 No…….2	
		E. Motorcycle Yes…….1 No…….2	
		F. Refrigerator Yes…….1 No…….2	
		G. Car or truck Yes…….1 No…….2	

WATER, SANITATION, AND HYGIENE (WASH)			
N°	QUESTIONS	ANSWERS	SKIPS
w1	What is the main source of drinking water for the members of your household? *(CIRCLE ONLY **ONE** ANSWER)*	Piped water into dwelling Piped water into yard / plot / compound Public tap or standpipe Borehole or pump Protected dug well Protected spring or rainwater Bottled water ……1 Unprotected dug well Unprotected spring Tanker truck River or stream Dam, lake, or pond Canal or irrigation channel Other ……2	
w2	Where is that water source located? *(CIRCLE ONLY **ONE** ANSWER)*	In own dwelling……1 In own yard/plot……2 Elsewhere……3	If **1 or 2**, skip to **w4**
w3	How long does it take to go there, get water and come back? *(WRITE IN THE NUMBER.)* *(IF 'DON'T KNOW', RECORD 888)*	Minutes…… ☐☐☐	
w4	What do you **usually** do to the water to make it safer to drink? *(DO **NOT** PROMPT)* *(CIRCLE ONLY **ONE** ANSWER)*	Boil Add bleach / chlorine tablet Use a water filter Solar disinfection ……1 Strain it through a cloth Let it stand and settle Nothing Other ……2 Don't know……...3	
w5	What kind of toilet facility do members of your household usually use? *(DO **NOT** PROMPT)* *(CIRCLE ONLY **ONE** ANSWER)*	Flush or pour flush toilet Ventilated improved pit (VIP) latrine Composting toilet Pit latrine with slab ……1 Pit latrine without slab Bucket Hanging latrine Bush or field No facilities ……2	
w6	Do you share this facility with other households? (*Circle only **ONE** answer*)	Yes……1 No……2	

SHORT BIRTH HISTORY			
N°	QUESTIONS	ANSWERS	SKIPS
bh1	Altogether, how many live births have you had in the last 5 years? Please include any baby who cried or showed other signs of life. *(WRITE IN THE NUMBER)* *(IF 'NONE', RECORD 00.* *IF 'DON'T KNOW', RECORD 88)*	☐☐	If **00** or **88**, skip to **household hunger scale** module.
bh2	Is this child / are these children still alive? *(CIRCLE ONLY **ONE** ANSWER)*	All live.....1 One or more has died in the past 5 years .....2 Don't know……88	

HOUSEHOLD HUNGER SCALE			
N°	QUESTIONS	ANSWERS	SKIPS
hh1	How many times in the last month was there ever no food to eat of any kind in your house because of lack of resources to get food? *(WRITE IN THE NUMBER)* *(IF 'NONE,' RECORD 00.)*	Number of times ☐☐	
hh2	How many times in the last month did you or any household member go to sleep at night hungry because there was not enough food? *(WRITE IN THE NUMBER)* *(IF 'NONE,' RECORD 00.)*	Number of times ☐☐	
hh3	How many times in the last month did you or any household member go a whole day and night without eating anything at all because there was not enough food? *(WRITE IN THE NUMBER)* *(IF 'NONE,' RECORD 00.)*	Number of times ☐☐	

CHILD FEEDING PRACTICES			
N°	QUESTIONS	ANSWERS	SKIPS
cf1	Is [NAME OF CHILD] currently breastfed? *(CIRCLE ONLY **ONE** ANSWER)*	Yes…….....1 No……..……..2	If **2**, skip to **cf3**.
cf2	Does [NAME OF CHILD] take any food or drink other than breastmilk? *(CIRCLE ONLY **ONE** ANSWER)*	Yes…….....1 No…..……..2	If **2**, skip to **dietary diversity** module.
cf3	In the last 24 hours, how many times was [NAME OF CHILD] fed? Include the number of times he/she was fed any type of food (mashed or pureed food or solid or semi-solid food) as a meal or snack. *(WRITE IN THE NUMBER)* *(IF 'NONE,' RECORD 00.)* *(IF 'DON'T KNOW', RECORD 88)*	Number of times ☐☐	

DIETARY DIVERSITY

Since the time you woke up yesterday to when you woke up today, did you and [NAME OF CHILD] have any of the following things to eat or drink?

I am interested in whether you had the item I mention, even if it was combined with other foods. For example, if you ate a rice porridge made with a mixed vegetable sauce, you should reply yes to any food I ask about that was an ingredient in the porridge or sauce. Please do not include any food used in a small amount for seasoning or condiments (like chilies, spices, herbs, or fish powder), I will ask you about those foods separately.

*(READ **ALL** QUESTIONS. CIRCLE ONLY **ONE** ANSWER FOR EACH.)*

N°	ITEMS	A. Caregiver	B. Child
dd1	Plain water?		Yes……1 No…….2
dd2	Tinned or powdered milk? Tinned or powdered infant formula such as Cerelac, Nido, Lactogen, or any other milk (excluding breast milk)?		Yes……1 No…….2
dd3	Any bread, noodles, biscuits, or any other foods made from maize, rice, wheat, or other grains?	Yes……1 No…….2	Yes……1 No…….2
dd4	Any potatoes, yams or any other foods made from roots or tubers?	Yes……1 No…….2	Yes……1 No…….2
dd5	Any food made from vegetables or root crops with yellow or orange flesh such as carrots, pumpkin, or sweet potatoes?	Yes……1 No…….2	Yes……1 No…….2
dd6	Any food made from dark green leafy vegetables such as spinach, kale, lettuce, sorrel and other locally available dark green leafy vegetables?	Yes……1 No…….2	Yes……1 No…….2
dd7	Any other vegetables such as okra, eggplant, tomato, cucumber?	Yes……1 No…….2	Yes……1 No…….2
dd8	Any food made from fruits with yellow or orange flesh such as mango, guava or papaya?	Yes……1 No…….2	Yes……1 No…….2
dd9	Any other fruits?	Yes……1 No…….2	Yes……1 No…….2
dd10	Any beef, pork, lamb, goat, camel, chicken, turkey, duck, or other birds?	Yes……1 No…….2	Yes……1 No…….2
dd11	Any liver, kidney, heart, or other organ meats?	Yes……1 No…….2	Yes……1 No…….2
dd12	Any eggs?	Yes……1 No…….2	Yes……1 No…….2
dd13	Any fresh or dried fish or shellfish?	Yes……1 No…….2	Yes……1 No…….2
dd14	Any cowpea, groundnut, locust bean, soya bean, or other foods made from beans, peas, lentils, or legumes?	Yes……1 No…….2	Yes……1 No…….2

dd15	Any cashew, walnut, pecan, shea nut, almond or other foods made from nuts?	Yes……1 No…….2	Yes……1 No…….2
dd16	Any cheese, yogurt, milk or other milk products?	Yes……1 No…….2	Yes……1 No…….2
dd17	Any foods made with oil, fat, margarine or butter?	Yes……1 No…….2	Yes……1 No…….2
dd18	Any sugar or honey?	Yes……1 No…….2	Yes……1 No…….2
dd19	Any other foods, such as condiments, coffee, tea?	Yes……1 No…….2	Yes……1 No…….2

HOUSEHOLD SALT IODIZATION COVERAGE			
N°	QUESTIONS	ANSWERS	SKIPS
si1	Now, I would like to talk with you about salt. Does your household use salt? *(CIRCLE ONLY **ONE** ANSWER)*	Yes……..……...1 No.....…… ……..……2	If **2**, skip to **oil/ghee** module.
si2	The **last time** your household got salt, where did you get it from? *(CIRCLE ONLY **ONE** ANSWER)*	Purchased from wholesaler.....1 Purchased from retail shop.....2 Purchased from supermarket…….....3 Made it at home.....4 Received from food aid.....5 Don't know / Don't remember.....88 Other: _____.....99	If **4,** skip to **oil/ghee** module.
si3	The **last time** your household got salt, how was it packaged? *(READ **ALL** RESPONSES)* *(CIRCLE ONLY **ONE** ANSWER)*	Original package..……..1 Re-packaged from original package at retail outlet……..……....2 Re-packaged from unknown source…...3 Don't know / Don't remember.....88 Other: _____....99	If **3, 88 or 99**, skip to **si6**.
si4	The **last time** your household got salt, what was the original packaging type from the manufacturer? *(READ **ALL** RESPONSES)* *(CIRCLE ONLY **ONE** ANSWER)*	Plastic sachet…..……....1 Don't know / Don't remember.....88 Other: _____.....99	
si5	The **last time** your household got salt, what was the original packaging size from the manufacturer? *(READ **ALL** RESPONSES)* *(CIRCLE ONLY **ONE** ANSWER)* *(IF B IS DON'T KNOW/DON'T REMEMBER THEN RECORD 8888 IN A)*	A. Quantity ☐☐☐☐ B. Kg.....1 g ……..…….2 Don't know / Don't remember……...88	
si6	The **last time** your household got salt, what was the brand? *(CIRCLE ONLY **ONE** ANSWER)*	Ayenda-e-Durokhshan.....1 Omid Kabul…….....2 Bostan Bahar.....3 Spinghar…….....4 Blour Afghan.....5 Sehat shoma.....6 Pamer Cristal.....7 Gulabahar-e-Ghazna……8 Pak Afghan…….9 De Sehat Zarai…….....10 Don't know .....88 Other: _____.....99	

si7	The **last time** your household got salt, how much did you get? *(A. WRITE IN THE NUMBER)* *(B. CIRCLE THE UNIT)*	A. Quantity ☐☐☐☐ B. Kg.....1 g ……..…….2	
si8	The **last time** your household got that amount of salt, how much did it cost? *(IF 'DON'T KNOW', RECORD 8888)*	AFN ☐☐☐☐	
si9	How long does this amount usually last in your household? *(A. WRITE IN THE NUMBER)* *(B. CIRCLE THE UNIT)*	A. Duration ☐☐ B. Day(s).....1 Month(s).....2	
si10	Do you have this salt in your home now? *(CIRCLE ONLY **ONE** ANSWER)*	Yes……..……...1 No…… ……..……2	If **2**, skip to **oil/ghee** module.
si11	***ASK TO SEE THE SALT PACKAGE AND LOOK FOR FORTIFICATION LOGO OR WORDS SUCH AS IODIZED OR FORTIFIED*** *(CIRCLE ONLY **ONE** ANSWER)*	**Original package:** Logo or words observed.....1 Logo or words NOT observed……...2 **Not in original package:** Logo or words NOT observed……...3	

HOUSEHOLD OIL/GHEE FORTIFICATION COVERAGE			
N°	QUESTIONS	ANSWERS	SKIPS
of1	Now, I would like to talk with you about cooking oil and ghee. Does your household use cooking oil or ghee to prepare food or add to foods at home? *(CIRCLE ONLY **ONE** ANSWER.)*	Yes……1 No……2	If **2**, skip to **household wheat flour** module.
of2	The **last time** your household got oil or ghee, what type of oil or ghee did you get? *(CIRCLE ONLY **ONE** ANSWER.)*	Palm oil……1 Sunflower oil……2 Corn oil……3 Blend oil (sunflower and soybean)……4 Date oil……5 Vegetable oil……6 Vanaspati ghee……7 Vegetable ghee……8 Don't know / Don't remember.....88 Other:_____.....99	
of3	The **last time** your household got oil or ghee, where did you get it from? *(CIRCLE ONLY **ONE** ANSWER)*	Purchased from wholesaler.....1 Purchased from retail shop.....2 Purchased from supermarket…….....3 Made it at home.....4 Received from food aid.....5 Don't know / Don't remember.....88 Other: _____.....99	If **4,** skip to **household wheat flour** module.
of4	The **last time** your household got oil or ghee, how was it packaged? *(READ **ALL** RESPONSES)* *(CIRCLE ONLY **ONE** ANSWER)*	Original package……1 Re-packaged from original package at retail outlet……2 Re-packaged from unknown source……3 Don't know / Don't remember.....88 Other: _____.....99	If **3, 88 or 99**, skip to **of7**.
of5	The **last time** your household got oil or ghee, what was the original packaging type from the manufacturer? *(READ **ALL** RESPONSES)* *(CIRCLE ONLY **ONE** ANSWER)*	Plastic bottle……1 Plastic bucket……2 Jerry can……3 Plastic sachet……4 Tin can……5 Don't know / Don't remember.....88 Other:_____.....99	
of6	The **last time** your household got oil or ghee, what was the original packaging size from the manufacturer? *(READ **ALL** RESPONSES)* *(CIRCLE ONLY **ONE** ANSWER)* *(IF B IS DON'T KNOW/DON'T REMEMBER THEN RECORD 8888 IN A)*	A. Quantity ☐☐☐☐ B. L.....1 mL……2 Don't know / Don't remember.....88	

of7	The **last time** your household got oil or ghee, what was the brand? *(CIRCLE ONLY **ONE** ANSWER)*	Moman……1 Ashfaf .....2 Shabbir……3 Khorshid …….....4 Spinghar.....5 Gulden Moize……6 Alokozay.....7 Sanaizada……8 Al Nawid.....9 CMAK……10 Don't know .....88 Other:_____.....99	
of8	The **last time** your household got oil or ghee, how much did you get? *(A. WRITE IN THE NUMBER)* *(B. CIRCLE THE UNIT)*	A. Quantity ☐☐☐☐ B. L.....1 mL.....2	
of9	The **last time** your household got that amount of oil or ghee, how much did it cost? *(IF 'DON'T KNOW', RECORD 8888)*	AFN ☐☐☐☐	
of10	How long does this amount usually last in your household? *(A. WRITE IN THE NUMBER.)* *(B. CIRCLE THE UNIT)*	A. Duration ☐☐ B. Day(s).....1 Month(s).....2	
of11	***ASK TO SEE THE OIL OR GHEE PACKAGE AND LOOK FOR FORTIFICATION LOGO OR WORDS SUCH AS FORTIFIED*** *(CIRCLE ONLY **ONE** ANSWER)*	**Original package:** Logo or words observed.....1 Logo or words NOT observed……...2 **Not in original package:** Logo or words NOT observed……...3	

HOUSEHOLD WHEAT FLOUR FORTIFICATION COVERAGE			
N°	QUESTIONS	ANSWERS	SKIPS
wf1	Now, I would like to talk with you about wheat flour. Does your household prepare foods using wheat flour (such as bread, cookies, or other wheat flour products)? *(CIRCLE ONLY **ONE** ANSWER)*	Yes.....1 No.....2	If **2**, skip to **individual wheat flour** module.
wf2	The **last time** your household got wheat flour, what type of wheat flour did you get? *(CIRCLE ONLY **ONE** ANSWER)*	White / Maida flour.....1 Brown / Bread / Atta flour.....2 Don't know / Don't remember.....88 Other: _____...99	
wf3	The **last time** your household got wheat flour, where did you get it from? *(CIRCLE ONLY **ONE** ANSWER)*	Purchased from wholesaler.....1 Purchased from retail shop.....2 Purchased from supermarket.....3 Made it at home.....4 Received from food aid.....5 Don't know / Don't remember.....88 Other: _____....99	If **4,** skip to **individual wheat flour** module.
wf4	The **last time** your household got wheat flour, how was it packaged? *(READ **ALL** RESPONSES)* *(CIRCLE ONLY **ONE** ANSWER)*	Original package.....1 Re-packaged from original package at retail outlet.....2 Re-packaged from unknown source.....3 Don't know / Don't remember.....88 Other: _____...99	If **3, 88 or 99**, skip to **wf7**.
wf5	The **last time** your household got wheat flour, what was the original packaging type from the manufacturer? *(READ **ALL** RESPONSES)* *(CIRCLE ONLY **ONE** ANSWER)*	Plastic bag.....1 Paper bag.....2 Don't know / Don't remember.....88 Other: _____.....99	
wf6	The **last time** your household got wheat flour, what was the original packaging size from the manufacturer? *(READ **ALL** RESPONSES)* *(CIRCLE ONLY **ONE** ANSWER)* *(IF B IS DON'T KNOW/DON'T REMEMBER THEN RECORD 8888 IN A)*	A. Quantity ☐☐☐☐ B. Kg.....1 g .....2 Don't know / Don't remember.....88	
wf7	The **last time** your household got wheat flour, what was the brand? *(CIRCLE ONLY **ONE** ANSWER)*	Abid Nayab.....1 Camel mark.....2 Sadiq Ata.....3 Barakat.....4 Mustafa Jamal flour.....5 Baby Chap.....6	

		Paka Chap.....7 Naqsha…….....8 Kauk Chap.....9 Pahlawan (Romana)…….10 Don't know .....88 Other: _____.....99	
wf8	The **last time** your household got wheat flour, how much did you? *(A. WRITE IN THE NUMBER)* *(B. CIRCLE THE UNIT)*	A. Quantity ☐☐☐☐ B. Kg.....1 g.....2	
wf9	The **last time** your household got that amount of wheat flour, how much did it cost? *(IF 'DON'T KNOW', RECORD 8888)*	AFN ☐☐☐☐	
wf10	How long does this amount usually last in your household? *(A. WRITE IN THE NUMBER.)* *(B. CIRCLE THE UNIT)*	A. Duration ☐☐ B. Day(s).....1 Month(s).....2	
wf11	***ASK TO SEE THE WHEAT FLOUR PACKAGE AND LOOK FOR FORTIFICATION LOGO OR WORDS SUCH AS FORTIFIED*** *(CIRCLE ONLY **ONE** ANSWER)*	**Original package:** Logo or words observed.....1 Logo or words NOT observed……....2 **Not in original package:** Logo or words NOT observed……....3	

INDIVIDUAL WHEAT FLOUR CONSUMPTION

Now I would like to ask about how often and how much you and [NAME OF CHILD] consume specific foods made from wheat flour.

1. **In the last 7 days**, how many times did you and [NAME OF CHILD] eat [FOOD ITEM]?

(REPEAT QUESTION FOR EACH FOOD ITEM LISTED BELOW)

2. Usually how much of [FOOD ITEM] did you and [NAME OF CHILD] eat at one sitting?

(SHOW PICTURES OF PORTIONS AND REPEAT QUESTION FOR EACH FOOD ITEM LISTED BELOW. IF FREQUENCY = 00, DO NOT ASK PORTION SIZE, JUST RECORD '0' FOR PORTION SIZE.)

N°	ITEMS	A. Caregiver		B. Child	
		1. Frequency (# times)	2. Portion size	1. Frequency (# times)	2. Portion size
fc1	Bread (Nan Tandoori)	☐☐	☐	☐☐	☐
fc2	Nan Ozbaky	☐☐	☐	☐☐	☐
fc3	Nan Paraky	☐☐	☐	☐☐	☐
fc4	Sambossa	☐☐	☐	☐☐	☐
fc5	Pizza	☐☐	☐	☐☐	☐
fc6	Cake regular	☐☐	☐☐	☐☐	☐☐
fc7	Roat	☐☐	☐	☐☐	☐
fc8	Burger with egg	☐☐	☐	☐☐	☐
fc9	Nastha	☐☐	☐	☐☐	☐
fc10	Cookies regular	☐☐	☐	☐☐	☐
fc11	Cookies homemade	☐☐	☐	☐☐	☐
fc12	Halwa	☐☐	☐	☐☐	☐
fc13	Bolany Bazari	☐☐	☐	☐☐	☐
fc14	Bolany Tandoori	☐☐	☐	☐☐	☐
fc15	Leety	☐☐	☐	☐☐	☐
fc16	Kachy	☐☐	☐	☐☐	☐

fc17	Manto	☐☐	☐	☐☐	☐
fc18	Ashak	☐☐	☐	☐☐	☐
fc19	Nan Parat	☐☐	☐	☐☐	☐
fc20	Nane Bazary	☐☐	☐	☐☐	☐

FORTIFICATION KNOWLEDGE			
fk1	Have you ever heard about fortified foods? *(CIRCLE ONLY **ONE** ANSWER.)*	Yes……1 No……2	If **no**, skip to **fk3**.
fk2	Where did you hear about it or see it? *(DO NOT READ RESPONSES TO RESPONDENT.)* *(CIRCLE **ALL** RESPONSES THAT APPLY.)*	Television……1 Radio……2 Campaign of Department of Health……3 Health facility / clinic ……4 Newspaper / magazine……5 Other: _____.....99	
fk3	What does fortified mean? *(DO NOT READ RESPONSES TO RESPONDENT.)* *(CIRCLE **ALL** RESPONSES THAT APPLY.)*	Enriched / added micronutrients ……1 Good for health……2 Better quality ……3 Bad quality……4 More expensive……5 No meaning ……6 The food is better for your health than a similar food without the logo……7 The food tastes good……8 The food is more expensive than a similar food without the logo……9 The food is good for the growth and development of children……10 Don't know……88 Other: _____.....99	

HEALTH AND NUTRITION DATA			
N°	QUESTIONS	ANSWERS	SKIPS
MOTHER / CAREGIVER			
hnd1	Are you currently pregnant? *(CIRCLE ONLY **ONE** ANSWER.)*	Yes…….....1 No……..……..……2 Caregiver is a man..…....3 Don't know……88	
hnd2	Are you currently breastfeeding? *(CIRCLE ONLY **ONE** ANSWER.)*	Yes…….....1 No…..……...2 Caregiver is a man..……..3	
muacm	Now I would like to check you and [NAME OF CHILD]'s nutritional status. May I measure your arm circumference? *TAKE THE MUAC OF THE **MOTHER / CAREGIVER** ON HER LEFT ARM* *(IF THE RESPONDENT IS A MAN, RECORD 555.)* *(IF 'REFUSED,' RECORD 666.)* *(IF ARM IS TOO BIG, RECORD 777.)*	mm ☐☐☐	If MUAC **< 185mm** → **Refer!**
CHILD			
muacc	May I measure [NAME OF CHILD]'s arm circumference? *TAKE THE MUAC OF THE **CHILD** ON HIS / HER LEFT ARM* *(IF 'REFUSED,' RECORD 666.)* *(IF CHILD IS NOT AVAILABLE, 'RECORD 777.)*	mm ☐☐☐	If <6 months and MUAC **< 110 mm** OR >6 months and MUAC **< 115 mm** → **Refer!**

***** CHECK THE QUESTIONNAIRE & THANK THE RESPONDENT! *****

2. EXAMPLE PHOTO ALBUM USED WITH INDIVIDUAL WHEAT FLOUR ASSESSMENT

نان ازبکی

1

1/16 نان ازبکی

2

1/8 نان ازبکی

3

1/4 نان ازبکی

4

1/2ازبکی

5

3/4 نان ازبکی

6

1 نان ازبکی

3. MARKET FORMS

Form 1

MARKET PLACES BY Market hub (city) در ساحه شهری) موقعیت مارکیت عمده)	Date of visit (dd/mm/yyyy) تاریخ بازدید (روز/ماه/سال)	_____ / _____ / 2017	1

Surveyor Name: اسم سروی ر		Team ID ن		

MARKET HUB (City) NAME اسم مارکیت عمده) در سطح شهر	DIVISION س	MARKET PLACE NAME AND NEIGHBORHOOD مارکیت دران موقعیت دارد و	Name of Retail Outlet تعداد بازدید ها از ساحه فروش مواد غذایی	Retail outle type (R, S, W) (if you cannot find one type, then pick 2 of another type and number accordingly - e.g. R1, R2)
	D1 ساحه 1			
CITIES شهر ها KB = Kabul CH = Chaharikar JB = Jalalabad HT = Herat FZ = Fayzabad KZ = Kunduz PK = Puli Khumri MS = Mazari-Sharif MM = Maymana GZ = Gardez KD = Kandahar LG = LashkarGah				

Form 2

FORM 2 - BRAND REGISTRATION BY RETAIL OUTLET
مرشماره 2- ثبت وراجستر نمودن محصول تولیدی در ساحه پرچون

Date of visit (dd/mm/yyyy تاریخ بازدید)روز/ماه /سال(	_____ / _____ / 2017	Surveyor Name: اسم سرویر:		Team ID: بر شناخت	

To be completed by the team in EVERY retail outlet visited – information in the first row should match Form 1
باید

MARKET HUB (City) NAME اسم مارکیت عمده)در سطح شهر(	MARKET PLACE NAME AND NEIGHBORHOOD (IF AVAILABLE) ران موقیعت دارد و ساحه همجوار ان	DIVISION (D1) ویا بخش	Retail outlet type (R = Retail shop S= Supermarket W = Wholesaler, trader) نوع پرچون فروشی R =دوکان پرچون فروشی S =سوپر مار کیت W= ی	FOOD VEHICLE ن

No ش	Brand name ا	Available? (Y - Yes, N - No) ن؟ موج	Name of Producer ا	Local or Imported (L / I) لی ت	Location of production site م	Type of flour (AT = Atta flour, WH = White flour) نوع ارد AT= ا WH = ارد سفید	Packaging type (Plastic bag, paper bag, sack)) نوع بس	Indicate the label for all the packaging sizes the brand is available in (Y=Yes (Statement), L = Yes (Logo), N = no) مشخصات در لیبل در مورد اندازه بسته بندی محصول موجود بشکل Y=بیان(بلی) L= موجودیت لوگو (بلی). N = ر								
								500 g	1kg	2kg	5kg	10kg	20kg	25kg	50kg	If other, specify
1																
2																
3																
4																
5																
6																
7																
8																
9																
10																

Form 3

FORM 3 - SAMPLE REGISTRATION FORM ف	Date of visit (dd/mm/yyyy) تاریخ بازدید (روز/ماه/سال)	_____ / _____ / 2017	Surveyor Name: اسم مرروور:		Team ID: ن		3

No ض	SAMPLE ID Market hub (city) division retail outlet type Food Vehicle Type Brand name Sample Number (1-12) ن	Batch number ب		Producer ت	Production site location م	Labeled as fortified? Y=Yes (Statement), L=Yes (Logo), N =Y ده	Original Packaging type (Plastic bottle, jerry can, plastic bag, tin can شریک ب	Original Packaging size (ml) ان داز	unit (g, kg, mL, L) واحد	Unit cost (Afghani) ی واحد ب قیمت
		Production date ت	Expiry date ت							
1										
2										
3										
4										
5										
6										
7										
8										
9										
10										
11										
12										
13										
14										
15										

4. SUPPLEMENTARY TABLES

SURVEY POPULATION DEMOGRAPHICS

Table 12 Survey response rate, Afghanistan, 2017

Place of residence	Sample size		Reason for non-response	N
	Planned, N	Interviewed, N (%)		
National	2,520	2474 (98.2%)	Refused	40
			No Eligible respondent[1]	3
			Incapacitated/intoxicated	0
			Dwelling vacant	1
			Dwelling destroyed	0
			Other	2
Urban (Kabul)	840	822 (98.0%)	Refused	17
			No Eligible respondent[1]	1
			Incapacitated/intoxicated	0
			Dwelling vacant	0
			Dwelling destroyed	0
			Other	0
Urban (Other)	840	822 (97.9%)	Refused	13
			No Eligible respondent	2
			Incapacitated/intoxicated	0
			Dwelling vacant	1
			Dwelling destroyed	0
			Other	2
Rural	840	830 (98.8%)	Refused	10
			No Eligible respondent	0
			Incapacitated/intoxicated	0
			Dwelling vacant	0
			Dwelling destroyed	0
			Other	0

[1]One household completed the interview but the child was not under 5 so was later excluded from the analysis.

Table 13 Household and demographic characteristics of the survey sample by place of residence and population group, Afghanistan, 2017[1, 2]

Variable	Median (25%, 75%) or Mean/Percentage (95% CI)				p-value[4]
	National	Urban (Kabul)	Urban (Other)	Rural	
Household	N = 2474	N = 822	N = 822	N = 830	
Household size (n), median	6.2 (4.4, 8.1)	6.0 (4.4, 8.0)	5.9 (4.2, 7.9)	6.3 (4.5, 8.2)	0.1132
Household dependency ratio, median[3]	1.2 (0.8, 1.9)	1.0 (0.6, 1.6)	1.2 (0.8, 1.9)	1.2 (0.8, 1.9)	0.4029
Female-headed household, %	0.1 (0.0, 0.2)	0.9 (0.0, 1.8)[a]	0.4 (0.0, 1.0)[a]	0 (0.0, 0.1)[b]	<0.0001
Age of household head (years), mean	40.5 (38.4, 42.7)	41.6 (39.7, 43.4)	38.6 (37.1, 40.0)	40.7 (38.1, 43.3)	0.2770
All caregivers	N = 2474	N = 822	N = 822	N = 830	
Age (years), mean	30.1 (29.5, 30.8)	29.8 (29.1, 30.4)	30.7 (29.7, 31.7)	30.1 (29.4, 30.8)	0.4533
≥ 5 years education, %	14.2 (7.3, 21.1)	42.3 (35.7, 49)[a]	26.4 (19.2, 33.7)[b]	10.9 (2, 19.8)[c]	0.0008
Caregivers who are WRA	N = 2425	N = 810	N = 808	N = 807	
Age (years), mean	29.7 (29.2, 30.2)	29.6 (29.0, 30.2)	30.4 (29.5, 31.3)	29.6 (29.0, 30.3)	0.2269
≥ 5 years education, %	14.3 (7.0, 21.5)	42.5 (35.8, 49.1)[a]	26.8 (19.4, 34.1)[b]	10.9 (1.6, 20.2)[c]	0.0012
Child	N = 2474	N = 822	N = 822	N = 830	
Age (months), mean	30.0 (28.5, 31.5)	28.9 (27.5, 30.3)	29.7 (27.7, 31.6)	30.1 (28.3, 31.9)	0.6152
Sex female, %	46.1 (42.7, 49.5)	45.4 (40.9, 49.8)	45.7 (41.5, 50.0)	46.2 (42.1, 50.3)	0.9579

[1] Abbreviation: CI, confidence interval; WRA, women of reproductive age (15-49 years)

[2] All values are mean, median or percent as indicated, and are weighted to correct for unequal probability of selection. Mean was used as the measure of central tendency for normally distributed continuous variables. Median was used for non-normally distributed variables. Percentage was used for categorical variables.

[3] Household dependency ratio is the number of household members below 15 years of age and above 64 years of age/Number of household members between 15 and 64 years of age.

[4] A caregiver was identified by the household as the primary person responsible for the care of the child that was randomly selected. This could be a man or woman of any age.

[5] Chi-square test was used to compare the means/percentages and Kruskal-Wallis test was used to compare medians of the three groups. For means/percentages, superscript letters denote statistical significance within the groups – between strata with the same letter, there is no statistical significance; between strata with different letters, there is a statistical difference.

Table 14 Multidimensional poverty index (MPI) and its component indicators by place of residence, Afghanistan, 2017[1, 2]

Variable	Percentage (95% CI)				p-value[11]
	National N = 2474	Urban (Kabul) N =	Urban (Other) N=	Rural N=	
Not at risk of acute poverty[3]	36.4 (21, 51.7)	85.7 (81.5, 89.8)[a]	64.9 (56, 73.8)[b]	29.8 (10.1, 49.5)[c]	0.0004
At risk of acute poverty[3]	63.6 (48.3, 79)	14.3 (10.2, 18.5)[a]	35.1 (26.2, 44)[b]	70.2 (50.5, 89.9)[c]	0.0004
Living standards component					
No electricity	6.9 (2.8, 11)	0.9 (0, 1.9)	6 (1.4, 10.7)	7.4 (2.4, 12.4)	0.1762
Unimproved sanitation[4]	64.4 (46.2, 82.7)	40.5 (32.1, 49)	48 (35.1, 60.9)	67.9 (45.3, 90.6)	0.1019
Unsafe drinking water source[5]	45.6 (27.8, 63.4)	3.9 (1.2, 6.6)[a]	14.6 (6.2, 23.1)[b]	51.9 (29.9, 73.8)[c]	<0.0001
Inadequate flooring[6]	88.3 (84.9, 91.7)	23.7 (14, 33.4)[a]	50.6 (38.7, 62.6)[b]	96.9 (95, 98.7)[c]	<0.0001
Inadequate cooking fuel source[7]	80.6 (76, 85.3)	3.4 (0.2, 6.6)[a]	22.9 (13.4, 32.4)[b]	92.3 (87.9, 96.7)[c]	<0.0001
<2 household assets[8]	27 (16.2, 37.8)	3.1 (0.6, 5.5)[a]	7.8 (4.1, 11.5)[b]	30.8 (17.2, 44.3)[c]	<0.0001
Education component					
No HH member aged 10 years or older has completed 5 or more years of school	41.4 (30.6, 52.3)	15.8 (12.3, 19.3)[a]	28.4 (20.5, 36.3)[b, c]	44.6 (31.1, 58.2)[c]	0.0019
Any household member 5-14 years NOT currently attending school	56.5 (48.7, 64.3)	43.5 (37.8, 49.1)[a]	51.1 (45.3, 56.9)[a, b]	58 (48.5, 67.5)[b]	0.0323
Health and nutrition component					
Child has died in past five years	10.5 (5.6, 15.5)	4.7 (1.8, 7.5)	11.1 (6, 16.1)	10.9 (4.9, 16.8)	0.3005
WRA or child is malnourished[10]	17.2 (11.3, 23)	8.5 (4.5, 12.6)[a]	11.3 (7.8, 14.9)[a, b]	18.4 (11.3, 25.6)[b]	0.0258

[1] Abbreviation: CI, confidence interval; WRA, women of reproductive age (15-49 years)
[2] All values are percent as indicated and weighted to correct for unequal probability of selection.
[3] MPI ≥ 0.33
[4] The household does not have access to an improved sanitation facility, i.e. a flush toilet or latrine, ventilated improved pit or composting toilet, or it is improved but shared with other households.
[5] The household does not have access to safe drinking water, i.e. piped water, public tap, borehole or pump, protected well, protected spring or rainwater, or safe drinking water is more than a 30 minute walk from home (round-trip).
[6] The household has a dirt, sand or dung floor.
[7] The household cooks with dung, wood or charcoal.
[8] From an asset list including: radio, TV, mobile/non-mobile phone, bicycle, motorcycle, fridge, and/or car or truck.
[9] The household reports either (a) having no food of any kind in the house, going to sleep hungry at night, OR going all day and night without eating at least twice in the last month, or (b) experiencing two of the above three occurrences at least once in the past month.
[10] Mid-upper arm circumference of female caregiver <230 mm or of child under 6 months <115 mm or child 6 months or older <125 mm.
[11] Chi-square test was used to compare the means of the three groups. For percentages, superscript letters denote statistical significance within the groups – between strata with the same letter, there is no statistical significance; between strata with different letters, there is a statistical difference.

Table 15 Infant and child feeding index and its components by place of residence, Afghanistan, 2017[1, 2]

Variable	Median (25%, 75%), Percentage (95% CI)				P-value[7]
	National	Urban (Kabul)	Urban (Other)	Rural	
All children 0-59 months	N = 2474	N = 822	N = 822	N = 830	
Good infant and young child feeding (IYCF), %[6]	27.8 (20.0, 35.6)	38.0 (31.5, 44.5)[a]	41.5 (32.4, 50.7)[a]	25.6 (16.0, 35.2)[b]	0.0133
Inadequate infant and young child feeding (IYCF), %[6]	72.2 (64.4, 80.0)	74.4 (64.8, 84.0)[a]	62.0 (55.5, 68.5)[a]	58.5 (49.3, 67.6)[b]	0.0133
Children <6 months	N = 159	N = 55	N = 54	N = 50	
Exclusively breastfed, %	76.5 (63.2, 89.7)	54.2 (36.1, 72.3)	75.3 (60.5, 90.1)	78.4 (62.7, 94)	0.1621
Children 6-23 months	N = 674	N = 236	N = 218	N = 220	
Infant child feeding index (ICFI) score, median	4.5 (3.5, 5.3)	4.7 (3.8, 5.4)	4.9 (4.1, 5.4)	4.5 (3.5, 5.3)	0.0009
ICFI score = 6, %[3]	37.0 (26.2, 47.8)	39.7 (31.3, 48.2)	45.4 (31.3, 59.6)	35.8 (22.5, 49.1)	0.4968
Currently breastfed, %	85.1 (81.0, 89.2)	76.1 (71.4, 80.8)[a]	79.4 (71.2, 87.6)[a, b]	86.4 (81.8, 91.0)[b]	0.0074
Dietary diversity component score ≥ 2, %[4]	14.3 (4.5, 24.1)	14.7 (5.6, 23.9)	10.3 (5.7, 14.8)	14.8 (2.7, 26.8)	0.7494
Meal frequency component score ≥ 2, %[5]	89.6 (80.8, 98.5)	95.6 (90.8, 100.0)	96.2 (93.4, 99.0)	88.4 (77.4, 99.4)	0.1212
Children 24-59 months	N = 1641	N = 531	N = 550	N = 560	
Infant child feeding index (ICFI) score, median	4.2 (2.7, 4.9)	4.7 (4.1, 5.3)	4.7 (4.2, 5.3)	4.0 (2.6, 4.8)	<0.0001
ICFI score = 6, %[3]	20.0 (11.6, 28.5)	35.7 (28.3, 43.0)[a]	36.7 (25.7, 47.6)[a]	17.2 (6.9, 27.4)[b]	0.0056
Dietary diversity component score =3, %[4]	32.7 (18.6, 46.8)	4.7 (2.3, 7.0)[a]	11.8 (6.6, 17.1)[b]	36.8 (19.7, 53.9)[c]	<0.0001
Meal frequency component score ≥ 2, %[5]	99.5 (98.8, 100.0)	99.8 (99.4, 100.0)	98.7 (97.3, 100.0)	99.5 (98.8, 100.0)	0.2956

[1] Abbreviations: CI, confidence interval; ICFI, infant child feeding index; IYCF, infant and young child feeding.
[2] All values are mean or percent as indicated, and are weighted to correct for unequal probability of selection. Mean was used as the measure of central tendency for normally distributed variables. Median was used for non-normally distributed variables.
[3] ICFI score = 6 is equivalent to good practices based on continued breastfeeding, increased dietary diversity, and increased meal frequency based on child's age range.
[4] Good dietary diversity score based on child's age range (≥ 2 food groups for 6-8 months, ≥ 3 food groups for 9-11 months, ≥ 4 food groups for 12-23 months, and ≥ 5 food groups for 24-59 months).
[5] Good mean frequency score based on child's age range (≥ 2 times for 6-8 months, ≥ 3 times for 9-11 months, ≥ 4 times for 12-59 months).
[6] Defined as exclusive breastfeeding for children under 6 months and ICFI score of 6 for children 6-59 months.
[7] Chi-square test was used to compare the means and Kruskal-Wallis test was used to compare medians of the three groups. For percentages, superscript letters denote statistical significance within the groups – between strata with the same letter, there is no statistical significance; between strata with different letters, there is a statistical difference.

Table 16 Minimum dietary diversity score for women of reproductive age and its components by place of residence, Afghanistan, 2017[1,2]

Variable	Median (25%, 75%) or Percentage (95% CI)				p-value[8]
	National N=	Urban (Kabul) N=	Urban (Other) N=	Rural N=	
Dietary diversity score, median[3]	2.8 (1.7, 4.1)	4.3 (3.2, 5.3)	3.8 (2.7, 5.2)	2.6 (1.6, 3.8)	<0.0001
Met MDD-W, %[4]	26.1 (17.5, 34.8)	59.7 (49.5, 69.9)[a]	46 (35.4, 56.6)[a]	21.6 (10.8, 32.3)[b]	<0.0001
Did not meet MDD-W, %	73.9 (65.2, 82.5)	40.3 (30.1, 50.5)[a]	54 (43.4, 64.6)[a]	78.4 (67.7, 89.2)[b]	<0.0001
Consumed plant sources of vitamin A, %[5]	36.2 (26.4, 46.0)	66.9 (59.2, 74.6)[a]	62.9 (52.8, 73.0)[a]	31.0 (18.8, 43.3)[b]	<0.0001
Consumed animal sources of vitamin A, %[6]	47.9 (39.0, 56.8)	68.2 (60.4, 76)[a]	67.7 (58.9, 76.6)[a]	44.3 (33.8, 54.8)[b]	<0.0001
Consumed iron-rich foods, %[7]	22.9 (17.9, 27.8)	46.1 (40.1, 52.1)[a]	43.8 (36.0, 51.6)[a]	18.9 (13.3, 24.5)[b]	<0.0001
Consumed zinc-rich foods, %[8]	22.5 (17.6, 27.4)	43.9 (38.1, 49.7)[a]	42.8 (35.4, 50.3)[a]	18.7 (13.1, 24.4)[b]	<0.0001

[1] Abbreviations: CI, confidence interval; MDD-W, minimum dietary diversity for women of reproductive age

[2] All values are median or percent as indicated and weighted to correct for unequal probability of selection.

[3] Median score based on a score of ten food groups consumed in the last 24 hours: 1) grains, white roots and tubers, and plantains, 2) pulses (beans, peas, and lentils), 3) nuts and seeds, 4) dairy, 5) meat, poultry, and fish, 6) eggs, 7) dark green leafy vegetables, 8) other vitamin A-rich fruits and vegetables, 9) other vegetables, and 10) other fruits.

[3] Consumed at least five food groups out of ten.

[4] Consumed dark green leafy vegetables or other vitamin-A rich fruits and vegetables.

[5] Consumed dairy, organ meats, or eggs.

[6] Consumed flesh meat, organ meat, or fish.

[7] Consumed flesh meat or organ meat.

[8] Chi-square test was used to compare the percentages and Kruskal-Wallis test was used to compare medians of the three groups. For percentages, superscript letters denote statistical significance within the groups – between strata with the same letter, there is no statistical significance; between strata with different letters, there is a statistical difference.

Table 17 Minimum dietary diversity for women of reproductive age (MDD-W) and its components by poverty risk[1,2]

Variable	Median (25%, 75%) or Percentage (95% CI)		P-value[10]
	Poor[3]	Non-poor	
National	N = 666	N = 1759	
Dietary diversity score, median[4]	2.3 (1.4, 3.5)	3.7 (2.7, 4.7)	<0.0001
Met MDD-W, %[5]	17.7 (9.0, 26.5)	41.0 (35.7, 46.4)	<0.0001
Consumed plant sources of vitamin A, %[6]	26.9 (17.9, 35.9)	52.7 (45.9, 59.6)	<0.0001
Consumed animal sources of vitamin A, %[7]	43.4 (32.8, 53.9)	56.0 (44.1, 67.9)	0.0297
Consumed iron-rich foods, %[8]	15.8 (10.6, 21.0)	35.3 (30.2, 40.5)	<0.0001
Consumed zinc-rich foods, %[9]	15.6 (10.5, 20.7)	*34.8 (29.9, 39.7)*	<0.0001
Urban (Kabul)	N = 39	N = 771	
Dietary diversity score, median[4]	4.1 (2.9, 4.9)	4.4 (3.3, 5.4)	0.0481
Met MDD-W, %[5]	54.1 (39.1, 69.0)	60.6 (50.6, 70.6)	0.2676
Consumed plant sources of vitamin A, %[6]	63.4 (50.1, 76.6)	67.5 (59.6, 75.4)	0.5068
Consumed animal sources of vitamin A, %[7]	52.6 (42.5, 62.6)	70.8 (63.1, 78.6)	0.0015
Consumed iron-rich foods, %[8]	41.6 (33.2, 49.9)	46.8 (40.8, 52.9)	0.1435
Consumed zinc-rich foods, %[9]	41.6 (33.2, 49.9)	44.3 (38.5, 50.2)	0.4502
Urban (Other)	N = 138	N = 670	
Dietary diversity score, median[4]	3.3 (2.4, 4.6)	4.1 (3.0, 5.5)	<0.0001
Met MDD-W, %[5]	36.2 (24.7, 47.8)	51.2 (39.9, 62.6)	0.0043
Consumed plant sources of vitamin A, %[6]	55.2 (44.3, 66.0)	67.1 (56.4, 77.7)	0.0066
Consumed animal sources of vitamin A, %[7]	63.3 (52.2, 74.4)	70.1 (60.4, 79.9)	0.2083
Consumed iron-rich foods, %[8]	35.5 (25.0, 46.0)	48.3 (40.9, 55.6)	0.0025
Consumed zinc-rich foods, %[9]	33.9 (24.1, 43.7)	47.6 (40.3, 54.9)	0.0009
Rural	N = 489	N = 318	
Dietary diversity score, median[4]	2.3 (1.4, 3.4)	3.5 (2.5, 4.4)	<0.0001
Met MDD-W, %[5]	16.2 (6.8, 25.6)	34.5 (25.2, 43.8)	0.0048
Consumed plant sources of vitamin A, %[6]	24.8 (15.2, 34.3)	46.2 (33.1, 59.2)	0.0122
Consumed animal sources of vitamin A, %[7]	42.2 (30.6, 53.7)	49.5 (35.5, 63.4)	0.2349
Consumed iron-rich foods, %[8]	14.4 (9.0, 19.8)	29.7 (24.4, 35.1)	0.0007
Consumed zinc-rich foods, %[9]	14.2 (8.8, 19.6)	29.7 (24.3, 35.0)	0.0007

[1] Abbreviations: CI, confidence interval; MDD-W, minimum dietary diversity for women of reproductive age

[2] All values are median or percent as indicated, and are weighted to correct for unequal probability of selection.

[3] Poor refers to households with a multidimensional poverty index (MPI) score ≥ 0.33.

[4] Median score based on a score of ten food groups consumed in the last 24 hours: 1) grains, white roots and tubers, and plantains, 2) pulses (beans, peas, and lentils), 3) nuts and seeds, 4) dairy, 5) meat, poultry, and fish, 6) eggs, 7) dark green leafy vegetables, 8) other vitamin A-rich vegetables and fruits, 9) other vegetables, and 10) other fruits.

[5] Consumed at least five food groups out of ten.

[6] Consumed dark green leafy vegetables or other vitamin-A rich fruits and vegetables.

[7] Consumed dairy, organ meats, or eggs.

[8] Consumed flesh meat, organ meat, or fish.

[9] Consumed flesh meat or organ meat.

[10] Rao-Scott modified chi-square test was used to compare the percentages and Wilcoxon rank-sum test was used to compare the medians of the two groups.

Table 18 Fortification awareness and knowledge by place of residence, Afghanistan, 2017[1,2]

Variable	National		Urban (Kabul)		Urban (Other)		Rural		p-value[4]
	N	Percentage (95% CI)	N	Percentage (95% CI)	N	Percentage (95% CI)	N	Percentage (95% CI)	
Reported hearing about fortified foods	2474	22.3 (17.2, 27.5)	822	34.6 (26.7, 42.5)[a]	822	33.4 (24.6, 42.3)[a]	830	20.3 (13.9, 26.6)[b]	0.0089
Among those reporting hearing about them, reported positive attributes of fortified foods[3]	670	67.4 (53.7, 81.1)	256	71.2 (63.4, 78.9)	256	74.7 (64.1, 85.2)	158	65.6 (47.2, 84.1)	0.5685

[1] Abbreviation: CI = confidence interval
[2] All values are percent as indicated and weighted to correct for unequal probability of selection.
[3] Positive attributes reported by households include "enriched/added micronutrients", "good for health", "better quality", "the food is better for your health than a similar food without the logo", and/or "the food is good for the growth and development of children"
[4] Chi-square test was used to compare the percentages of the three groups. For percentages, superscript letters denote statistical significance within the groups – between strata with the same letter, there is no statistical significance; between strata with different letters, there is a statistical difference.

MICRONUTRIENT CONTENT OF FOOD SPECIMENS

Table 19 Imported versus local produced brands of salt, oil, and wheat flour present in the market hubs, Afghanistan, 2017

Origin	Salt		Oil/Ghee		Wheat flour	
	N	%	N	%	N	%
Imported	78	84.8	172	92.0	118	77.1
Local	14	15.2	14	7.5	35	22.9
Unknown	0	0.0	1	0.5	0	0.0
Total	92	100.0	187	100.0	153	100.0

Table 20 Summary of brands by food vehicle and place of origin classified according to Afghanistan national fortification standards, Afghanistan, 2017[1]

Country of Origin	Total (N)	Classification (N, %)				
		Not fortified	Fortified below standard	Fortified within the standard range	Fortified above standard	Unknown[2]
Salt Brands						
Afghanistan	78	21 (26.9)	52 (66.7)	2 (2.6)	1 (1.3)	2 (2.6)
China	1	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	1 (100.0)
Iran	7	1 (14.3)	4 (57.1)	0 (0.0)	0 (0.0)	2 (28.6)
Pakistan	6	0 (0.0)	5 (83.3)	0 (0.0)	0 (0.0)	1 (16.7)
Total	92	22 (11.7)	61 (32.4)	2 (1.1)	1 (0.5)	6 (3.2)
Oil/Ghee Brands						
Afghanistan	14	6 (42.9)	4 (28.6)	3 (21.4)	0 (0.0)	1 (7.1)
China	2	2 (100.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)
Indonesia	5	3 (60.0)	2 (40.0)	0 (0.0)	0 (0.0)	0 (0.0)
Iran	17	13 (76.5)	3 (17.6)	0 (0.0)	0 (0.0)	1 (5.9)
Kazakhstan	2	2 (100.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)
Malaysia	76	45 (59.2)	26 (34.2)	0 (0.0)	0 (0.0)	5 (6.6)
Pakistan	14	8 (57.1)	3 (21.4)	3 (21.4)	0 (0.0)	0 (0.0)
Russia	29	15 (58.6)	7 (24.1)	1 (3.4)	0 (0.0)	4 (13.8)
Turkey	9	8 (88.9)	1 (11.1)	0 (0.0)	0 (0.0)	0 (0.0)
UAE	15	7 (46.7)	8 (53.3)	0 (0.0)	0 (0.0)	0 (0.0)
Ukraine	2	2 (100.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)
Unknown	2	2 (100.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)
Total	187	116 (61.5)	54 (28.9)	7 (3.7)	0 (0.0)	11 (5.9)
Wheat Flour Brands						
Afghanistan	35	6 (17.1)	12 (34.3)	7 (20.0)	10 (28.6)	0 (0.0)
Iran	1	0 (0.0)	1 (100.0)	0 (0.0)	0 (0.0)	0 (0.0)
Kazakhstan	76	22 (28.9)	47 (61.8)	3 (3.9)	2 (2.6)	2 (2.6)
Pakistan	34	11 (32.4)	11 (32.4)	5 (14.7)	6 (17.6)	1 (2.9)
Tajikistan	3	1 (33.3)	2 (66.7)	0 (0.0)	0 (0.0)	0 (0.0)
Uzbekistan	1	1 (100.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)
Unknown	3	0 (0.0)	3 (100.0)	0 (0.0)	0 (0.0)	0 (0.0)
Total	153	41 (26.8)	76 (49.7)	15 (9.8)	18 (11.8)	3 (2.0)

[1] For salt, "not fortified" is <5 mg/kg, "fortified below standard" is 5 to <30 mg/kg, "fortified within the standard range" is 30-50 mg/kg, "fortified above standard" is >50 mg/kg; For oil/ghee, "not fortified" is 0 IU/kg, "fortified below standard" is 0 to <24,000 IU/kg, "fortified within the standard range" is 24,000-36,000 IU/kg, "fortified above standard" is >36,000 IU/kg; For wheat flour, "not fortified" is 0 mg/kg, "fortified below standard" is 0 to <12 mg/kg, "fortified within standard range" is 12-18 mg/kg, "fortified above standard" is >18 mg/kg.

Table 21 List of brands analyzed, the number of individual samples collected, the nutrient content and compliance with national standards, and presence in market hubs, Afghanistan, 2017

Brand Name	# of single samples	Mean nutrient content[1]	Compliance with national standards[2]	Presence in market hubs[3]
Salt Brands				
S1	4	38.1	Fortified within the standard range	MM
S2	4	14.8	Fortified below standard	MS
S3	12	8.5	Fortified below standard	KB
S4	8	3.6	Not fortified	MS, KB, FZ
S5	6	2.1	Not fortified	KB, FZ, CH
S6	8	81.9	Fortified above standard	KB
S7	1	7.4	Fortified below standard	GZ
S8	2	13.8	Fortified below standard	MS, MM
S9	1	11.6	Fortified below standard	JB
S10	4	5.6	Fortified below standard	KZ
S11	4	14.2	Fortified below standard	MM
S12	8	38.3	Fortified within the standard range	KB, KZ
S13	4	15.6	Fortified below standard	MS
S14	3	9.0	Fortified below standard	KB
S15	4	5.8	Fortified below standard	KZ
S16	4	11.4	Fortified below standard	KZ
S17	4	7.4	Fortified below standard	KB
S18	3	9.4	Fortified below standard	MS
S19	1	10.6	Fortified below standard	MS
S20	2	14.3	Fortified below standard	CH, PK
S21	1	11.6	Fortified below standard	MS
S22	6	14.1	Fortified below standard	KD
S23	14	3.33	Fortified below standard	MS, KB, CH
S24	5	8.2	Fortified below standard	KB
S25	4	2.7	Not fortified	GZ
S26	1	25.4	Fortified below standard	CH
S27	3	2.1	Not fortified	KD
S28	4	11.9	Fortified below standard	MS
S29	6	1.1	Not fortified	LG
S30	1	5.3	Fortified below standard	KD
S31	4	26.5	Fortified below standard	PK
S32	2	9.0	Fortified below standard	KZ, CH
S33	4	3.5	Fortified below standard	FZ
S34	2	8.5	Fortified below standard	GZ
S35	1	1.1	Not fortified	JB
S36	1	3.2	Not fortified	KB, CH, HT
S37	4	3.2	Not fortified	MS
S38	6	6.9	Fortified below standard	LG
S39	4	8.8	Fortified below standard	MS
S40	8	1.2	Not fortified	HT
S41	1	3.2	Not fortified	JB
S42	9	10.8	Fortified below standard	KB

S43	2	9.0	Fortified below standard	MS
S44	1	6.3	Fortified below standard	MS
S45	2	1.6	Not fortified	LG, CH
S46	1	2.1	Not fortified	MS
S47	1	3.2	Not fortified	GZ
S48	6	4.2	Not fortified	PK, KB, CH
S49	4	22.5	Fortified below standard	PK, MS, MM, KZ
S50	6	3.7	Not fortified	PK, KD, CH
S51	1	10.6	Fortified below standard	MS
S52	3	15.5	Fortified below standard	MS
S53	4	4.5	Not fortified	GZ
S54	4	16.4	Fortified below standard	KZ
S55	2	10.9	Fortified below standard	CH, KD
S56	10	7.1	Fortified below standard	KB
S57	4	14.6	Fortified below standard	MS
S58	6	2.8	Not fortified	LG
S59	1	7.4	Fortified below standard	KD
S60	6	9.9	Fortified below standard	LG, KB
S61	3	6.3	Fortified below standard	MS
S62	1	6.3	Fortified below standard	MS
S63	8	5.4	Fortified below standard	PK, MS
S64	4	10.6	Fortified below standard	MS
S65	4	2.9	Not fortified	PK
S66	6	14.9	Fortified below standard	CH, FZ, KZ, MM, PK
S67	6	13.9	Fortified below standard	FZ, JB, KB, KZ, MM, MS
S68	12	3.3	Not fortified	KB
S69	4	6.9	Fortified below standard	KB
S70	12	28.9	Fortified below standard	KB, HT
S71	12	14.0	Fortified below standard	KB, HT
S72	1	3.2	Not fortified	JB
S73	4	5.3	Fortified below standard	KZ
S74	4	7.4	Fortified below standard	FZ
S75	4	20.1	Fortified below standard	MS
S76	1	4.2	Not fortified	CH
S77	4	6.1	Fortified below standard	MS
S78	6	17.1	Fortified below standard	
S79	4	23.8	Fortified below standard	MS
S80	4	4.8	Not fortified	CH
S81	4	8.2	Fortified below standard	CH
S82	4	6.4	Fortified below standard	MS
S83	8	20.4	Fortified below standard	KZ, MM, KB
S84	4	20.4	Fortified below standard	MS
S85	8	8.6	Fortified below standard	FZ, KZ
S86	7	6.1	Fortified below standard	MS, PK
S87	0	.	.	KB
S88	0	.	.	KB
S89	0	.	.	KB
S90	0	.	.	KB
S91	0	.	.	HT

S92	0	.	.	KB
Oil/Ghee Brands				
O1	0	.		KB
O2	12	1650.0	Fortified below standard	JB, CH
O3	1	260.0	Fortified below standard	HT
O4	12	0.0	Not fortified	KB, GZ, CH
O5	12	0.0	Not fortified	KB, GZ, CH
O6	31	0.0	Not fortified	LG, KZ, KD, HT
O7	12	0.0	Not fortified	KB
O8	12	0.0	Not fortified	KB
O9	17	6250.0	Fortified below standard	PK, MS, MM, KZ, KB,
O10	11	0.0	Not fortified	KB
O11	3	11680.0	Fortified below standard	CH
O12	3	0.0	Not fortified	GZ
O13	6	0.0	Not fortified	KB
O14	9	1090.0	Fortified below standard	HT
O15	5	0.0	Not fortified	HT
O16	6	0.0	Not fortified	
O17	2	0.0	Not fortified	PK, JB, CH
O18	10	880.0	Fortified below standard	FZ, GZ, MS
O19	4	0.0	Not fortified	MM
O20	12	0.0	Not fortified	HT
O21	2	17170.0	Fortified below standard	CH, GZ
O22	1	1160.0	Fortified below standard	PK
O23	1	580.0	Fortified below standard	KZ
O24	2	9200.0	Fortified below standard	KD, FZ
O25	6	840.0	Fortified below standard	KB
O26	12	0.0	Not fortified	KB, GZ
O27	12	2620.0	Fortified below standard	PK, LG, KB
O28	12	630.0	Fortified below standard	PK, MS, KB, HT, CH
O29	4	2470.0	Fortified below standard	GZ
O30	8	4210.0	Fortified below standard	KB
O31	8	5950.0	Fortified below standard	JB, CH
O32	14	800.0	Fortified below standard	PK, KB, HT, CH
O33	1	5640.0	Fortified below standard	HT
O34	3	3500.0	Fortified below standard	CH, JB, PK
O35	8	0.0	Not fortified	GZ, KB
O36	3	6080.0	Fortified below standard	CH, KD, LG
O37	2	3390.0	Fortified below standard	FZ, KZ
O38	7	1100.0	Fortified below standard	PK, KB
O39	12	34070.0	Fortified within the standard range	KB
O40	1	2410.0	Fortified below standard	HT
O41	4	720.0	Fortified below standard	CH, PK, FZ, JB, KB
O42	4	2820.0	Fortified below standard	GZ
O43	7	0.0	Not fortified	HT
O44	4	12480.0	Fortified below standard	MM
O45	8	0.0	Not fortified	HT
O46	4	0.0	Not fortified	KZ
O47	12	3895.0	Fortified below standard	KB, CH

O48	2	2290.0	Fortified below standard	LG, KD
O49	1	0.0	Not fortified	KZ
O50	7	0.0	Not fortified	HT
O51	6	0.0	Not fortified	FZ, CH
O52	8	0.0	Not fortified	KB
O53	4	0.0	Not fortified	MS
O54	4	0.0	Not fortified	JB
O55	12	0.0	Not fortified	KB
O56	12	7000.0	Fortified below standard	KB
O57	3	0.0	Not fortified	PK
O58	4	0.0	Not fortified	MS
O59	4	0.0	Not fortified	HT
O60	3	0.0	Not fortified	JB
O61	11	0.0	Not fortified	MM, HT
O62	6	0.0	Not fortified	HT
O63	3	4830.0	Fortified below standard	PK, GZ, CH
O64	4	0.0	Not fortified	GZ
O65	8	0.0	Not fortified	KB
O66	16	0.0	Not fortified	KZ, KB, GZ
O67	3	17470.0	Fortified below standard	CH
O68	10	0.0	Not fortified	CH
O69	2	0.0	Not fortified	KB
O70	9	0.0	Not fortified	HT
O71	10	0.0	Not fortified	HT
O72	12	0.0	Not fortified	KB, JB, HT
O73	16	1705.0	Fortified below standard	PK, MS, KZ, KB, GZ,
O74	6	1610.0	Fortified below standard	KB, KZ, MS, MM
O75	6	4650.0	Fortified below standard	CH, FZ, KD, HT, LG, PK
O76	10	0.0	Not fortified	KZ, KD
O77	1	14610.0	Fortified below standard	CH
O78	12	0.0	Not fortified	KB
O79	12	0.0	Not fortified	KB, GZ
O80	13	32590.0	Fortified within the standard range	GZ, FZ
O81	12	0.0	Not fortified	KB
O82	1	0.0	Not fortified	PK
O83	12	0.0	Not fortified	PK, KB, CH
O84	12	0.0	Not fortified	KZ, KB
O85		0.0	Not fortified	KZ
O86	3	18020.0	Fortified below standard	CH, HT, PK
O87	9	0.0	Not fortified	KB
O88	8	0.0	Not fortified	HT
O89	12	0.0	Not fortified	KB, CH
O90	8	0.0	Not fortified	KZ, FZ
O91	15	0.0	Not fortified	LG
O92	12	2000.0	Fortified below standard	PK, LG, KB, HT, CH
O93	12	0.0	Not fortified	KB
O94	4	0.0	Not fortified	GZ, CH, FZ, PK
O95	4	5820.0	Fortified below standard	JB
O96	12	0.0	Not fortified	KB

O97	12	0.0	Not fortified	LG, KD
O98	4	23180.0	Fortified below standard	JB
O99	17	0.0	Not fortified	KB, HT, GZ
O100	11	1573.3	Not fortified	FZ, KZ, CH, GZ, PK, MS, KB
O101	4	0.0	Not fortified	GZ, JB, KZ, KD
O102	12	0.0	Not fortified	KB, CH
O103	12	2990.0	Fortified below standard	KB
O104	12	0.0	Not fortified	PK, MS, MM, LG, KZ,
O105	4	0.0	Not fortified	KZ
O106	4	0.0	Not fortified	KZ, MS
O107	16	0.0	Not fortified	LG, HT
O108	1	30680.0	Fortified within the standard range	CH
O109	1	0.0	Not fortified	PK
O110	12	0.0	Not fortified	PK, MS, KB, FZ, CH
O111	8	0.0	Not fortified	KB, GZ, HT, JB, KD, LG, PK
O112	4	4420.0	Fortified below standard	KB
O113	12	0.0	Not fortified	KB
O114	12	2630.0	Fortified below standard	PK, KB, CH
O115	2	12140.0	Fortified below standard	CH, FZ
O116	6	0.0	Not fortified	KB
O117	4	0.0	Not fortified	KZ, LG, PK, HT
O118	1	0.0	Not fortified	JB
O119	12	0.0	Not fortified	KB
O120	4	0.0	Not fortified	FZ
O121	12	0.0	Not fortified	KB
O122	4	0.0	Not fortified	GZ
O123	8	0.0	Not fortified	HT
O124	3	0.0	Not fortified	JB
O125	6	0.0	Not fortified	HT
O126	1	0.0	Not fortified	CH
O127	8	0.0	Not fortified	MS, KZ
O128	4	21050.0	Fortified below standard	MS
O129	12	0.0	Not fortified	KB
O130	9	1580.0	Fortified below standard	KB, KZ
O131	3	0.0	Not fortified	PK
O132	4	0.0	Not fortified	JB
O133	8	5110.0	Fortified below standard	CH, KB
O134	4	0.0	Not fortified	GZ
O135	12	0.0	Not fortified	PK, LG, KZ, KB, JB,
O136	18	0.0	Not fortified	MS, MM, KD, HT
O137	4	0.0	Not fortified	KZ
O138	3	0.0	Not fortified	PK
O139	1	0.0	Not fortified	JB
O140	12	25270.0	Fortified within the standard range	PK, KB, GZ, CH
O141	1	400.0	Fortified below standard	MS
O142	4	0.0	Not fortified	KZ
O143	3	0.0	Not fortified	PK, JB, FZ

O144	8	0.0	Not fortified	HT
O145	4	3410.0	Fortified below standard	MS
O146	3	0.0	Not fortified	CH
O147	4	34130.0	Fortified within the standard range	GZ
O148	8	0.0	Not fortified	PK, LG, KD, KB, JB,
O149	5	2330.0	Fortified below standard	CH, JB, KD, LG, PK
O150	12	2550.0	Fortified below standard	PK, KB, JB, CH
O151	6	0.0	Not fortified	HT
O152	2	6120.0	Fortified below standard	KB, JB, CH
O153	12	34960.0	Fortified within the standard range	PK, KB, JB, GZ, CH
O154	10	0.0	Not fortified	CH, JB
O155	12	10470.0	Fortified below standard	KB, CH
O156	12	0.0	Not fortified	KB, FZ
O157	16	0.0	Not fortified	FZ, KB
O158	4	0.0	Not fortified	MS
O159	9	0.0	Not fortified	KB
O160	4	0.0	Not fortified	KZ
O161	3	0.0	Not fortified	MS,PK, FZ
O162	8	0.0	Not fortified	HT
O163	18	0.0	Not fortified	KD, KB
O164	12	0.0	Not fortified	KB
O165	12	0.0	Not fortified	KB
O166	14	0.0	Not fortified	PK, KB, JB
O167	3	0.0	Not fortified	JB
O168	12	340.0	Fortified below standard	PK, KZ, KB, HT, CH
O169	18	0.0	Not fortified	LG, KB, GZ
O170	12	0.0	Not fortified	KB
O171	12	0.0	Not fortified	KB
O172	12	0.0	Not fortified	KB
O173	8	0.0	Not fortified	HT
O174	12	0.0	Not fortified	KB
O175	12	0.0	Not fortified	KB
O176	31	130.0	Fortified below standard	LG, KZ, KB, HT
O177	12	27260.0	Fortified within the standard range	PK, KB, GZ, CH
O178	0	.		MS
O179	0	.		KB
O180	0	.		MM
O181	0	.		HT
O182	0	.		KB
O183	0	.		HT
O184	0	.		KB
O185	0	.		CH
O186	0	.		KB
O187	0	.		KB
Wheat Flour Brands				
W1	1	14.1	Fortified within the standard range	KD
W2	0			GZ
W3	2	13.7	Fortified within the standard range	LG
W4	4	3.2	Fortified below standard	PK, MM, KZ, CH
W5	12	14.8	Fortified within the standard range	PK, KZ, KD, KB, CH

W6	8	2.1	Fortified below standard	MS, GZ
W7	4	0.0	Not fortified	FZ
W8	12	7.4	Fortified below standard	KB, GZ
W9	12	3.5	Fortified below standard	KB
W10	12	0.3	Fortified below standard	PK, MM, KZ, KB, CH
W11	2	15.0	Fortified within the standard range	KD, HT
W12	24	0.0	Not fortified	KB, HT
W13	12	0.0	Not fortified	KB
W14	20	32.5	Fortified above standard	MS, KZ, HT
W15	4	0.0	Not fortified	FZ
W16	4	0.0	Not fortified	GZ
W17	4	8.6	Fortified below standard	MS
W18	13	8.7	Fortified below standard	CH, HT, JB, KB, KD, KZ, MM, PK
W19	4	8.0	Fortified below standard	KZ
W20	8	6.6	Fortified below standard	MM, KZ
W21	12	9.4	Fortified below standard	HT
W22	7	6.6	Fortified below standard	CH, JB, KD, MM
W23	12	4.6	Fortified below standard	HT
W24	20	4.8	Fortified below standard	KZ, KB, JB
W25	2	0.0	Not fortified	JB, GZ
W26	2	0.0	Not fortified	LG, KD
W27	4	10.3	Fortified below standard	
W28	12	7.2	Fortified below standard	GZ, KB
W29	4	6.9	Fortified below standard	CD, GZ, JB, KD
W30	4	17.3	Fortified within the standard range	JB
W31	4	2.1	Fortified below standard	GZ
W32	4	2.5	Fortified below standard	FZ
W33	4	0.4	Fortified below standard	MS
W34	4	11.9	Fortified below standard	FZ
W35	4	18.1	Fortified above standard	KZ
W36	2	30.3	Fortified above standard	PK, LG
W37	4	2.8	Fortified below standard	KZ
W38	12	1.7	Fortified below standard	HT
W39	24	4.1	Fortified below standard	FZ, HT, KZ, MS
W40	4	0.0	Not fortified	GZ
W41	6	7.2	Fortified below standard	KD
W42	12	12.1	Fortified within the standard range	HT
W43	1	15.8	Fortified within the standard range	KD
W44	1	19.0	Fortified within the standard range	KZ
W45	4	7.5	Fortified below standard	KZ
W46	0			KB
W47	12	33.8	Fortified above standard	KB, HT
W48	24	6.0	Fortified below standard	KZ, KB, HT, FZ
W49	4	32.0	Fortified above standard	KZ
W50	8	8.2	Fortified below standard	KB
W51	12	6.3	Fortified below standard	MS, KZ, FZ
W52	4	15.8	Fortified within the standard range	FZ
W53	0			KB
W54	4	48.0	Fortified above standard	PK, HT, CH

W55	12	0.0	Not fortified	HT
W56	6	3.1	Fortified below standard	MS, MM, KZ, KD, HT,
W57	1	16.4	Fortified within the standard range	KD
W58	4	1.6	Fortified below standard	KZ
W59	12	8.9	Fortified below standard	HT
W60	4	0.0	Not fortified	FZ
W61	3	8.0	Fortified below standard	LG, KD, HT
W62	4	22.6	Fortified above standard	GZ
W63	12	5.3	Fortified below standard	KB
W64	4	6.0	Fortified below standard	KZ
W65	2	0.0	Not fortified	MM, CH
W66	12	0.3	Fortified below standard	KB, JB
W67	8	21.1	Fortified above standard	CH, PK, MM, MS
W68	18	7.3	Fortified below standard	CH, KB, KZ, MS, MM, PK
W69	4	37.2	Fortified above standard	GZ
W70	4	0.0	Not fortified	JB
W71	8	0.0	Not fortified	KZ, MM
W72	3	9.3	Fortified below standard	CH,GZ, PK
W73	12	0.0	Not fortified	KB
W74	12	11.0	Fortified below standard	KB
W75	8	15.3	Fortified within the standard range	FZ, KZ
W76	4	0.0	Not fortified	KZ
W77	12	4.6	Fortified below standard	KZ, KB
W78	3	28.1	Fortified above standard	PK, KZ, CH
W79	15	0.0	Not fortified	HT, CH
W80	4	0.0	Not fortified	KZ
W81	4	0.0	Not fortified	FZ
W82	12	1.7	Fortified below standard	HT
W83	4	7.3	Fortified below standard	JB
W84	12	3.1	Fortified below standard	PK, MM, KZ, KB, CH
W85	27	7.9	Fortified below standard	MM, KZ, HT, FZ, CH
W86	16	2.7	Fortified below standard	JB, HT
W87	4	9.4	Fortified below standard	MM
W88	13	4.3	Fortified below standard	MS, MM, LG, KZ, KB,
W89	3	12.5	Fortified within the standard range	MS, MM
W90	4	0.2	Fortified below standard	MS
W91	12	0.0	Not fortified	HT
W92	4	0.0	Not fortified	MM
W93	6	0.0	Not fortified	LG
W94	4	0.0	Not fortified	GZ
W95	12	0.0	Not fortified	KB
W96	12	2.6	Fortified below standard	PK, MM, KZ, KB, CH
W97	1	5.5	Fortified below standard	JB
W98	4	5.1	Fortified below standard	MS
W99	12	0.0	Not fortified	MS, MM, KB
W100	4	0.0	Not fortified	KZ
W101	5	5.2	Fortified below standard	CH, FZ, KZ, MM, PK

W102	4	0.0	Not fortified	FZ
W103	11	12.8	Fortified within the standard range	FZ, KB
W104	8	0.8	Fortified below standard	FZ, KZ
W105	6	7.1	Fortified below standard	CH, HT, KZ, MM, MS, PK
W106	12	15.5	Fortified within the standard range	HT
W107	12	11.7	Fortified below standard	KB
W108	20	1.8	Fortified below standard	MS, KZ
W109	4	0.0	Not fortified	JB
W110	12	7.5	Fortified below standard	HT
W111	1	0.0	Not fortified	LG
W112	8	1.3	Fortified below standard	KZ, GZ
W113	6	4.9	Fortified below standard	LG
W114	4	3.1	Fortified below standard	JB
W115	1	0.0	Not fortified	CH
W116	12	0.0	Not fortified	KB, GZ
W117	13	0.0	Not fortified	KD, KB, CH
W118	4	1.0	Fortified below standard	JB
W119	12	1.8	Fortified below standard	HT
W120	1	0.0	Not fortified	CH
W121	4	14.9	Fortified within the standard range	KZ
W122	8	10.1	Fortified below standard	KB
W123	4	0.0	Not fortified	CH
W124	12	0.0	Not fortified	KB
W125	3	7.8	Fortified below standard	PK, KD, CH
W126	4	67.8	Fortified above standard	PK
W127	12	5.6	Fortified below standard	PK, KZ, KB, HT
W128	4	0.6	Not fortified	KZ
W129	4	0.0	Fortified below standard	FZ
W130	12	7.1	Fortified below standard	HT
W131	1	0.0	Not fortified	CH
W132	11	3.6	Fortified below standard	KB, HT, GZ
W133	2	0.0	Not fortified	KZ, KD, JB, HT
W134	4	0.0	Not fortified	JB
W135	4	50.0	Fortified above standard	GZ
W136	1	10.5	Fortified below standard	CH
W137	4	18.1	Fortified above standard	FZ
W138	1	22.7	Fortified above standard	CH
W139	4	0.0	Not fortified	JB
W140	8	4.2	Fortified below standard	MS, FZ
W141	12	0.1	Fortified below standard	KB
W142	3	7.2	Fortified below standard	GZ, FZ, CH
W143	8	4.8	Fortified below standard	MS, MM
W144	2	5.2	Fortified below standard	FZ, CH
W145	12	8.7	Fortified below standard	KB
W146	1	25.9	Fortified above standard	KZ
W147	4	79.5	Fortified above standard	PK
W148	4	6.3	Fortified below standard	KZ
W149	12	5.0	Fortified below standard	HT
W150	2	18.3	Fortified above standard	PK, CH

W151	1	0.0	Not fortified	CH
W152	4	54.5	Fortified above standard	PK
W153	4	0.0	Not fortified	JB

[1] The nutrient level units vary by food vehicle: mg/kg (ppm) for salt, IU/kg for oil, and mg/kg (ppm) for wheat flour.

[2] For salt, "not fortified" is less than 5 mg/kg, "Fortified below standard" is between 5 and less than 30 mg/kg, "Fortified within the standard range" is between 30 and 50 mg/kg, "Fortified above standard" is greater than 50 mg/kg; For oil/ghee, "not fortified" is 0 IU/kg, "Fortified below standard" is between 0 and less than 24,000 IU/kg, "Fortified within the standard range" is between 24,000 and 36,000 IU/kg, "Fortified above standard" is greater than 36,000 IU/kg; For wheat flour, "not fortified" is 0 mg/kg, "Fortified below standard" is between 0 and less than 12 mg/kg, "Fortified within the standard range" is between 12 and 18 mg/kg, "Fortified above standard" is greater than 18 mg/kg.

[3] Market Hub codes are: Chaharikar = CH, Fayzabad = FZ, Gardez = GZ, Herat = HT, Jalalabad = JB, Kandahar = KD, Kunduz = KZ, Lashkargah = LG, Maymana = MM, Mazari Sharif = MS, Puli Khumri = PK, Kabul = KB

Table 22 Proportion of brands per food vehicle that are not fortified, fortified below the standard, fortified within the standard range, and fortified above the standard, Afghanistan, 2017

Food Vehicle	Total	Not fortified		Fortified below standard		Fortified within the standard range		Fortified above standard	
	N	N	%	N	%	N	%	N	%
Salt	86	22	25.6	61	70.9	2	2.3	1	1.2
Oil/Ghee	176	115	65.3	54	30.7	7	4.0	0	0.0
Wheat Flour	150	41	27.3	76	50.7	15	10.0	18	12.0

[1] The nutrient level units vary by food vehicle: mg/kg (ppm) for salt, IU/kg for oil, and mg/kg (ppm) for wheat flour.

[2] For salt, "not fortified" is less than 5 mg/kg, "fortified below standard" is between 5 and less than 30 mg/kg, "fortified within the standard range" is between 30 and 50 mg/kg, "fortified above standard" is greater than 50 mg/kg; For oil/ghee, "not fortified" is 0 IU/kg, "fortified below standard" is between 0 and less than 24,000 IU/kg, "fortified within the standard range" is between 24,000 and 36,000 IU/kg, "fortified above standard" is greater than 36,000 IU/kg; For wheat flour, "not fortified" is 0 mg/kg, "fortified below standard" is between 0 and less than 12 mg/kg, "fortified within the standard range" is between 12 and 18 mg/kg, "fortified above standard" is greater than 18 mg/kg.

HOUSEHOLD COVERAGE OF FOODS

Table 23 Household coverage of salt, oil/ghee, and wheat flour by place of residence, Afghanistan, 2017 [1,2]

Variable	Percentage (95% CI)				P-value[6]
	National N = 2474	Urban (Kabul) N = 822	Urban (Other) N = 822	Rural N = 830	
Salt					
Household consumes[3] salt	100.0 (100.0, 100.0)	100.0 (100.0, 100.0)	100.0 (100.0, 100.0)	100.0 (100.0, 100.0)	
Household consumes fortifiable[4] salt	100.0 (100.0, 100.0)	99.9 (99.7, 100.0)	99.9 (99.6, 100.0)	100.0 (100.0, 100.0)	
Household consumes fortified[5] salt	22.1 (10.6, 33.6)	43.1 (35.1, 51.1)[a]	53.5 (42.6, 64.4)[b]	17.2 (3.9, 30.5)[c]	<0.0001
Oil/Ghee					
Household consumes oil/ghee	100.0 (100.0, 100.0)	100.0 (100.0, 100.0)	100.0 (100.0, 100.0)	100.0 (100.0, 100.0)	
Household consumes fortifiable oil/ghee	98.8 (97.9, 99.8)	99.9 (99.8, 100.0)	99.2 (98.2, 100.0)	98.7 (97.6, 99.9)	0.2548
Household consumes fortified oil/ghee	30.1 (24.0, 36.2)	55.6 (50.8, 60.4)[a]	37.7 (30.1, 45.3)[a]	27.6 (20.5, 34.6)[b]	<0.0001
Wheat flour					
Household consumes wheat flour	91.6 (86.0, 97.3)	72.0 (65.8, 78.2)[a]	74.1 (65.3, 82.8)[a]	94.9 (88.2, 100.0)[b]	0.0003
Household consumes fortifiable wheat flour	49.7 (34.7, 64.7)	70.7 (64.5, 77.0)[a]	51.5 (43.8, 59.3)[b]	48.1 (30.4, 65.8)[b]	0.0333
Household consumes fortified wheat flour	18.6 (10.8, 26.4)	52.8 (47.4, 58.2)[a]	28.5 (20.5, 36.5)[b]	15.2 (6.3, 24.1)[b]	<0.0001

[1] Abbreviations: CI, confidence interval

[2] All values are percent as indicated and are weighted to correct for unequal probability of selection.

[3] "Consumes" refers to households that reported using this food at home.

[4] "Consumes fortifiable" refers to households that reported consuming a food vehicle that was not made at home and is assumed to be industrially processed.

[5] "Consumes fortified" refers to households that consumed a food vehicle that was confirmed to be fortified by brand identification and quantitative analyses.

[6] Chi-square test was used to compare the percentages of the three groups. For percentages, superscript letters denote statistical significance within the groups – between strata with the same letter, there is no statistical significance; between strata with different letters, there is a statistical difference.

Table 24 Household coverage of salt, oil/ghee, and wheat flour by place of residence (4 categories), Afghanistan, 2017 [1,2]

Variable	Percentage (95% CI)				P-value[6]
	National N = 2474	Urban (Kabul) N = 822	Urban (Other) N = 822	Rural N = 830	
Salt					
Consumes fortified	22.1 (10.6, 33.6)	43.1 (35.1, 51.1)	53.5 (42.6, 64.4)	17.2 (3.9, 30.5)	
Consumes not fortified	23.3 (12.3, 34.3)	36.4 (30.4, 42.4)	13.9 (7.9, 20.0)	23.4 (10.1, 36.7)	
Unknown	54.6 (39.8, 69.4)	20.5 (14.2, 26.7)	32.5 (24.9, 40.1)	59.4 (42.2, 76.5)	
Not fortifiable (does not use or made at home)	0.0 (0.0, 0.0)	0.1 (0.0, 0.3)	0.1 (0, 0.4)	0.0 (0.0, 0.0)	
Oil/Ghee					
Consumes fortified	30.1 (24.0, 36.2)	55.6 (50.8, 60.4)	37.7 (30.1, 45.3)	27.6 (20.5, 34.6)	<0.0001
Consumes not fortified	40.5 (32.3, 48.8)	29.1 (23.8, 34.3)	26.8 (19.4, 34.1)	42.8 (33, 52.7)	<0.0001
Unknown	28.2 (21.7, 34.7)	15.2 (12.5, 18)	34.7 (26.8, 42.7)	28.3 (20.5, 36.1)	<0.0001
Not fortifiable (does not use or made at home)	1.2 (0.2, 2.1)	0.1 (0.0, 0.2)	0.8 (0.0, 1.8)	1.3 (0.1, 2.4)	<0.0001
Wheat flour					
Consumes fortified	18.6 (10.8, 26.4)	52.8 (47.4, 58.2)	28.5 (20.5, 36.5)	15.2 (6.3, 24.1)	<0.0001
Consumes not fortified	0.2 (0.0, 0.5)	0.7 (0.1, 1.2)	0.3 (0.0, 0.8)	0.2 (0.0, 0.6)	<0.0001
Unknown	30.9 (17.8, 43.9)	17.2 (13.5, 20.9)	22.7 (17.4, 28.0)	32.7 (16.7, 48.8)	<0.0001
Not fortifiable (does not use or made at home)	50.3 (35.3, 65.3)	29.3 (23.0, 35.5)	48.5 (40.7, 56.2)	51.9 (34.2, 69.6)	<0.0001

[1] Abbreviations: CI, confidence interval

[2] All values are percent as indicated and are weighted to correct for unequal probability of selection.

[3] "Consumes" refers to households that reported using this food at home.

[4] "Consumes fortifiable" refers to households that reported consuming a food vehicle that was not made at home and is assumed to be industrially processed.

[5] "Consumes fortified" refers to households that consumed a food vehicle that was confirmed to be fortified by brand identification and quantitative analyses.

[6] Chi-square test was used to compare the percentages of the three groups.

Table 25 Household coverage of salt, oil/ghee, and wheat flour by poverty status and place of residence, Afghanistan, 2017[1,2]

	Variable	Percentage (95% CI)		P-value[7]
		Poor[3]	Non-poor	
National		N = 1020	N = 1454	
Salt	Household consumes salt[4]	100.0 (100.0, 100.0)	100.0 (100.0, 100.0)	
	Household consumes fortifiable salt[5]	100.0 (99.9, 100.0)	100.0 (100.0, 100.0)	0.8691
	Household consumes fortified salt[6]	17.6 (8.3, 26.8)	30.0 (7.6, 52.5)	0.1813
Oil/Ghee	Household consumes oil	100.0 (100.0, 100.0)	100.0 (100.0, 100.0)	
	Household consumes fortifiable oil	98.3 (96.9, 99.7)	99.7 (99.4, 100.0)	0.0622
	Household consumes fortified oil	29.4 (22.4, 36.5)	31.4 (20.3, 42.4)	0.7572
Wheat flour	Household consumes wheat flour	95.8 (91.3, 100.0)	84.4 (73.2, 95.7)	0.0055
	Household consumes fortifiable wheat flour	53.1 (36.2, 69.9)	43.9 (24.2, 63.6)	0.4403
	Household consumes fortified wheat flour	16.6 (7.2, 26)	22.2 (12.9, 31.4)	0.2360
Urban (Kabul)		N = 122	N = 700	
Salt	Household consumes salt	100.0 (100.0, 100.0)	100.0 (100.0, 100.0)	
	Household consumes fortifiable salt	100.0 (100.0, 100.0)	99.9 (99.7, 100.0)	
	Household consumes fortified salt	42.2 (25.9, 58.5)	43.2 (35.4, 51.1)	0.8919
Oil/Ghee	Household consumes oil	100 (100, 100)	100 (100, 100)	
	Household consumes fortifiable oil	100 (100, 100)	99.9 (99.7, 100)	
	Household consumes fortified oil	53.9 (40.7, 67.1)	55.9 (51.1, 60.8)	0.7580
Wheat flour	Household consumes wheat flour	77.7 (64.6, 90.8)	71 (65.2, 76.8)	0.2448
	Household consumes fortifiable wheat flour	75.3 (62.2, 88.4)	69.9 (64.1, 75.8)	0.3419
	Household consumes fortified wheat flour	47.4 (33.9, 60.9)	53.7 (48.6, 58.9)	0.2744
Urban (Other)		N = 265	N = 557	
Salt	Household consumes salt	100.0 (100.0, 100.0)	100.0 (100.0, 100.0)	
	Household consumes fortifiable salt	99.7 (98.9, 100.0)	100.0 (100.0, 100.0)	
	Household consumes fortified salt	45.4 (34.1, 56.6)	57.9 (45.6, 70.2)	0.0309
Oil/Ghee	Household consumes oil	100.0 (100.0, 100.0)	100.0 (100.0, 100.0)	
	Household consumes fortifiable oil	99.6 (98.8, 100)	99.0 (97.4, 100.0)	0.5342
	Household consumes fortified oil	34.5 (17.6, 51.4)	39.5 (32.7, 46.2)	0.5551
Wheat flour	Household consumes wheat flour	87.2 (79.5, 94.9)	67.0 (57.7, 76.2)	<0.0001
	Household consumes fortifiable wheat flour	53.7 (42.2, 65.2)	50.4 (42.4, 58.4)	0.5412
	Household consumes fortified wheat flour	34.3 (23.0, 45.7)	25.4 (17.4, 33.4)	0.0931
Rural		N = 633	N = 327	
Salt	Household consumes salt	100.0 (100.0, 100.0)	100.0 (100.0, 100.0)	
	Household consumes fortifiable salt	100.0 (100.0, 100.0)	100.0 (100.0, 100.0)	
	Household consumes fortified salt	15.7 (5.8, 25.6)	20.7 (0.0, 48.6)	0.6561
Oil/Ghee	Household consumes oil	100.0 (100.0, 100.0)	100.0 (100.0, 100.0)	
	Household consumes fortifiable oil	98.2 (96.7, 99.8)	99.9 (99.6, 100.0)	0.0513
	Household consumes fortified oil	28.8 (21.1, 36.5)	24.6 (13.9, 35.2)	0.5204
Wheat flour	Household consumes wheat flour	96.5 (91.7, 100.0)	91.3 (78.6, 100.0)	0.2033
	Household consumes fortifiable wheat flour	52.7 (34.3, 71.1)	37.3 (13.9, 60.6)	0.2932
	Household consumes fortified wheat flour	15.2 (5.1, 25.3)	15.3 (6.5, 24.0)	0.9858

[1] Abbreviations: CI, confidence interval

[2] All values are percent as indicated and are weighted to correct for unequal probability of selection.

[3] Multidimensional poverty index (MPI) score ≥ 0.33.

[4] "Consumes" refers to households that reported using this food at home.

[5] "Consumes fortifiable" refers to households that reported consuming a food vehicle that was not made at home and is assumed to be industrially processed.

[6] "Consumes fortified" refers to households that consumed a food vehicle that was confirmed to be fortified by brand identification and quantitative analyses.

[7] Rao-Scott modified chi-square test was used to compare the percentages of the two groups.

Table 26 Household coverage of salt, oil/ghee, and wheat flour by IYCF status and place of residence, Afghanistan, 2017[1,2]

Variable		Percentage (95% CI)		P-value[7]
		Inadequate IYCF practices	Adequate IYCF practices[3]	
National		N = 1569	N = 905	
Salt	Household consumes salt[4]	100.0 (100.0, 100.0)	100.0 (100.0, 100.0)	
	Household consumes fortifiable salt[5]	100.0 (100.0, 100.0)	99.9 (99.8, 100)	
	Household consumes fortified salt[6]	18.1 (8.6, 27.6)	32.5 (15.3, 49.8)	<0.0001
Oil/Ghee	Household consumes oil	100.0 (100.0, 100.0)	100.0 (100.0, 100.0)	
	Household consumes fortifiable oil	98.9 (97.8, 100.0)	98.6 (96.7, 100.0)	0.7255
	Household consumes fortified oil	30.6 (23.4, 37.9)	28.8 (20.8, 36.8)	0.6983
Wheat flour	Household consumes wheat flour	93.7 (88.7, 98.6)	86.4 (78.7, 94.1)	<0.0001
	Household consumes fortifiable wheat flour	54.4 (38.6, 70.2)	37.5 (20.9, 54.2)	0.0157
	Household consumes fortified wheat flour	18.5 (9.8, 27.2)	19 (10.1, 27.9)	0.9135
Urban (Kabul)		N = 498	N = 324	
Salt	Household consumes salt	100.0 (100.0, 100.0)	100.0 (100.0, 100.0)	
	Household consumes fortifiable salt	100.0 (100.0, 100.0)	99.8 (99.3, 100.0)	
	Household consumes fortified salt	42.7 (33.7, 51.6)	43.8 (34.4, 53.2)	0.8007
Oil/Ghee	Household consumes oil	100.0 (100.0, 100.0)	100.0 (100.0, 100.0)	
	Household consumes fortifiable oil	99.9 (99.6, 100.0)	100.0 (100.0, 100.0)	
	Household consumes fortified oil	56.4 (50.1, 62.7)	54.4 (47.5, 61.3)	0.6589
Wheat flour	Household consumes wheat flour	71.8 (63.8, 79.9)	72.3 (65.9, 78.8)	0.9054
	Household consumes fortifiable wheat flour	70.2 (62.0, 78.3)	71.6 (65.0, 78.2)	0.7458
	Household consumes fortified wheat flour	53 (45.5, 60.6)	52.4 (46.3, 58.5)	0.8941
Urban (Other)		N = 459	N = 363	
Salt	Household consumes salt	100.0 (100.0, 100.0)	100.0 (100.0, 100.0)	
	Household consumes fortifiable salt	100.0 (100.0, 100.0)	99.7 (99.1, 100.0)	
	Household consumes fortified salt	46.7 (35.2, 58.2)	63.0 (50.7, 75.4)	0.0013
Oil/Ghee	Household consumes oil	100.0 (100.0, 100.0)	100.0 (100.0, 100.0)	
	Household consumes fortifiable oil	98.8 (96.9, 100.0)	99.8 (99.6, 100.0)	0.0665
	Household consumes fortified oil	36.9 (27.1, 46.8)	38.8 (30.3, 47.3)	0.7256
Wheat flour	Household consumes wheat flour	78 (69.2, 86.8)	68.5 (58.2, 78.8)	0.0079
	Household consumes fortifiable wheat flour	53.7 (43.6, 63.9)	48.4 (41.8, 55.1)	0.2126
	Household consumes fortified wheat flour	30.3 (20.9, 39.8)	26.0 (18.7, 33.2)	0.1572
Rural		N = 612	N = 218	
Salt	Household consumes salt	100.0 (100.0, 100.0)	100.0 (100.0, 100.0)	
	Household consumes fortifiable salt	100.0 (100.0, 100.0)	100.0 (100.0, 100.0)	
	Household consumes fortified salt	14.2 (3.7, 24.8)	25.9 (4.0, 47.8)	0.0022
Oil/Ghee	Household consumes oil	100.0 (100.0, 100.0)	100.0 (100.0, 100.0)	
	Household consumes fortifiable oil	98.9 (97.6, 100.0)	98.2 (95.8, 100.0)	0.5728
	Household consumes fortified oil	28.6 (20.2, 37.0)	24.4 (14.8, 34.0)	0.4700
Wheat flour	Household consumes wheat flour	96.3 (90.8, 100.0)	91.1 (81.2, 100.0)	<0.0001
	Household consumes fortifiable wheat flour	53.6 (35.2, 71.9)	32.1 (13.0, 51.3)	0.0045
	Household consumes fortified wheat flour	15.5 (5.7, 25.3)	14.3 (4.5, 24.2)	0.8039

[1] Abbreviations: CI, confidence interval; IYCF, infant and child feeding practices

[2] All values are percent as indicated and are weighted to correct for unequal probability of selection.

[3] Defined as exclusive breastfeeding for children under 6 months and ICFI score of 6 for children 6-59 months.

[4] "Consumes" refers to households that reported using this food at home.

[5] "Consumes fortifiable" refers to households that reported consuming a food vehicle that was not made at home and is assumed to be industrially processed.

[6] "Consumes fortified" refers to households that consumed a food vehicle that was confirmed to be fortified by brand identification and quantitative analyses.

[7] ANOVA was used to compare the percentages of the two groups.

Table 27 Household coverage of salt, oil/ghee, and wheat by dietary diversity status and place of residence and, Afghanistan, 2017[1,2]

Variable		Percentage (95% CI)		P-value[7]
		Did not meet MDD-W	Met MDD-W[3]	
National		N = 1362	N = 1063	
Salt	Household consumes salt[4]	100.0 (100.0, 100.0)	100.0 (100.0, 100.0)	
	Household consumes fortifiable salt[5]	100.0 (100.0, 100.0)	100.0 (99.9, 100.0)	0.8677
	Household consumes fortified salt[6]	18.2 (7.6, 28.7)	33.3 (16.6, 50.0)	0.0076
Oil/Ghee	Household consumes oil	100.0 (100.0, 100.0)	100.0 (100.0, 100.0)	
	Household consumes fortifiable oil	98.9 (97.8, 100.0)	98.6 (96.5, 100.0)	0.7710
	Household consumes fortified oil	28.6 (21.8, 35.4)	36.5 (26.5, 46.5)	0.1386
Wheat flour	Household consumes wheat flour	94.7 (90.0, 99.4)	82.2 (72.2, 92.2)	<0.0001
	Household consumes fortifiable wheat flour	52.6 (35.9, 69.3)	41.4 (26.2, 56.7)	0.1640
	Household consumes fortified wheat flour	17.3 (8.6, 26.0)	23.0 (11.7, 34.3)	0.3286
Urban (Kabul)		N = 371	N = 439	
Salt	Household consumes salt	100.0 (100.0, 100.0)	100.0 (100.0, 100.0)	
	Household consumes fortifiable salt	100.0 (100.0, 100.0)	99.8 (99.5, 100.0)	
	Household consumes fortified salt	37.1 (27.9, 46.4)	47.5 (37.9, 57.2)	0.0374
Oil/Ghee	Household consumes oil	100.0 (100.0, 100.0)	100.0 (100.0, 100.0)	
	Household consumes fortifiable oil	100.0 (100.0, 100.0)	99.9 (99.6, 100.0)	
	Household consumes fortified oil	53.5 (48.2, 58.8)	57.1 (51.5, 62.7)	0.2137
Wheat flour	Household consumes wheat flour	73.2 (64.2, 82.3)	71.1 (64.5, 77.7)	0.6528
	Household consumes fortifiable wheat flour	72.7 (63.3, 82.0)	69.3 (62.5, 76.1)	0.5039
	Household consumes fortified wheat flour	52.9 (45.0, 60.8)	52.9 (46.7, 59.1)	0.9957
Urban (Other)		N = 391	N = 417	
Salt	Household consumes salt	100.0 (100.0, 100.0)	100.0 (100.0, 100.0)	
	Household consumes fortifiable salt	99.8 (99.3, 100.0)	100.0 (100.0, 100.0)	
	Household consumes fortified salt	48.7 (36.8, 60.7)	60.1 (47.6, 72.5)	0.0379
Oil/Ghee	Household consumes oil	100.0 (100.0, 100.0)	100.0 (100.0, 100.0)	
	Household consumes fortifiable oil	98.9 (97, 100.0)	99.5 (98.9, 100.0)	0.4579
	Household consumes fortified oil	34.5 (24.9, 44.1)	41.5 (32.4, 50.6)	0.2457
Wheat flour	Household consumes wheat flour	79.1 (70.5, 87.7)	67.8 (57.6, 77.9)	0.0005
	Household consumes fortifiable wheat flour	53.5 (42.4, 64.5)	49 (42.1, 55.9)	0.3893
	Household consumes fortified wheat flour	30.4 (18.9, 42.0)	25.6 (19.4, 31.8)	0.3190
Rural		N = 600	N = 207	
Salt	Household consumes salt	100.0 (100.0, 100.0)	100.0 (100.0, 100.0)	
	Household consumes fortifiable salt	100.0 (100.0, 100.0)	100.0 (100.0, 100.0)	
	Household consumes fortified salt	15.1 (3.5, 26.8)	24.1 (2.5, 45.7)	0.1260
Oil/Ghee	Household consumes oil	100.0 (100.0, 100.0)	100.0 (100.0, 100.0)	
	Household consumes fortifiable oil	98.9 (97.6, 100.0)	98.1 (95.0, 100.0)	0.5898
	Household consumes fortified oil	27.2 (19.4, 35.1)	31.4 (18.5, 44.2)	0.5333
Wheat flour	Household consumes wheat flour	96.7 (91.5, 100.0)	87.8 (74.5, 100.0)	0.0001
	Household consumes fortifiable wheat flour	51.8 (33.0, 70.7)	34.2 (16.3, 52.2)	0.0351
	Household consumes fortified wheat flour	15.0 (5.5, 24.6)	16.7 (3.2, 30.2)	0.7968

[1] Abbreviations: CI, confidence interval; MDD-W, minimum dietary diversity for women of reproductive age

[2] All values are percent as indicated and are weighted to correct for unequal probability of selection.

[3] Consumed at least five food groups out of ten in the last 24 hours.

[4] "Consumes" refers to households that reported using this food at home.

[5] "Consumes fortifiable" refers to households that reported consuming a food vehicle that was not made at home and is assumed to be industrially processed.

[6] "Consumes fortified" refers to households that consumed a food vehicle that was confirmed to be fortified by brand identification and quantitative analyses.

[7] ANOVA was used to compare the percentages of the two groups.

COSUMPTION OF FORTIFIABLE FOODS USING ADULT MALE EQUIVALENT (AME) METHOD

Table 28 Daily salt, oil/ghee, and wheat flour apparent consumption by AME stratified by population group and place of residence, Afghanistan, 2017[1,2]

Variable			National		Urban (Kabul)		Urban (Other)		Rural		P-value[4]
			N	Median (25%, 75%)	N	Median (25%, 75%)	N	Median (25%, 75%)	N	Median (25%, 75%)	
Fortifiable salt, g/day[3]	Children	6-8 months	115	4.5 (3.3, 10.7)	44	2.7 (2.0, 4.2)	33	4.4 (2.6, 8.5)	38	5 (3.6, 14.0)	0.0007
		9-11 months	132	7.6 (6.2, 9.6)	42	3.4 (2.3, 4.3)	44	4.5 (2.2, 8.6)	46	7.7 (6.4, 9.7)	<0.0001
		12-23 months	424	8.6 (5.9, 12.0)	150	4.6 (3.4, 7.7)	139	6.4 (4.2, 11.3)	135	9.0 (6.5, 12.4)	<0.0001
		24-59 months	1633	11.8 (7.3, 20.4)	530	5.6 (3.7, 8.1)	545	8.6 (5.2, 15.3)	558	12.9 (8.6, 21.6)	<0.0001
	WRA	15-49 years	2414	23.5 (14.5, 38.6)	809	11.1 (7.8, 16.4)	801	16.6 (10.4, 28.6)	804	25.7 (16.6, 41.4)	<0.0001
Fortifiable oil/ghee, g/day	Children	6-8 months	115	14.9 (10.1, 24.5)	44	15.3 (14.1, 25.8)	33	14.9 (10.2, 28.8)	38	13.5 (9.7, 22.9)	0.2320
		9-11 months	133	23.7 (12.0, 27.1)	42	19.0 (13.0, 27.7)	45	21.5 (14.0, 27.0)	46	24.0 (12.0, 26.5)	0.3325
		12-23 months	426	25.8 (17.9, 33.8)	150	27.0 (18.1, 37.0)	140	24.2 (17.8, 33.6)	136	25.9 (17.5, 33.1)	0.5045
		24-59 months	1641	29.0 (21.1, 40.6)	531	30.4 (22.1, 41.7)	550	32.5 (23.0, 46.7)	560	28.5 (20.3, 40.1)	0.0485
	WRA	15-49 years	2425	59.7 (43.1, 87.6)	810	61.7 (45.4, 88.4)	808	64.7 (46.2, 93.9)	807	59.1 (42.4, 85.3)	0.3693
Fortifiable wheat flour, g/day	Children	6-8 months	115	59.9 (0.0, 159.6)	44	66.7 (0.0, 93.0)	33	47.2 (0.0, 100.2)	38	48.7 (0.0, 171.4)	0.5999
		9-11 months	133	0.0 (0.0, 77.8)	42	76.7 (0.0, 125.3)	45	34.1 (0.0, 114.9)	46	0.0 (0.0, 74.8)	0.5218
		12-23 months	426	55.2 (0.0, 188.3)	150	109.7 (0.0, 178.6)	140	0.0 (0.0, 135.1)	136	0.0 (0.0, 189.7)	0.0002
		24-59 months	1641	70.4 (0.0, 235.1)	531	134.1 (0.0, 195.5)	550	74.8 (0.0, 196.5)	560	0.0 (0.0, 241.7)	0.0002
	WRA	15-49 years	2425	0.0 (0.0, 463.2)	810	275.0 (0.0, 404.1)	808	119.3 (0.0, 380.4)	807	0.0 (0.0, 475.8)	<0.0001

[1] Abbreviations: WRA, women of reproductive age (15-49 years)
[2] All values are median as indicated and are weighted to correct for unequal probability of selection.
[3] Fortifiable refers to a food vehicle that was not made at home and is assumed to be industrially processed.
[4] Kruskal-Wallis test was used to compare the medians of the three groups.

Table 29 Daily salt, oil/ghee, and wheat flour apparent consumption by AME stratified by population group, place of residence, and poverty status, Afghanistan, 2017[1,2]

Variable			Poor[3]		Non-poor		
			N	Median (25%, 75%)	N	Median (25%, 75%)	P-value[5]
National							
Fortifiable salt, g/day[4]	Children	6-8 months	48	4.2 (3.8, 13.4)	67	7.1 (2.2, 9.0)	0.1465
		9-11 months	49	7.8 (5.7, 9.8)	83	7.2 (6.2, 9.6)	0.0720
		12-23 months	162	9.5 (6.9, 14.1)	262	6.7 (4.3, 10.0)	<0.0001
		24-59 months	692	13.7 (8.6, 22.2)	941	9.9 (6, 17.5)	<0.0001
	WRA	15-49 years	990	26.5 (16.5, 43.0)	1424	20.4 (11.9, 31.6)	<0.0001
Fortifiable oil/ghee, g/day	Children	6-8 months	48	12.9 (9.8, 20.6)	67	19.6 (12.9, 35.1)	0.2967
		9-11 months	49	20.1 (11.2, 24.7)	84	26.1 (13.3, 28.3)	0.1006
		12-23 months	163	24.3 (15.6, 34.8)	263	27.6 (21.2, 33.8)	0.8755
		24-59 months	696	30.4 (21.9, 41.8)	945	26.9 (19.8, 37.2)	0.0503
	WRA	15-49 years	995	61.6 (43.5, 87.1)	1430	57.6 (42.0, 88.1)	0.2908
Fortifiable wheat flour, g/day	Children	6-8 months	48	0.0 (0.0, 155.5)	67	77.6 (0.0, 166.8)	0.4334
		9-11 months	49	0.0 (0.0, 78.7)	84	0.0 (0.0, 77.7)	0.7240
		12-23 months	163	137.7 (0.0, 225.7)	263	0.0 (0.0, 101.3)	0.0075
		24-59 months	696	83.1 (0.0, 257.3)	945	0.0 (0.0, 189.8)	0.0545
	WRA	15-49 years	995	176.8 (0.0, 524.0)	1430	0.0 (0.0, 361.9)	0.0230
Urban (Kabul)							
Fortifiable salt, g/day	Children	6-8 months	7	2.4 (1.9, 4.5)	37	2.8 (2.0, 4.0)	0.6533
		9-11 months	7	2.7 (1.9, 3.9)	35	3.5 (2.4, 4.3)	0.6126
		12-23 months	19	4.2 (3.4, 8.4)	131	4.6 (3.4, 7.3)	0.9212
		24-59 months	81	6.1 (4.4, 9.4)	449	5.5 (3.7, 7.8)	0.3695
	WRA	15-49 years	121	11.7 (9.1, 17.9)	688	11 (7.6, 16.1)	0.2242
Fortifiable oil/ghee, g/day	Children	6-8 months	7	15.1 (12.2, 19.1)	37	15.3 (13.7, 25.9)	0.1778
		9-11 months	7	15.8 (13.0, 19.6)	35	18.7 (13.0, 27.9)	0.6365
		12-23 months	19	25.8 (18.7, 37.3)	131	27.0 (18.0, 36.8)	0.8787
		24-59 months	81	34.4 (22.1, 47.8)	450	29.9 (21.9, 40.8)	0.9214
	WRA	15-49 years	121	67.2 (47.1, 93.4)	689	61.4 (45.0, 85.9)	0.9578
Fortifiable wheat flour, g/day	Children	6-8 months	7	83.3 (63.1, 106.7)	37	61.8 (0.0, 92.5)	0.6363
		9-11 months	7	126.3 (125.4, 143.2)	35	51.3 (0.0, 89.5)	0.1798
		12-23 months	19	116.7 (110.4, 183.6)	131	96.9 (0.0, 166.3)	0.6206
		24-59 months	81	139.2 (0.0, 195.6)	450	132.0 (0.0, 195.5)	0.9029
	WRA	15-49 years	121	307.7 (17.3, 452.3)	689	268.7 (0.0, 392.0)	0.2358
Urban (Other)							
Fortifiable salt, g/day	Children	6-8 months	13	3.7 (2.6, 4.9)	20	5.4 (2.5, 9.3)	0.8250
		9-11 months	11	6.9 (1.2, 10.1)	33	4.5 (2.4, 6.3)	0.9352
		12-23 months	39	8.1 (4.5, 11.3)	100	5.9 (4.0, 12.7)	0.2384
		24-59 months	181	10.4 (5.5, 17.2)	364	7.7 (4.9, 13.0)	0.0015
	WRA	15-49 years	255	19.7 (10.9, 32.0)	546	16.0 (10.1, 27.0)	0.0084
Fortifiable oil/ghee, g/day	Children	6-8 months	13	12.3 (10.2, 17.1)	20	22.7 (9.9, 33.5)	0.9853
		9-11 months	11	18.4 (15.5, 22.7)	34	23.7 (13.4, 30.5)	0.4840
		12-23 months	39	25.2 (17.3, 31.4)	101	22.7 (17.9, 35.7)	0.8854
		24-59 months	183	34.7 (24.0, 46.3)	367	30.9 (22.9, 47.3)	0.2277
	WRA	15-49 years	257	66.8 (48.5, 89.3)	551	62.4 (45.0, 98.2)	0.3211
Fortifiable wheat flour, g/day	Children	6-8 months	13	38.8 (0.0, 76.0)	20	23.5 (0.0, 123.2)	0.9085
		9-11 months	11	77.5 (4.1, 124.2)	34	0.0 (0.0, 113.7)	0.3761
		12-23 months	39	89.3 (0.0, 139.8)	101	0.0 (0.0, 128.8)	0.2700
		24-59 months	183	71.0 (0.0, 244.2)	367	75.5 (0.0, 185.7)	0.0725
	WRA	15-49 years	257	143.4 (0.0, 411.8)	551	14.2 (0.0, 366.0)	0.0592
Rural							
Fortifiable salt, g/day	Children	6-8 months	28	4.1 (3.6, 14.4)	10	8.5 (2.0, 9.5)	0.6308
		9-11 months	31	7.8 (6.2, 9.7)	15	7.3 (6.4, 9.7)	0.5117

		12-23 months	104	9.6 (7.3, 14.1)	31	7.2 (5.0, 9.6)	0.0110
		24-59 months	430	14.0 (8.8, 22.7)	128	10.7 (8.0, 19.0)	0.0247
	WRA	15-49 years	614	27.4 (17.2, 45.0)	190	22.9 (16.0, 35.9)	0.0367
Fortifiable oil/ghee, g/day	Children	6-8 months	28	12.8 (9.6, 20.7)	10	19.9 (11.3, 36.5)	0.2963
		9-11 months	31	19.5 (10.5, 24.3)	15	26.1 (13.2, 28.0)	0.1597
		12-23 months	105	24.2 (15.6, 34.9)	31	27.7 (21.9, 32.7)	0.5491
		24-59 months	432	30.4 (21.8, 41.6)	128	26.1 (17.9, 35.3)	0.0196
	WRA	15-49 years	617	60.9 (43.3, 85.6)	190	56.5 (39.1, 85.0)	0.3515
Fortifiable wheat flour, g/day	Children	6-8 months	28	0.0 (0.0, 158.9)	10	68.1 (0.0, 204.0)	0.1787
		9-11 months	31	0.0 (0.0, 64.6)	15	0.0 (0.0, 75.0)	0.5348
		12-23 months	105	143.3 (0.0, 229.3)	31	0.0 (0.0, 0.0)	0.0007
		24-59 months	432	82.5 (0.0, 257.3)	128	0.0 (0.0, 168.4)	0.1061
	WRA	15-49 years	617	167.8 (0.0, 526.1)	190	0.0 (0.0, 307.4)	0.0536

[1] Abbreviations: WRA, women of reproductive age (15-49 years)

[2] All values are median as indicated and are weighted to correct for unequal probability of selection.

[3] Poor refers to households with a multidimensional poverty index (MPI) score ≥ 0.33.

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

[5] Wilcoxon rank-sum test was used to compare the medians of the two groups.

Table 30 Daily salt, oil/ghee, and wheat flour apparent consumption by AME stratified by population group, place of residence, and IYCF status, Afghanistan, 2017[1,2]

Variable			Inadequate IYCF practices		Adequate IYCF practices[3]		
			N	Median (25%, 75%)	N	Median (25%, 75%)	P-value[5]
National							
Fortifiable salt, g/day[4]	Children	6-8 months	58	9.3 (2.9, 14.8)	57	4.0 (3.4, 5.4)	0.8382
		9-11 months	64	9.6 (5.5, 10.0)	68	7.3 (6.2, 7.8)	0.0832
		12-23 months	285	9.5 (6.5, 12.7)	139	5.2 (3.2, 8.6)	0.0023
		24-59 months	1107	13.4 (8.5, 21.0)	526	8.6 (5.4, 12.8)	<0.0001
	WRA	15-49 years	1523	26.4 (16.6, 41.7)	891	20.0 (11.0, 28.2)	<0.0001
Fortifiable oil/ghee, g/day	Children	6-8 months	58	15.2 (13.0, 23.2)	57	12.1 (9.3, 24.5)	0.8492
		9-11 months	64	13.2 (12.0, 20.6)	69	26.1 (20.8, 27.9)	0.2198
		12-23 months	286	26.9 (18.0, 33.8)	140	24.5 (17.2, 28.8)	0.6202
		24-59 months	1115	30.2 (21.5, 42.2)	526	26.6 (19.7, 33.2)	0.0198
	WRA	15-49 years	1532	59.4 (43.4, 86.5)	893	60.5 (42.0, 88.5)	0.3785
Fortifiable wheat flour, g/day	Children	6-8 months	58	103.7 (0.0, 183.1)	57	0.0 (0.0, 154.8)	0.4803
		9-11 months	64	74.2 (0.0, 118.8)	69	0.0 (0.0, 57.0)	0.7296
		12-23 months	286	67.4 (0.0, 202.4)	140	0.0 (0.0, 154.0)	0.0493
		24-59 months	1115	94.0 (0.0, 252.2)	526	0.0 (0.0, 148.4)	<0.0001
	WRA	15-49 years	1532	194.5 (0.0, 496.9)	893	0.0 (0.0, 325.9)	<0.0001
Urban (Kabul)							
Fortifiable salt, g/day	Children	6-8 months	26	2.6 (2.0, 3.9)	18	2.7 (2.0, 4.4)	0.2936
		9-11 months	15	3.9 (2.7, 4.2)	27	3 (1.9, 4.3)	0.2936
		12-23 months	99	4.5 (3.4, 6.5)	51	4.8 (3.6, 8.5)	0.2309
		24-59 months	337	5.8 (3.9, 8.5)	193	5.1 (3.5, 7.2)	0.0059
	WRA	15-49 years	488	11.3 (7.8, 16.9)	321	11.0 (7.8, 15.5)	0.1013
Fortifiable oil/ghee, g/day	Children	6-8 months	26	15.3 (14.5, 25.9)	18	14.6 (10.9, 18.9)	0.5427
		9-11 months	15	14.3 (11.9, 30.4)	27	19.5 (13.1, 23.3)	0.7727
		12-23 months	99	27.2 (16.8, 36.0)	51	25.9 (20.4, 37.5)	0.9304
		24-59 months	338	30.5 (22.9, 41.8)	193	29.6 (21.1, 41.5)	0.8150
	WRA	15-49 years	489	61.7 (45.2, 89.7)	321	61.7 (46.0, 85.4)	0.9712
Fortifiable wheat flour, g/day	Children	6-8 months	26	72.8 (0.0, 100.0)	18	61.8 (0.0, 85.0)	0.3502
		9-11 months	15	0.0 (0.0, 65.5)	27	89.9 (24.5, 126.0)	0.1056
		12-23 months	99	103.3 (0.0, 165.6)	51	110.9 (0.0, 185.1)	0.2878
		24-59 months	338	135.0 (0.0, 195.4)	193	130.2 (0.0, 195.3)	0.9744
	WRA	15-49 years	489	275.2 (0.0, 395.1)	321	272.3 (0.0, 419.9)	0.8080
Urban (Other)							
Fortifiable salt, g/day	Children	6-8 months	16	5.0 (2.4, 10.0)	17	4.1 (2.7, 6.6)	0.6919
		9-11 months	24	5.5 (4.0, 10.3)	20	3.6 (1.8, 6.7)	0.3896
		12-23 months	79	8.5 (4.6, 13.2)	60	5.2 (3.6, 7.4)	0.0065
		24-59 months	321	10.0 (6.1, 16.7)	224	6.7 (4.5, 10.9)	<0.0001
	WRA	15-49 years	445	20.6 (11.9, 33.3)	356	13.7 (9.2, 22.6)	<0.0001
Fortifiable oil/ghee, g/day	Children	6-8 months	16	16.1 (10.1, 28.2)	17	12.4 (10.2, 28.1)	0.7458
		9-11 months	24	21.5 (15.9, 26.6)	21	18.9 (13.4, 26.8)	0.7158
		12-23 months	80	25.7 (17.8, 36.6)	60	22.4 (17.6, 30.2)	0.3052
		24-59 months	326	34.0 (24.4, 49.0)	224	30.8 (22.3, 42.3)	0.3635
	WRA	15-49 years	451	66.8 (48.1, 97.9)	357	61.3 (43.7, 89.2)	0.4141
Fortifiable wheat flour, g/day	Children	6-8 months	16	73.0 (0.0, 191.7)	17	0.0 (0.0, 70.0)	0.5119
		9-11 months	24	24.6 (0.0, 125.8)	21	21.0 (0.0, 87.5)	0.9710
		12-23 months	80	0.0 (0.0, 150.2)	60	62.4 (0.0, 123.9)	0.4951
		24-59 months	326	86.6 (0.0, 224.2)	224	0.0 (0.0, 163.1)	0.0045
	WRA	15-49 years	451	169.8 (0.0, 413.3)	357	0.0 (0.0, 327.1)	0.0154
Rural							
Fortifiable salt, g/day	Children	6-8 months	16	12.1 (7.6, 16.7)	22	4.0 (3.4, 5.3)	0.0097
		9-11 months	25	9.7 (6.4, 10.0)	21	7.4 (6.3, 7.8)	0.9122
		12-23 months	107	9.5 (6.9, 12.8)	28	5.1 (3.1, 8.8)	0.0102
		24-59 months	449	14.5 (9.3, 22.2)	109	9.6 (5.8, 16.1)	<0.0001
	WRA	15-49 years	590	27.7 (17.9, 44.3)	214	21.1 (12.9, 32.7)	<0.0001

Fortifiable oil/ghee, g/day	Children	6-8 months	16	14.5 (12.7, 21.5)	22	10.2 (9.1, 23.1)	0.8941
		9-11 months	25	12.0 (11.5, 18.4)	21	26.1 (21.5, 27.9)	0.0372
		12-23 months	107	26.9 (18.0, 33.4)	29	24.5 (15.1, 28.3)	0.7987
		24-59 months	451	29.2 (21.1, 42.0)	109	25.4 (19.3, 30.6)	0.0002
	WRA	15-49 years	592	58.9 (43.1, 85.0)	215	59.6 (40.5, 85.7)	0.3833
Fortifiable wheat flour, g/day	Children	6-8 months	16	98.3 (0.0, 179.7)	22	0.0 (0.0, 157.9)	0.7370
		9-11 months	25	74.2 (0.0, 119.1)	21	0.0 (0.0, 0.0)	0.2244
		12-23 months	107	47.2 (0.0, 208.0)	29	0.0 (0.0, 140.1)	0.0396
		24-59 months	451	93.3 (0.0, 256.0)	109	0.0 (0.0, 112.6)	0.0001
	WRA	15-49 years	592	177.8 (0.0, 524.1)	215	0.0 (0.0, 277.2)	<0.0001

[1] Abbreviations: WRA, women of reproductive age (15-49 years)

[2] All values are median as indicated and are weighted to correct for unequal probability of selection.

[3] Defined as exclusive breastfeeding for children under 6 months and ICFI score of 6 for children 6-59 months.

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

[5] Wilcoxon rank-sum test was used to compare the medians of the two groups.

Table 31 Daily salt, oil/ghee, and wheat flour apparent consumption by AME stratified by population group, place of residence, and dietary diversity status, Afghanistan, 2017[1,2]

Variable			Did not meet MDD-W		Met MDD-W[3]		
			N	Median (25%, 75%)	N	Median (25%, 75%)	P-value[5]
National							
Fortifiable salt, g/day[4]	Children	6-8 months	59	5.3 (3.6, 14.5)	56	4.0 (2.6, 6.1)	0.1504
		9-11 months	74	7.8 (6.4, 9.8)	57	4.8 (2.9, 7.2)	0.0053
		12-23 months	234	9.1 (6.9, 12.4)	181	6.4 (3.7, 11.8)	0.0045
		24-59 months	914	13.6 (8.6, 21.4)	682	9.7 (5.7, 15.3)	<0.0001
	WRA	15-49 years	1353	26.5 (17.0, 41.0)	1061	17.7 (10.7, 30.4)	<0.0001
Fortifiable oil/ghee, g/day	Children	6-8 months	59	13.3 (9.8, 21.8)	56	19.2 (10.6, 27.3)	0.9509
		9-11 months	74	24.1 (12.0, 26.2)	58	20.2 (12, 36.2)	0.5076
		12-23 months	235	25.9 (15.8, 33.7)	182	23.2 (18.9, 37.5)	0.7948
		24-59 months	922	30.5 (21.1, 42.1)	682	26.8 (21.1, 35.0)	0.0755
	WRA	15-49 years	1362	62.7 (43.3, 88.3)	1063	56.5 (42.0, 78.7)	0.1346
Fortifiable wheat flour, g/day	Children	6-8 months	59	102.0 (0.0, 176.2)	56	0.0 (0.0, 126.9)	0.0441
		9-11 months	74	0.0 (0.0, 79.0)	58	0.0 (0.0, 72.7)	0.0285
		12-23 months	235	99.7 (0.0, 211.0)	182	0.0 (0.0, 96.5)	0.0059
		24-59 months	922	93.9 (0.0, 249.4)	682	0.0 (0.0, 170.7)	0.0022
	WRA	15-49 years	1362	178.2 (0.0, 496.9)	1063	0.0 (0.0, 325.6)	<0.0001
Urban (Kabul)							
Fortifiable salt, g/day	Children	6-8 months	21	3.2 (1.8, 4.5)	23	2.5 (2.1, 3.8)	0.9625
		9-11 months	22	3.4 (2.6, 4.3)	20	3.0 (1.7, 4.2)	0.5045
		12-23 months	63	5.1 (3.4, 8.5)	83	4.5 (3.4, 7.0)	0.3440
		24-59 months	239	5.8 (4.0, 8.3)	283	5.4 (3.6, 7.8)	0.0074
	WRA	15-49 years	370	11.6 (8.3, 17.9)	439	10.5 (7.7, 15.5)	0.0014
Fortifiable oil/ghee, g/day	Children	6-8 months	21	22.9 (14.5, 25.9)	23	15.1 (13.9, 21.5)	0.3595
		9-11 months	22	15.0 (12.8, 27.8)	20	19.5 (13.0, 23.5)	0.5045
		12-23 months	63	30.4 (21.7, 39.5)	83	23.2 (17.2, 36.0)	0.1601
		24-59 months	240	30.4 (21.9, 40.7)	283	30.4 (22.1, 42.5)	0.6189
	WRA	15-49 years	371	64.1 (45.4, 89.7)	439	60.6 (45.4, 86.9)	0.3639
Fortifiable wheat flour, g/day	Children	6-8 months	21	46.9 (0.0, 116.1)	23	72.0 (0.0, 90.8)	0.0592
		9-11 months	22	76.1 (0.0, 125.3)	20	73.9 (0.0, 109.7)	0.4414
		12-23 months	63	129.6 (0.0, 222.6)	83	96.2 (0.0, 143.0)	0.3706
		24-59 months	240	143.8 (0.0, 208.8)	283	130.1 (0.0, 187.7)	0.5286
	WRA	15-49 years	371	289.9 (0.0, 440.5)	439	269.5 (0.0, 359.3)	0.1793
Urban (Other)							
Fortifiable salt, g/day	Children	6-8 months	14	3.7 (1.9, 10.3)	19	4.6 (3.1, 5.6)	0.6358
		9-11 months	18	5.9 (2.1, 10.4)	25	3.8 (2.3, 5.5)	0.2325
		12-23 months	69	8.1 (4.2, 13.4)	70	5.6 (4.0, 9.7)	0.7745
		24-59 months	271	10.1 (5.6, 17.1)	262	7.1 (4.8, 10.8)	0.0001
	WRA	15-49 years	385	20.2 (11.0, 34.9)	416	14.7 (9.8, 23.0)	0.0013
Fortifiable oil/ghee, g/day	Children	6-8 months	14	11.8 (10.0, 27.2)	19	15.9 (10.7, 28.3)	0.5973
		9-11 months	18	23.1 (15.6, 26.4)	26	17.3 (14.0, 26.8)	0.3103
		12-23 months	70	26.0 (19.4, 36.5)	70	20.9 (16.6, 31.4)	0.5526
		24-59 months	276	34.6 (24.6, 50.4)	262	30.8 (22.7, 42.7)	0.2991
	WRA	15-49 years	391	67.3 (48.2, 98.8)	417	61.2 (43.7, 88.7)	0.2828
Fortifiable wheat flour, g/day	Children	6-8 months	14	78.8 (0.0, 148.9)	19	0.0 (0.0, 55.6)	0.5827
		9-11 months	18	78.5 (0.0, 144.1)	26	0.0 (0.0, 86.1)	0.0400
		12-23 months	70	90.8 (0.0, 153.6)	70	0.0 (0.0, 107.9)	0.1740
		24-59 months	276	78.3 (0.0, 220.5)	262	61.2 (0.0, 179.2)	0.0542
	WRA	15-49 years	391	172.0 (0.0, 418.5)	417	0.0 (0.0, 337.6)	0.0096
Rural							
Fortifiable salt, g/day	Children	6-8 months	24	6.7 (3.5, 14.7)	14	4.0 (3.5, 6.2)	0.0586
		9-11 months	34	7.8 (6.4, 9.7)	12	6.9 (3.6, 7.1)	0.0402
		12-23 months	102	9.1 (7.2, 12.4)	28	6.2 (3.6, 18.8)	0.4633
		24-59 months	404	14.5 (8.9, 22.2)	137	10.4 (7.0, 18.7)	0.0003
	WRA	15-49 years	598	27.4 (17.9, 42.8)	206	20.4 (13.1, 33.8)	<0.0001

Fortifiable oil/ghee, g/day	Children	6-8 months	24	13.2 (9.6, 20.9)	14	19.6 (9.6, 34.7)	0.4052
		9-11 months	34	23.9 (12.0, 26.2)	12	23.6 (10.1, 36.0)	0.8025
		12-23 months	102	25.9 (15.6, 32.6)	29	22.8 (20.5, 36.1)	0.0080
		24-59 months	406	30.1 (20.6, 41.9)	137	25.7 (19.8, 31.1)	0.0038
	WRA	15-49 years	600	61.6 (42.9, 87.8)	207	55.8 (39.9, 74.1)	0.4500
Fortifiable wheat flour, g/day	Children	6-8 months	24	23.5 (0.0, 178.5)	14	0.0 (0.0, 154.1)	0.4613
		9-11 months	34	0.0 (0.0, 74.7)	12	0.0 (0.0, 17.5)	0.2772
		12-23 months	102	97.8 (0.0, 211.1)	29	0.0 (0.0, 0.0)	0.0087
		24-59 months	406	93.3 (0.0, 252.5)	137	0.0 (0.0, 161.1)	0.0051
	WRA	15-49 years	600	163.9 (0.0, 513.6)	207	0.0 (0.0, 269)	0.0001

[1] Abbreviations: WRA, women of reproductive age (15-49 years)

[2] All values are median as indicated and are weighted to correct for unequal probability of selection.

[3] Consumed at least five food groups out of ten in the last 24 hours.

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

[5] Wilcoxon rank-sum test was used to compare the medians of the two groups.

CONSUMPTION OF FORTIFIABLE FOODS USING FOOD FREQUENCY QUESTIONNAIRE (FFQ) ASSESSMENT METHOD

Table 32 Daily wheat flour consumption by individual FFQ stratified by population group and place of residence, Afghanistan, 20171, 2

Variable			National		Urban (Kabul)		Urban (Other)		Rural		
			N	Median (25%, 75%)	N	Median (25%, 75%)	N	Median (25%, 75%)	N	Median (25%, 75%)	P-value[4]
Fortifiable wheat flour, g/day[3]	Children	6-8 months	115	5.2 (0.0, 17.0)	44	0.0 (0.0, 3.6)	33	15.5 (0.0, 28.5)	38	5.2 (0.0, 16.4)	0.1271
		9-11 months	133	12.8 (0.8, 22.0)	42	29.5 (17.1, 64.9)	45	13.7 (5.3, 29.6)	46	12.2 (0.2, 21.6)	<0.0001
		12-23 months	426	26.5 (15.8, 56.1)	150	37.2 (22.8, 59.4)	140	37.3 (22.2, 68.6)	136	24.5 (14.9, 53.6)	0.0271
		24-59 months	1641	62.8 (39.9, 119.7)	531	64.7 (38.0, 119.2)	550	68.4 (39.3, 126.0)	560	62.1 (39.8, 119.7)	<0.0001
	WRA	15-49 years	2425	262.8 (178.9, 360.0)	810	257.1 (239.3, 359.2)	808	257.0 (160.7, 359.2)	807	263.6 (183.0, 359.9)	0.2861

[1] Abbreviations: WRA, women of reproductive age (15-49 years)
[2] All values are median as indicated and are weighted to correct for unequal probability of selection.
[3] Fortifiable refers to a food vehicle that was not made at home and is assumed to be industrially processed.
[4] Kruskal-Wallis test was used to compare the medians of the three groups.

Table 33 Daily wheat flour consumption by individual FFQ stratified by population group, place of residence, and poverty status, Afghanistan, 2017[1,2]

Variable			Poor[3]		Non-poor		
			N	Median (25%, 75%)	N	Median (25%, 75%)	P-value[5]
National							
Fortifiable wheat flour, g/day[4]	Children	6-8 months	48	5.3 (0.0, 14.6)	67	0.0 (0.0, 26.1)	0.1710
		9-11 months	49	9.0 (0.0, 17.8)	84	13.7 (8.8, 22.1)	0.4346
		12-23 months	163	28.0 (17.0, 46.8)	263	24.4 (14.1, 63.9)	0.0308
		24-59 months	696	57.3 (36.7, 101.8)	945	92.6 (47.1, 138.6)	<0.0001
	WRA	15-49 years	995	260.6 (163.4, 359.3)	1430	271.1 (222.7, 374.1)	0.0001
Urban (Kabul)							
Fortifiable wheat flour, g/day	Children	6-8 months	7	5.1 (0.6, 58.3)	37	0.0 (0.0, 0.0)	0.5166
		9-11 months	7	21.8 (12.9, 45.4)	35	30.2 (18.3, 64.6)	0.2114
		12-23 months	19	39.0 (16.1, 51.5)	131	35.9 (23.2, 59.9)	0.3733
		24-59 months	81	59.5 (41.4, 119.4)	450	65.6 (36.4, 118.8)	0.9204
	WRA	15-49 years	121	249.7 (232.6, 287.1)	689	259.7 (239.3, 359.4)	0.6485
Urban (Other)							
Fortifiable wheat flour, g/day	Children	6-8 months	13	9.1 (0.0, 20.4)	20	20.0 (0.3, 31.0)	0.9551
		9-11 months	11	13.5 (6.3, 17.9)	34	12.7 (3.2, 29.8)	0.4798
		12-23 months	39	29.1 (20.5, 58.2)	101	39.1 (22.2, 69.7)	0.5167
		24-59 months	183	58.1 (31.9, 115.0)	367	73.6 (46.1, 130.2)	0.0020
	WRA	15-49 years	257	238.8 (136.0, 295.8)	551	266.7 (183.7, 376.2)	<0.0001
Rural							
Fortifiable wheat flour, g/day	Children	6-8 months	28	5.2 (0.1, 14.5)	10	0.7 (0.0, 22.7)	0.7504
		9-11 months	31	8.4 (0.0, 17.8)	15	12.9 (7.4, 21.7)	0.7955
		12-23 months	105	27.6 (17.0, 46.6)	31	21.2 (13.7, 59.9)	0.9153
		24-59 months	432	57.1 (37.1, 101.2)	128	101.1 (49.9, 146.5)	0.0709
	WRA	15-49 years	617	261.6 (166.5, 358.4)	190	269.5 (230.2, 379.4)	0.5440

[1] Abbreviations: WRA, women of reproductive age (15-49 years)
[2] All values are median as indicated and are weighted to correct for unequal probability of selection.
[3] Poor refers to households with a multidimensional poverty index (MPI) score ≥ 0.33.
[4] Fortifiable refers to a food vehicle that was not made at home and is assumed to be industrially processed.
[5] Wilcoxon rank-sum test was used to compare the medians of the two groups.

Table 34 Daily wheat flour consumption by individual FFQ stratified by population group, place of residence, and IYCF status, Afghanistan, 2017[1,2]

Variable			Inadequate IYCF practices		Adequate IYCF practices[3]		
			N	Median (25%, 75%)	N	Median (25%, 75%)	P-value[5]
National							
Fortifiable wheat flour, g/day[4]	Children	6-8 months	58	0.0 (0.0, 4.1)	57	13.5 (5.2, 23.1)	<0.0001
		9-11 months	64	7.2 (0.0, 15.3)	69	13.8 (8.1, 22.3)	0.0650
		12-23 months	286	22.0 (14.7, 46.4)	140	39.4 (24.1, 63.9)	0.2598
		24-59 months	1115	59.1 (36.9, 109.9)	526	95.4 (52.7, 137.9)	<0.0001
	WRA	15-49 years	1532	262.8 (162.5, 364.1)	893	261.4 (222.7, 350.2)	0.0413
Urban (Kabul)							
Fortifiable wheat flour, g/day	Children	6-8 months	26	0.0 (0.0, 0.0)	18	7.0 (0.0, 16.7)	0.0233
		9-11 months	15	35.6 (23.0, 63.3)	27	29.0 (16.2, 64.8)	0.9372
		12-23 months	99	33.4 (22.2, 64.0)	51	37.8 (24.9, 55.6)	0.4102
		24-59 months	338	62.5 (36.7, 118.0)	193	68.2 (39.8, 119.0)	0.1608
	WRA	15-49 years	489	260.0 (237.7, 359.5)	321	254.5 (238.2, 337.3)	0.9647
Urban (Other)							
Fortifiable wheat flour, g/day	Children	6-8 months	16	0.0 (0.0, 12.1)	17	22.0 (10.8, 44.2)	0.0139
		9-11 months	24	10.0 (0.0, 31.8)	21	13.9 (12.0, 18.5)	0.3067
		12-23 months	80	37.0 (21.7, 69.0)	60	37.6 (22.2, 64.8)	0.8136
		24-59 months	326	63.3 (33.9, 114.2)	224	73.7 (48.9, 136.3)	0.0109
	WRA	15-49 years	451	246.5 (137.1, 356.7)	357	262.8 (191.1, 358.8)	0.0014
Rural							
Fortifiable wheat flour, g/day	Children	6-8 months	16	0.0 (0.0, 3.7)	22	13.1 (5.2, 20.7)	0.0004
		9-11 months	25	5.8 (0.0, 14.4)	21	13.4 (7.8, 21.9)	0.1908
		12-23 months	107	21.2 (14.2, 45.9)	29	39.5 (24.0, 63.7)	0.4442
		24-59 months	451	57.4 (37.5, 108.0)	109	111.9 (59.3, 136.5)	0.0025
	WRA	15-49 years	592	266.0 (162.8, 363.5)	215	261.2 (223.5, 349.5)	0.8181

[1] Abbreviations: WRA, women of reproductive age (15-49 years)

[2] All values are median as indicated and are weighted to correct for unequal probability of selection.

[3] Defined as exclusive breastfeeding for children under 6 months and ICFI score of 6 for children 6-59 months.

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

[5] Wilcoxon rank-sum test was used to compare the medians of the two groups.

Table 35 Daily wheat flour consumption by individual FFQ stratified by population group, place of residence, and dietary diversity status, Afghanistan, 2017[1,2]

Variable			Did not meet MDD-W		Met MDD-W[3]		
			N	Median (25%, 75%)	N	Median (25%, 75%)	P-value[5]
National							
Fortifiable wheat flour, g/day[4]	Children	6-8 months	59	4.7 (0,0, 13.6)	56	14,0 (0,0, 19.2)	0.4548
		9-11 months	74	12.5 (0,0, 21.8)	58	13.8 (13.4, 31.1)	0.2870
		12-23 months	235	25.7 (15.8, 46.7)	182	30.6 (13.9, 61.4)	0.4572
		24-59 months	922	57.6 (35.9, 110.1)	682	86.4 (51.1, 128.6)	<0.0001
	WRA	15-49 years	1362	260.8 (175.8, 359.8)	1063	266.5 (184.9, 368.0)	<0.0001
Urban (Kabul)							
Fortifiable wheat flour, g/day	Children	6-8 months	21	0.0 (0.0, 3.7)	23	0.0 (0.0, 3.1)	0.7974
		9-11 months	22	26.8 (18.0, 61.1)	20	31.4 (14.7, 65.7)	0.4127
		12-23 months	63	41.4 (28.8, 63.3)	83	33.5 (22.1, 54.1)	0.1600
		24-59 months	240	60.0 (37.1, 115.8)	283	68.3 (37.7, 119.8)	0.0520
	WRA	15-49 years	371	247.6 (231.2, 359.1)	439	262.7 (239.4, 358.2)	0.1281
Urban (Other)							
Fortifiable wheat flour, g/day	Children	6-8 months	14	9.4 (0.0, 29.2)	19	17.3 (2.9, 23.8)	0.7383
		9-11 months	18	13.3 (10.5, 23.0)	26	13.6 (0.0, 30.3)	0.3347
		12-23 months	70	37.0 (22.0, 77.6)	70	36.9 (21.9, 53.5)	0.5319
		24-59 months	276	61.1 (31.9, 108.7)	262	79.5 (50.0, 136.2)	0.0011
	WRA	15-49 years	391	243.0 (137.1, 327.3)	417	270.2 (191.7, 375.3)	<0.0001
Rural							
Fortifiable wheat flour, g/day	Children	6-8 months	24	4.8 (0.0, 13.4)	14	14.8 (4.2, 18.5)	0.3357
		9-11 months	34	11.2 (0.0, 21.1)	12	13.6 (13.0, 23.0)	0.0944
		12-23 months	102	24.8 (15.3, 46.2)	29	23.3 (13.7, 60.9)	0.0194
		24-59 months	406	57.1 (36.3, 109.7)	137	90.3 (51.7, 131)	0.0001
	WRA	15-49 years	600	262.3 (194.1, 359.6)	207	266.6 (166.8, 365.3)	0.0405

[1] Abbreviations: WRA, women of reproductive age (15-49 years)
[2] All values are median as indicated and are weighted to correct for unequal probability of selection.
[3] Consumed at least five food groups out of ten in the last 24 hours.
[4] Fortifiable refers to a food vehicle that was not made at home and is assumed to be industrially processed.
[5] Wilcoxon rank-sum test was used to compare the medians of the two groups.

FORTIFICATION ASSESSMENT COVERAGE TOOLKIT (FACT) SURVEY IN AFGHANISTAN, 2017