QUANTITATIVE DATA

Overview

Data on global food aid deliveries in metric tons are from the database of the International Food Aid Information System (INTERFAIS), which was developed by WFP as a contribution to a coordinated international response to food aid shortages in Africa. INTERFAIS involved the interaction of all users, represented by donor governments, international organizations, Non-Governmental Organizations, recipient countries and WFP field offices. They shared information and data on food aid transactions. The integrated database monitored food aid allocations and shipments for the purpose of improving food aid management, coordination, reporting and statistical analysis. Data are available from 1988 to 2014[1].

The Variables

Year

The year in which the food aid delivered reached the recipient country. A year is always considered as a 12-month calendar period, starting in January and ending in December.

Donor

The primary source that provides food aid from its own resources. FAIS includes all donors that donated at least once since 1988. All Non-Governmental Organizations (NGOs) and all Private sector donors are grouped together.

Recipient

The country that receives food aid. FAIS includes all recipient countries since 1988. They are aggregated by geographical area.

Commodity

The commodity delivered as food aid or locally purchased. Commodities are distinguished by specific variety (e.g. among fish: sardines and stockfish), packaging (canned/not canned) and kind of conservation (dried, lyophilised, fresh). The commodities are divided in two groups: CEREALS and NON CEREALS.

Food aid type

Food aid is classified in three categories:

Emergency food aid is for victims of natural or man-made disasters. It is freely distributed to targeted beneficiary groups and is usually provided on a grant basis. It is channeled multilaterally, through NGOs or, sometimes, bilaterally.

Project food aid aims at supporting specific poverty-reduction and disaster-prevention activities. It is usually freely distributed to targeted beneficiary groups, but may also be sold on the open market and is then referred to as "monetized" food aid. Project food aid is provided on a grant basis and is channeled multilaterally, through NGOs or bilaterally.

Programme food aid is usually supplied, on a government-to-government basis, as a resource transfer for balance-of-payments or budgetary support. Unlike most of the food aid provided for project or emergency purposes, it is not targeted at specific beneficiary groups. It is sold on the open market and provided either as a grant or as a loan.

1 Figures for 2013 - 2014 are not comprehensive due to a reduced availability of data flows.

Delivery mode

Food aid is classified in the following three categories, according to the origin of the commodities:

Local purchases are the transactions by which food aid is purchased and distributed/utilised in the recipient country.

Triangular purchases are the transactions by which a donor provides commodities purchased in a third country as food aid to a final recipient country.

Direct transfers are the transactions by which food aid is directly delivered from donor to recipient countries. Such operations do not involve either local or triangular purchases.

Aggregations and Groupings

Commodity aggregates

Commodities are divided into two groups: CEREALS and NON-CEREALS. This classification is mutually exclusive, i.e. each commodity falls either in one group or the other.

Donor aggregates

The donor list includes countries (governments) and three groupings: NGOs, PRIVATE donors and OTHERS. No further details are provided on the website on donations from NGOs and the private sector. The group of OTHERS includes the International Governmental Organizations and all the other donors that are neither governments nor NGOs nor private sector.

Recipient Groups

All recipients are grouped by geographical area. The geographical regions are mutually exclusive; each recipient country is included in one and only one group and none is excluded.

Units of Measurement

Food aid deliveries are measured in metric tons. In order to increase comparability among cereal-derived products, actual tons are sometimes converted into grain equivalent metric tons.

ACTUAL TONS

It is the actual weight in metric tons of commodities delivered. One ton is 1,000 kg.

GRAIN EQUIVALENTS

Grain equivalents are computed only for commodities derived from cereals. Grain equivalents are the equivalent tonnage of grains necessary to get the given amount of cereal-derived product. For example, the tonnage of wheat flour is multiplied by 1.37 to derive the grain equivalent tonnage. Non-cereal commodities and products are not derived in grain equivalents.

NUTRITIONAL DATA

Overview

The three indicators measure the nutritional value of food aid based on a simple idea: comparing supply and requirements. Human beings need certain amounts of nutrients in their food to live a healthy and active life. The proposed indicators compare the nutritional content of food aid to nutritional requirements, which vary by age, sex, activity level, health, nutritional status and climate. The humanitarian community has identified average requirements for important nutrients for beneficiary populations in emergencies, which are based on averages using the size of various age-sex groups as weights.

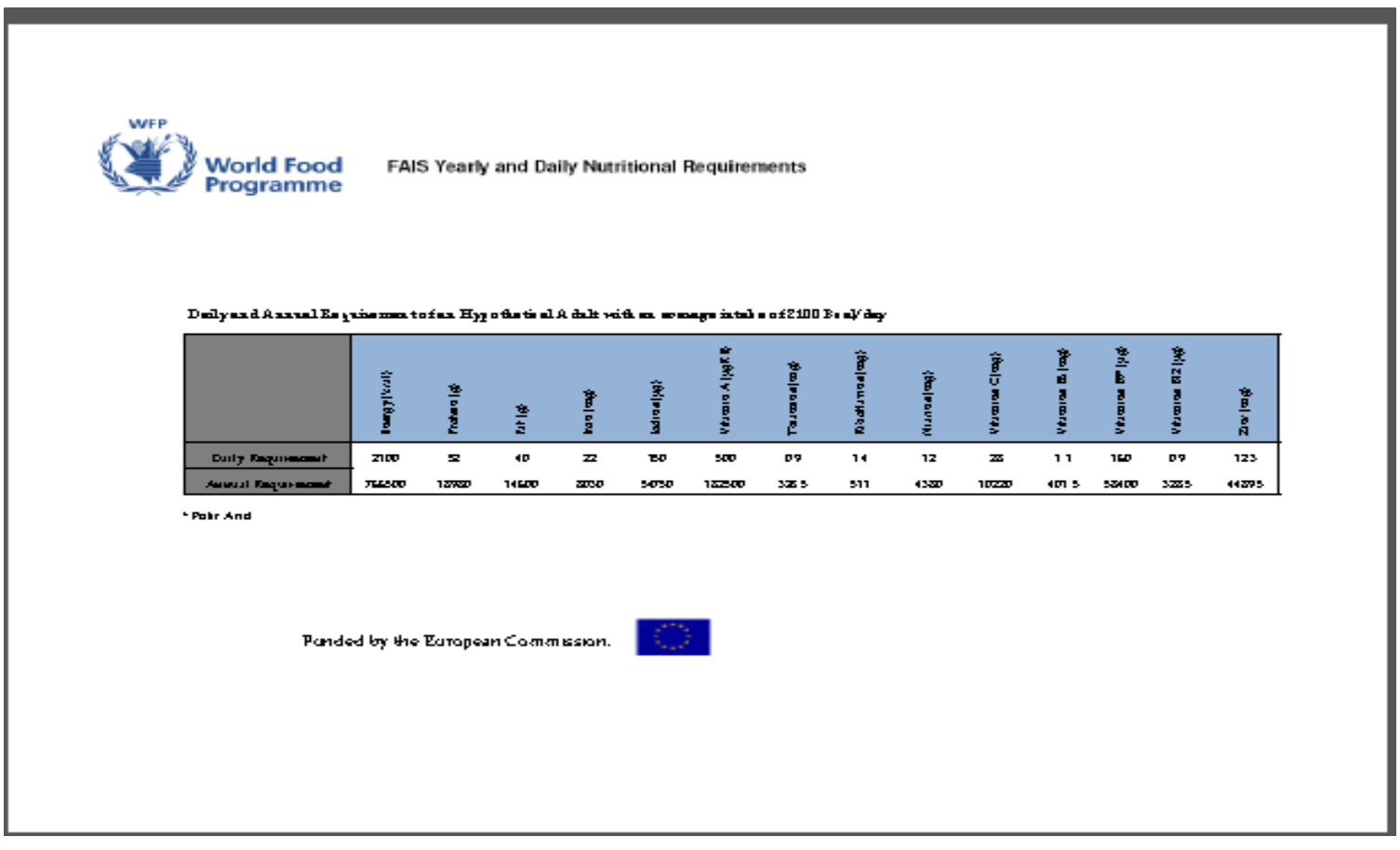
The proposed indicators do not compare the nutrients delivered to the actual needs of beneficiaries but to the requirements of an average individual in a developing country. The actual needs of beneficiaries could be different because of age, diseases, activity levels and other sources of food besides food aid.

The nutritional requirements are used as a yardstick for pragmatic and conceptual reasons. It provided a universal and fixed yardstick against which different food aid deliveries could be assessed. This increases comparability and kept the concept relatively simple. It also allows the indicators to be used for all kinds of food aid, irrespective of their destination or use. Comparing food aid deliveries to the actual nutritional needs of beneficiaries is not feasible as universal, comprehensive and detailed information on nutritional needs and gaps among beneficiaries is not available.

The Concept

The nutritional requirements are used as a yardstick for pragmatic and conceptual reasons. It provided a universal and fixed yardstick against which different food aid deliveries could be assessed. This increases comparability and kept the concept relatively simple. It also allows the indicators to be used for all kinds of food aid, irrespective of their destination or use. Comparing food aid deliveries to the actual nutritional needs of beneficiaries is not feasible as universal, comprehensive and detailed information on nutritional needs and gaps among beneficiaries is not available.

The three indicators compare the supply of nutrients with requirements. The indicators are based on the nutritional requirements for Energy and 13 macro- and micronutrients. These 13 nutrients were chosen on the recommendations of the participants of a workshop held on 8 July 2008.


WFP World Food Programme

FAIS Yearly and Daily Nutritional Requirements

Daily and Annual Requirements for a Hypothetical Adult with an average intake of 2100 Kcal/day

	Energy (Kcal)	Protein (g)	Fat (g)	Iron (mg)	Calcium (mg)	Vitamin A (µg RE)	Thiamine (mg)	Riboflavin (mg)	Niacin (mg)	Vitamin C (mg)	Vitamin B6 (mg)	Vitamin B12 (µg)	Zinc (mg)
Daily Requirement	2100	52	40	22	750	500	0.9	1.4	12	25	1.1	1.50	0.9	12.3
Annual Requirement	766500	18980	14600	8030	54750	182500	328.5	511	4380	10220	401.5	54800	328.5	44895

* Polar And

Funded by the European Commission.

The requirements are compared to the nutrients contained in the food commodities, which are compiled in a Food Composition Table. Thus if a beneficiary receives 0.5 kg of maize per day, which contains 1775 Kcal of energy, the food meets 85 percent of the nutritional requirements (1775/2100 * 100). This is the basic calculation behind the Individual Requirement Met on Average (IRMA). The proposed indicators are all based on averages or manipulations of this basic idea. For example, maize also contains other nutrients and the same calculations can be repeated for those nutrients.

Three indicators are proposed:

IRMAt = Individual Requirements Met on Average, Total: the total number of people for whom the requirements for each nutrient are potentially met based on the total tons delivered/selected. Thus, IRMAtj shows for each nutrient j the total number of people whose nutritional requirements could potentially be satisfied by the total tonnage selected/delivered to the country.

IRMA = Individual Requirements Met on Average: the number of people for whom the requirements for each nutrient could potentially be satisfied with 1 representative ton of the selected food basket. IRMAj scales IRMAtj down to 1 ton by dividing IRMAtj by the total tons selected for the country. This allows for easy comparisons across different food aid deliveries by eliminating the quantity component of IRMAt.

IRMAs = Individual Requirements Met on Average, Score: an average of 13 IRMAj values as a percentage of the IRMA value for energy. No weights are applied, but maximum values are imposed so that outliers are not unduly influencing the average, the indicator is restricted to the interval [0-100] and excess quantities are penalized. IRMAs is the only indicator that is one number.

Each indicator relays a different piece of information. IRMAt provides information about the scale of food aid. IRMA provides information about the nutritional value of 1 ton, allowing comparisons across deliveries without being influenced by the size of the total deliveries. IRMAs provides information in one number on the balance of the food basket that is implicit in the food aid deliveries.

The requirements and metric tons are scaled up for the actual indicators. That is, the nutritional requirements are not per day, but per year. And the nutrient content is not per 100 gram, as is the case for Food Composition Tables, but for 1 metric ton (MT).

ASSESSING THE NUTRITIONAL CONTENT OF COMMODITIES

WFP commissioned a nutritionist to compile a Food Composition Table for the commodities in the INTERFAIS database. The data sources are NutVal (WFP), the United States Department of Agriculture, the Food Composition Database for Epidemiological Studies in Italy (BDA), Istituto Nazionale di Ricerca per gli Alimenti e la Nutrizione (INRAN) and the Food and Agriculture Organization of the United Nations (FAO). The sources for each commodity are indicated within the table.

In terms of metric tons, more than 99% of the commodities have reliable information on energy and macronutrients and 5 or fewer missing values for micronutrients. In the calculation of the indicators, missing values and traces were equated to zeros. IRMAt is not affected by the decision on whether missing values are treated as zeros or not. If the commodities with missing values for a nutrient are excluded, IRMA and IRMAs are affected by this decision. The effect is on average very small, only amounting to a few percentages. Treating missing values as zeros has important advantages, such as comparability, simplicity and maintaining the simple relation between IRMAt and IRMA.

ASSESSING NUTRITIONAL REQUIREMENTS

The Nutritional Requirements are based on the requirements for different population groups specified by age, sex, weight and physical activity. The average requirements are a weighted average by using the size of each age-sex group as weights. This includes specific needs for pregnant and lactating women. These requirements are not the individual requirements of a particular individual, but an average for a group that is representative of the population in a developing country. Food aid programming guidelines usually give specific suggestions for adjustments based on climate, abnormal demographic distributions and specific nutritional needs of the beneficiary population.

Nutritional Requirements for an average individual may lead to "the apparent contradiction of attempting to meet the requirements of populations based on the diverse and heterogeneous needs of individuals, it is in fact, a necessary step in providing optimal health – a long life, free of physical and mental disability – to all individuals." (FAO/WHO, 2002).

The indicators include Energy and 13 nutrients: 2 macronutrients: Fat and Protein and 11 micronutrients: Iodine, Iron, Vitamin A, Vitamin C, Niacin, Thiamine, Riboflavin, Vitamin B6, Vitamin B9 (Folic Acid), Vitamin B12 and Zinc. The selection of these nutrients took into account the most essential nutrients for a healthy and active human life and data availability in terms of the Food Composition Tables.

WHO (2000) has been used as the standard reference for Nutritional Requirements. The Nutritional Requirements for Energy and 10 out of 13 nutrients are from WHO (2000). The exceptions are Protein, Vitamin B6 and Zinc. WHO (2000) recommends 46 gram of Protein per day, which is low compared to the Sphere Project (2004). The Sphere Project (2004) recommends 52 gram, which is in line with WFP guidelines. In the case of Vitamin B6, none of the major nutritional guidelines suggests a value for an average individual, only for age-sex groups (EC, 1992). A Nutritional Requirement was computed as a weighted average, using the same size of the sex-age groups as weights as the other Nutritional Requirements. The Nutritional Requirement for Zinc was also not available in WHO (2000). Instead, the recommendation of the Sphere Project (2004) was adopted.

References

European Commission, 1992, *Nutrient and Energy intakes for the EC*, Report of the Scientific Committee for Food.

FAO/WHO, 2002, *Vitamin and Mineral Requirements in Human Nutrition*.

The Sphere Project, 2004, *Humanitarian Charter and Minimum Standards in Disaster Response*.

WHO, 2000, *The Management of Nutrition in Major Emergencies*.

UNHCR/UNICEF/WFP/WHO, 2002, *Food and Nutrition Needs in Emergencies*.

Advantages and Limitations

The proposed indicators have certain limitations. Although the basic idea behind them is rather simple, the indicators themselves are not. There is a trade-off between simplicity and usefulness. The proposed indicators try to strike a balance between keeping as close as possible to a simple idea and trying to capture as much information as possible. For this reason, there are three indicators rather than one.

The indicators provide only information on the nutritional content of the delivered food aid in comparison to average nutritional requirements. They do not provide information on whether the nutritional needs of actual beneficiaries are met and do not infer a judgement on the quality of the food aid. The quality of food aid refers to a much broader set of issues, which include targeting, timing, safety, shelf life, local preferences/acceptability, usability in terms of preparation requirements, nutritional content and the extent to which food aid addresses nutritional requirements of the beneficiaries. The proposed measures focus on only one – limited – aspect of the quality of food aid, namely the nutritional content of the food aid.

Some of the advantages are:

• *Relatively easy concept:* The basic concept to compare supply and requirements is rather simple.

• *Universal applicability*: The indicators use a universal yardstick and can be applied to all food aid types.

• *Applicability independent from needs*: Needs vary; the indicators are independent from needs, keeping them relatively simple and comparable.

• *Accounting for new nutritious products*: The indicators can account for new nutritious products that contain significant amounts of micronutrients, even if they contain no energy, fat or protein.

Some of the limitations are:

• *Too many indicators:* There is not one indicator that captures the nutritional value of food aid. IRMAt and IRMA are calculated for each nutrient. Some of the comments received during the workshop and from the reviewers suggested that one indicator would not be possible and encouraged the use of indicators at the nutrient level.

• *Too many or too few nutrients are included and the nutrients are not weighted*: There is no consensus among nutritionists about which nutrients are the most important or which weights should be attached to them. The choice of nutrients is limited by the availability of data on nutrient content (the Food Composition Table) and a consensus on average requirements.

• *The indicators do not reflect nutritional gaps or needs*: For a measurement of the effectiveness and quality of food aid, one would want to compare the nutritional needs of beneficiaries and the food aid delivered. That is not possible with the proposed indicators. If comprehensive information on the actual nutritional needs of beneficiaries becomes available in the future and can be linked to distribution data (rather than deliveries to a country), this would be an area of further development. Using a universal yardstick in terms of nutritional requirements also has some advantages in terms of comparability and simplicity. Moreover, the universal yardstick allows the indicators to be applicable to all kinds of food aid, whether emergency, project or programme food aid, irrespective of their specific objectives.

• *The indicators only account for selected food aid deliveries*: The indicators include nothing but the selected food aid deliveries. Other sources of food, for example bought or grown by beneficiaries or other food donations, are not taken into account.

• *Average population vs. individual requirements*: The indicators are based on average requirements for a representative population, which is different from the requirements of the actual beneficiaries of an individual, for example, because of age or diseases.

• *Timing and geographical distribution:* The indicators refer to a year and a country and do not indicate in which month or in which region of the country the food is delivered and targeted to a specific population group during a particular time of the year, for example, the hunger season.

• *Complementarity*: Different food aid deliveries are often complementary in the same country. This means that the under-supply of some nutrients in a certain food aid basket coming from one donor could be compensated by deliveries from other donors.

• *Limitations also create possibilities for further developments*: Further development is, for example, possible through:

i. Improvements in the Food Composition Table through higher reliability, better comparability and fewer missing values;

ii. Inclusion of more nutrients;

iii. Consensus on weighting among nutrients; and

iv. The user being able to change the Nutritional Requirements.

The Project

In 2007, WFP received two grants – one from Canada and one from the European Commission – to develop a nutritional value of food aid, based on a proposal that was developed in 2006. In early 2008, WFP contracted a nutritionist to develop a method to measure the nutritional value of food aid. The first draft of her report was discussed at a workshop on 8 July 2008. A report on the workshop was produced. Based on the comments received at the workshop, the nutritionist revised her report.

Between October and December 2008, WFP asked a number of prominent scholars and practitioners to review the proposal. They provided very useful feedback. On the basis of the report of the nutritionist and the comments received at the workshop and from the reviewers, WFP revised the indicators.

Between June 2008 and March 2009, the project focused on the implementation of the proposed indicators and the development of the website. Thus, the IRMA indicators are slightly different from the ones proposed in the report by the nutritionist and the interpretation is different as well. Moreover, the nutritionist used fewer nutrients and a different Food Composition Table. Therefore, the results in the report are different from the ones that can be accessed through the available data.

Comments by reviewers

For the comments by reviewers on the first draft of the report of the nutritionist, please refer to the FAIS Annexes folder:

- Stuart Clark, Canadian Foodgrains Bank, Canada.
- Max Merbis, Centre for World Food Studies, Free University, The Netherlands.
- Andrew Seal, Centre for International Child Health, Institute of Child Health, University College London, United Kingdom.
- Amélie Solal-Celigny, International Fund for Agricultural Development, Italy.
- Iacopo Viciani, ActionAid, Italy.
- Patrick Webb, Friedman School of Nutrition Science and Policy, Tufts University, United States.

Nutritional Requirements

As the demand for information on the nutritional impact of food aid has increased, the World Food Programme has integrated through FAIS quantity data on food aid deliveries with additional information on their nutritious content. FAIS presents data on food aid deliveries in metric tons and a number of indicators that reflect the nutritional value of food aid deliveries.

Each commodity has a specific content in energy and macro- and micronutrients, many of which are essential to human health and well-being. Three new indicators are proposed to provide a synthesis of the nutritional power of food aid. They link the nutritional content of food aid deliveries with individual nutritional requirements by measuring the number of potential individual requirements met for the following 14 nutritional parameters:

- Energy
- Fat
- Protein
- Iodine
- Iron
- Riboflavin
- Thiamine
- Niacin
- Vitamin A
- Vitamin C
- Vitamin B6
- Vitamin B9 (folic acid)
- Vitamin B12
- Zinc

The nutritional content of commodities and the individual nutritional requirements are available in the Metadata section.

Metadata

Three datasets are needed for the calculation of the indicators:

- FAIS Data on food aid deliveries in metric tons

- Food Composition Table

- Nutritional requirements

FAIS data

Data on food aid deliveries in metric tons are from the database of the International Food Aid Information System (INTERFAIS).

The Food Composition Table

The Food Composition Table collects nutritional data (on Energy, Fat, Protein, Iodine, Iron, Niacin, Thiamine, Riboflavin, Vitamin A, Vitamin B6, Vitamin B9, Vitamin B12, Vitamin C and Zinc) for all the commodities of the INTERFAIS database.

The **food composition** data sources are:

NutVal (WFP)

United States Department of Agriculture

Food Composition Database for Epidemiological Studies in Italy (BDA)

Istituto Nazionale di Ricerca per gli Alimenti e la Nutrizione (INRAN)

Food and Agriculture Organization of the United Nations (FAO)

The Nutritional Requirements Table

The Nutritional Requirements Table provides data on the nutritional requirements (for Energy, Fat, Protein, Iodine, Iron, Niacin, Thiamine, Riboflavin, Vitamin A, Vitamin B6, Vitamin B9, Vitamin B12, Vitamin C and Zinc) of an average individual representative of the population in a developing country.

A Guided Example

Let's suppose the user is interested in emergency donations from the United States to the Sudan in 2007. The user can start by downloading quantity data on donations filtered as follows:

Donor = USA
Recipient = SUDAN

Year = 2007

Food Aid Type = Emergency

The output is: 311,983 metric tons of food were delivered by the United States to the Sudan in 2007.

Is this food aid basket nutritious?

FAIS data allows the user to get information on this basket from a nutritional point of view. By switching to the nutritional aspect, the user has access to three different indicators (IRMAt, IRMA and IRMAs), which summarize the nutritional information about this basket. These indicators refer only to the selected food aid basket, and do not take into account needs and other sources of food, such as bought or grown food by the beneficiaries or complementary food aid deliveries (see caveats below).

Interpreting IRMAt: How much of each nutrient is contained in the selected food basket

IRMAt (Individual Requirements Met on Average, Total) can be considered an alternative measure for food aid deliveries.

By knowing how many tons of which commodity are contained in the food aid basket, it is easy to compute how many micrograms of nutrients there are in the overall basket (see the Food Composition Table). But, a measure like that would not be easy to interpret. Furthermore, each nutrient is measured in a different unit (for example, vitamin C is measured in micrograms and fat is measured in grams). IRMAt "standardizes" the nutritional content of food aid by taking it as a percentage of human nutritional requirements. IRMAt of a nutrient is nothing but the number of individual requirements that could potentially be met on an annual basis by the total food aid deliveries selected.

Having a look at the output:

	Actual Tons	Energy	Protein	Fat	Iodine	Iron	Niacin	Riboflavin	Thiamine	Vitamin A	Vitamin B^6	Vitamin B^9	Vitamin B^{12}	Vitamin C	Zinc
2007	311,983	1,485,415	2,009,583	1,561,260	30,965	1,894,170	2,390,624	1,015,979	2,390,547	368,972	279,909	0	0	722,776	221,584

Table 1. IRMAt data (combination of both 2007 .csv files)

1,485,415 yearly individual energy requirements could potentially be satisfied by the food aid delivered by the United States to the Sudan in 2007. The same basket could potentially satisfy 1,894,170 yearly individual iron requirements.

IRMAt values are descriptive of a food aid basket and are dependent on the absolute value in tonnage. They give information that reflects both nutritional content and the size of the food aid deliveries. From this point of view IRMAt can be considered a unit of measurement for food aid flows: it measures food aid basket by the number of average individuals that its nutritional content could potentially satisfy.

Interpreting IRMA: How to make the nutritional content of food aid baskets comparable

IRMA (Individual Requirements Met on Average) is computed on one representative ton of the food aid basket the user has selected. The "representativity" of the ton comes from the fact that the shares of the commodities are the same as those in the total selected food basket.

Therefore it can be used for comparisons among food aid baskets of different size and in understanding how much of their difference in nutritional content is due to the absolute value in metric tons of the donations and how much is due to the nutritional qualities of food delivered.

See for example the emergency food aid donated from the United States to the Sudan in 1990 and in 2007. The actual tonnage of food aid delivered strongly increased, being in 2007 almost three times the 1990 tonnage. What about the nutritional characteristics of this aid? Its energetic content has increased a little, while the average iron content has increased significantly: one representative ton of those donated in 1990 could potentially satisfy the iron requirements of 4.4 average individuals, but in 2007 one representative ton contained iron enough to satisfy the requirements of 6.1 average individuals.

Table 2. IRMA data

	Actual Tons	Energy	Protein	Fat	Iodine	Iron	Niacin	Riboflavin	Thiamine	Vitamin A	Vitamin B^6	Vitamin B^9	Vitamin B^{12}	Vitamin C	Zinc
1990	116,840.0	4.5	7.1	1.9	0.0	4.4	14.8	2.4	12.4	0.0	9.9	0.1	0.0	0.0	8.8
2007	311,983.0	4.8	6.4	5.0	0.1	6.1	7.7	3.3	7.7	1.2	0.9	0.0	0.0	2.3	0.7

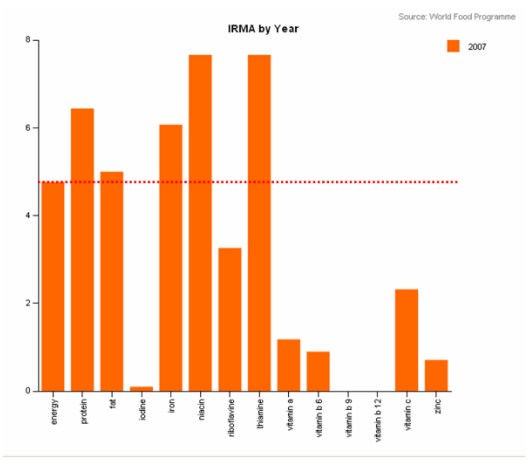
Because IRMA values are computed on just one ton of the 311,983 donated, IRMA values are much smaller than IRMAt (more precisely, they are 311,983 times smaller). In fact, IRMA = IRMAt divided by the quantity of food aid selected. IRMA makes it easier to notice any imbalance in the nutritional content of the food basket: one ton of food aid could potentially satisfy 4.8 individual requirements of Energy but only 0.1 of Iodine and 1.2 of Vitamin A. The IRMAs value captures these imbalances in one number.

Interpreting IRMAs: On the nutritional balance of food aid

The energy intake of a human being is the only one among the nutrients that cannot in the short run be renounced without putting at immediate risk the possibility of survival itself. A lack of other nutrients increases susceptibility to infections and slows cognitive development and growth, contributing to poorer school performance and reduced work productivity. These effects are largely irreversible and long term, particularly when they occur at a young age. For these reasons, the IRMAs computation takes the content of Energy as a benchmark to compare with the other nutrients' content.

For the calculation of IRMAs, we start with the IRMA values for each nutrient. IRMA of a nutrient counts the number of average individuals that could potentially be satisfied by the nutrient contained in a ton of food aid. The following graph (example) shows the IRMA values for each nutrient, computed on emergency food aid delivered from the United States to Sudan in 2007. The IRMA energy is highlighted as a red horizontal line.

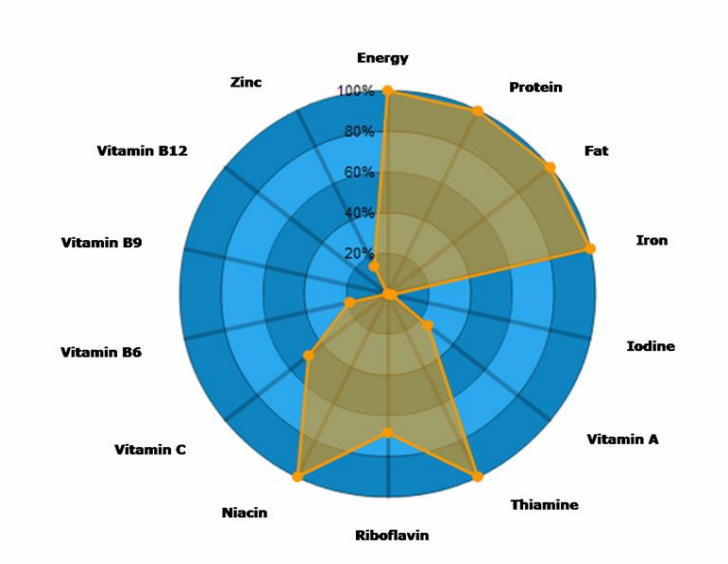
Figure 1. IRMA data



What is clear from the above graph is that Fat, Protein, Iron, Niacin and Thiamine are "more than sufficient" compared to the energy content. Yet, the IRMA for the other nutrients are smaller and below the red energy threshold.

IRMAs captures the imbalance regarding some nutrients in the food basket, disregarding at the same time the "surpluses" in others. It is computed by taking, for each nutrient (other than energy), its IRMA as a percentage of the IRMA for energy, capping the IRMA values above 100% at 100% and taking the average. See also the capped values in the spider graph below.

Figure 2. Capped scores for IRMAs



Turning back to the example, the IRMAs value for food aid deliveries from the United States to the Sudan in 2007 is 52.1%. You can also see displayed the IRMA energy to which it is referred.

IRMAs takes a value only in the interval [0%, 100%]. The closer the IRMAs is to 100%, the more balanced the food aid basket is. The closer it is to 0%, the poorer the nutrient balance is compared to its energy content.

Caveats

The proposed indicators IRMA, IRMAs and IRMAt cannot provide any judgement on the "effectiveness" or "quality" of food aid deliveries. They do not provide information on whether the nutritional needs of actual beneficiaries are met. They provide only information on their "nutritional potential" of meeting average requirements. Even if the indicators are connected to the actual impact of food aid, the concept of potential should be distinguished from actual impact.
These indicators are a first attempt to put a quantitative number on the nutritional value of food aid. They hopefully will start a discussion and lead to improvements.
This section provides some warnings about the interpretation of the nutritional indicators.

THE FOOD AID BASKET

The nutritional indicators provide a measure of the nutritional value of a food aid basket. Nothing but the selected food aid is taken into account. This means that any other source of food bought or grown by the beneficiaries or other food donations are not taken into account. Very often food aid is not the only source of food for the beneficiaries, even in an emergency context. Furthermore, there may exist complementarities among different food aid interventions. For example, the food aid selected might be low in Vitamin A, but other donors may provide food commodities rich in Vitamin A.

THE INDIVIDUAL REQUIREMENTS

IRMAt, IRMA and IRMAs use the concept of average Individual Requirement Met, which is different from the requirements of the actual beneficiaries of food aid. The average individual requirement is the nutrient requirement of an average individual in a developing country for one year, while the beneficiary is the person effectively targeted by food aid interventions. Beneficiary requirements might be different because of age, pregnancy or diseases. The nutritional indicators do not refer to beneficiaries reached by food, but more properly to the "nutritional potential" of a food aid basket. Thus, if the IRMA is 5, the food aid might be able to meet the requirements of 7 actual beneficiaries – or maybe 3.

TIMING

Computing nutritional indicators on the food aid delivered in a whole year is of course arbitrary. Food aid deliveries are often concentrated in a relatively short period of time, for example, during the hunger season or after a natural disaster. Shorter or even longer time intervals could be used with the same purpose without any substantial modification to the meaning of indicators. Furthermore, food aid is never presumed to be uniformly distributed over the considered year. A basket of food aid delivered, for example, in one shipment in January may have the same nutritional value of a basket delivered in monthly tranches throughout the year (but might have a higher impact because the timing in January was right at the time of the hunger season).

GEOGRAPHICAL DISTRIBUTION OF FOOD AID

Similarly, uniformity in the geographical distribution in the recipient country is not to be assumed. Food aid is often targeted to a specific area or subgroup of the population, and one cannot assume that all the inhabitants of a recipient country or sub-region within a country would receive the same food aid ration. This should always be taken into account when interpreting the nutritional indicators for a recipient country.

IRMAs: THE NUTRIENTS

Different food aid deliveries are often complementary in the same country. This means that the under-supply of some nutrients in a certain food aid basket coming from one donor could be compensated by deliveries from other donors. The IRMAs indicator calculated for one recipient, taking account of all deliveries from all donors, incorporates the fact that one donor may compensate for another.

The nutrients in the IRMAs are not weighted. The IRMAs gives the same importance to all the considered nutrients, even if their importance for human health and well-being is different.

Glossary and abbreviations

Actual Ton (AT)
Actual weight of commodities in Metric Tons.

BDA
Banca Dati di composizione degli Alimenti per studi epidemiologici in Italia (Database of Food Composition for Epidemiological Studies in Italy)

Bilateral food aid
Aid supplied on a government-to-government basis. It is often related to programme food aid.

Channel
Multilateral, intergovernmental or non-governmental organization acting as intermediary between a primary source government or organization and a recipient government or implementing agency within the recipient country.

CIS
Commonwealth of Independent States

Commodity
Type of FOOD commodity being imported or purchased locally. Commodities are listed with high degree of detail, distinguishing when possible for specific variety, the packaging (canned/not canned) and the kind of conservation (dried, lyophilised, fresh).

Delivery mode
The mode through which food aid commodities are delivered to the recipient country: Local Purchases, Triangular Purchases or Direct Transfers.

Direct transfers
Transactions by which food aid is directly delivered from donor to recipient countries. Such operations do not involve either local or triangular purchases.

Donor
The primary source which provides food aid in the form of in-kind commodities or funds. They are mainly governments, private sector donors and NGOs.

DPRK
Democratic People's Republic of Korea

DRC
Democratic Republic of the Congo

EC
European Community

Emergency food aid
Food aid provided to victims of natural or man-made disasters on a short- term basis. It is freely distributed to targeted beneficiary groups and is usually provided on a grant basis. It is channeled multilaterally, through NGOs or, sometimes, bilaterally.

Energy
Energy is needed for the essential body functions (such as breathing), growth (especially during childhood) and physical activities (working and playing). The sources of energy for individuals are foods. Their energetic content is measured in kilocalories (kcals).

FAO
Food and Agriculture Organization

Fat
Fat is a macronutrient. This term encompasses all fats and oils that are edible and found in human diets. Fats in the body are divided into two groups: storage fat, which provides a reserve of fuel for the body, and structural fat, which is part of the essential structure of cells.

Folate equivalent
Unit of measurement to account for the differences in absorption of naturally occurring dietary folate and the more bioavailable synthetic folic acid (1 µg of food folate = 0.6 µg folic acid from supplements and fortified foods).

Food aid
Food aid commodities provided by international donors on concessional terms.

Food aid categories
Classification of food aid deliveries used to indicate the food transaction type: Emergency, Programme or Project.

Food aid deliveries
Deliveries of food aid refer to quantities of commodities that actually reached the recipient country during a given period.

Food composition table
Table containing information on the nutritional content of commodities delivered. Data refer to 100 grams of food, for its content in energy and in the following nutrients: protein, fat, iodine, iron, niacin, riboflavin, thiamine, vitamin A, vitamin B6, vitamin B9, vitamin B12, vitamin C and Zinc.

Grain Equivalent
Unit of measurement used as alternative to Actual Ton for cereal-derived products. To convert a product into grain equivalent a commodity specific conversion factor is used. For example, if the factor to convert wheat flour into wheat is 1.37, a ton of wheat flour corresponds to 0.730 tons of wheat (1/1.37).

Implementing agency
Multilateral, intergovernmental or non-governmental agency that takes responsibility for the receipt and/or distribution of the food aid on behalf of the donor, channel and/or recipient country.

Iodine
Iodine is a micronutrient. It is an essential constituent of hormones produced by the thyroid gland in the neck. In the foetus, iodine is necessary for the development of the brain and nervous system during the first three months of gestation.

INRAN
Istituto Nazionale di Ricerca per gli Alimenti e la Nutrizione (National Research Institute for Food and Nutrition)

INTERFAIS
International Food Aid Information System

IRMA
Individual Requirement Met on Average. The number of individual requirements of a given nutrient potentially met by the nutritional content of a representative ton of the selected deliveries.

IRMAs
Individual Requirement Met on Average (Score). For the selected deliveries, average of 13 IRMA values (one for each nutrient) as a percentage of the IRMA value for energy. Maximum values (100%) are imposed so that outliers do not influence the average. It takes a value in the interval [0-100].

IRMAt
Individual Requirement Met on Average (for Total deliveries). Number of individual requirements of a given nutrient potentially met by the nutritional content of the total amount of the deliveries selected.

Iron
Iron is a micronutrient. Most of the iron in the body is present in red blood cells. The main function of iron is the transfer of oxygen to various sites in the body. Lack of iron eventually results in anaemia.

Kilocalorie (kcal)
According to the International System of Units, energy is measured in joules (J), but Kilocalories are still the most often used unit of measurement of dietary energy. The conversion factor is: 1 kcal = 4.184 kJ.

Local purchases
Transactions by which food aid is purchased and distributed/utilised in the recipient country.

Macronutrients
Macronutrients consist of carbohydrate, protein and fat. These nutrients form the bulk of the diet and supply all the energy needed by the body.

Metric Ton (MT)
Unit of measurement of food aid quantities: one Metric Ton is equivalent to 1,000 kg.

Micronutrients
Micronutrients include all vitamins and minerals. Required in only tiny amounts, they are nonetheless essential for life and needed for a wide range of body functions and processes. Vitamins are either water-soluble (e.g., those found in fruits and vegetables, such as the B complex vitamins and vitamin C) and generally not stored by the body for future needs, or fat-soluble (e.g., vitamins A and D), which can be stored by the body.

Multilateral food aid
Aid supplied by the government of one country to a multilateral international organization.

Niacin
Niacin is a micronutrient, is water-soluble and plays a central role in the utilization of food energy.

NGO
Non-Governmental Organization

Nutrients
Nutrients are the main components of food. Foods are made up of five nutrients: protein, fats, carbohydrate, vitamins and minerals.

Nutritional Requirement
The amount of energy, protein, fat and micronutrients needed for an average individual to sustain a healthy and active life. The average comes from weighting nutritional need of different age classes and sex groups within developing countries based on the demographic distribution of the typical population of a developing country. These average requirements differ from the actual amount of energy, protein, fat and micronutrients needed for an individual to sustain a healthy life. It varies across individuals and over time because of age, diseases, activity levels and other environmental factors.

PAR
Potential Average Requirement met

Programme food aid
Food aid provided on a government-to-government basis. It is not targeted at specific beneficiary groups. It is sold on the open market and can be provided either as a grant or as a loan.

Project food aid
Food aid provided to support various type of projects such as agricultural, nutritional and development. It is usually freely distributed to targeted beneficiary groups. However it can also be sold on the open market. Project food aid is provided on a grant basis and is channeled bilaterally, multilaterally or through NGOs.

Protein
Protein is a macronutrient. Proteins are made up of "building blocks" called amino acids, composed of carbon, hydrogen, oxygen and nitrogen (amino group). Proteins are required to build new tissue, particularly during the rapid growth period of infancy and early childhood, during pregnancy and nursing and after infections or injuries. Excess protein is burned for energy.

Quantity delivered
Quantity of food aid that reaches the recipient country during a given period. Quantities may be selected/reported in Actual Quantity or Grain Equivalent.

RDA
Recommended Daily Allowance

Recipient
The country that receives the food aid delivered.

Retinol equivalent
Unit of measurement to determine the value of vitamin A in sources of vitamin A. Retinol equivalent is 3.3 International Units of vitamin A. 1 retinol equivalent = 6 µg β-carotene or µg retinol.

Riboflavin (Vitamin B2)
Riboflavin is a micronutrient, belonging to the vitamin B group. It is water-soluble and is a component of enzymes, which play a role in the utilization of food energy.

Thiamine (Vitamin B1)
Thiamine is a micronutrient, belonging to the vitamin B group. It is water-soluble and is required mainly for the metabolism of carbohydrate, fat and alcohol. It is also necessary for the proper function of the nervous system and the heart.

Triangular purchases
Transactions by which a donor provides commodities purchased in a third country as food aid to a final recipient country.

UN
United Nations

USA
United States of America

USDA
United States Department of Agriculture

Vitamin A
Vitamin A is a micronutrient. It is a fat-soluble vitamin required for the normal functioning of the eyes, the immune system, growth and development, maintenance of healthy skin and reproduction.

Vitamin B12
Vitamin B12 is the largest of the B complex vitamins. It is water soluble and serves for the normal functioning of the nervous system, and for the formation of blood, DNA synthesis and the metabolism of cells.

Vitamin B6
Vitamin B6 is a micronutrient. It serves as co-enzyme in metabolism of amino acids, glycogen and sphingoid bases.

Vitamin B9 (folic acid)
Vitamin B9 is a micronutrient. It is required for the synthesis of nucleic acids. It has a role before conception and during early pregnancy in the prevention of foetal neural tube defect.

Vitamin C
Vitamin C is a micronutrient, is water-soluble and serves a number of essential metabolic functions. It also assists in absorption of non-haem iron and is an important anti-oxidant.

WFP
World Food Programme

Zinc
Zinc is a micronutrient. It is an essential component of a large number of enzymes participating in the synthesis and degradation of carbohydrates, lipids, proteins and nuclein acids, as well as in the metabolism of other micronutrients.

FAQ

What's the difference between Actual Tons and Grain Equivalents?

Both Actual Tons and Grain Equivalents are expressed in Metric Tons. The measurement in Actual Tons corresponds to the registered Metric Tons of food delivered. Cereal-derived commodities can also be measured in grain equivalents, which is the Metric Tons of grains necessary to produce the given amount of cereal-derived commodity. Grain Equivalents of the commodities derived from cereals come from their MT weight converted in GE by using a conversion factor specific per each commodity. For example, the actual tonnage of wheat flour is divided by 1.37 to derive the grain equivalent tonnage.

I find commodities that seem to be included within other commodities, are they?

The items Cereal and Non cereal are the only commodity aggregates. No other item in the list of commodities includes any others. This is due to the data entry process: commodities delivered are registered according to the highest available degree of detail. For example, "Dried fruits" does not include "Dried fruits dates" or "Dried fruits raisins".

How is the Nutritional Requirement defined?

The Nutritional Requirement of different age classes and sex groups within developing countries have been averaged, using the age-sex groups as weights based on the demographic distribution of the typical population of a developing country.

How is the Individual Requirement Met on Average (IRMA) defined?

IRMA is the number of individual requirements of a given nutrient potentially met by the nutritional content of a representative ton of the selected deliveries.

How can I measure if actual individual requirements are met?

The actual needs and requirements of beneficiaries could be different because of age, sex, diseases, activity levels and other sources of food besides food aid. There is no indicator among those proposed that could give such information. There is no connection between Individual Requirements met on average and the needs of beneficiaries of food aid. The former are a unit of measurement of the number of people whose requirements could hypothetically be satisfied. The latter are actual people reached by food aid deliveries.

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