Depth of food deficit

Overview

The indicator that measures the depth of food deficit (kcal/capita) represents the average per capita amount of additional energy (kcals) needed for undernourished individuals to meet the Average Dietary Energy Requirement (ADER) (FAO, 2000 [1]). This indicator is derived from the Prevalence of Undernourishment [2] (PoU) indicator (Cafiero, 2014 [3]).

Method of Construction

This indicator is calculated in three steps. First, the average intensity of food deprivation of the undernourished, which is equal to the difference between the ADER and the average dietary energy consumption of the undernourished population, is estimated. The average consumption of the undernourished population can be computed by taking the average of the area limited under the distribution of dietary energy consumption and below the minimum dietary energy requirement. Second, this value is then multiplied by the number of undernourished people (derived from the PoU [2]) to estimate the total food deficit (kcal) in the country. Third, and finally, this value is divided by the population size, which results in the average per capita food deficit (Moltedo et al., 2014 [4]).

Two sources of information can be used to obtain estimates of the depth of food deficit, or to approximate the per capita daily average dietary energy consumed in the population, which is one of the parameters needed to estimate the PoU:

- The Dietary Energy Supply [5] from the Food Balance Sheets [6] (FBS) and the three-year moving average of the depth of food deficit as part of the Suite of Food Security Indicators can both be accessed on the FAOSTAT website [7] under the "Data" tab.
- Alternatively, the food consumption data collected in Household Consumption and Expenditure Surveys [8] (HCES), can be used to estimate the depth of food deficit as it is one of several indicators included in the ADePT-FSM [9] (Food Security Module) software package, which is a free standalone software developed by FAO and the World Bank that allows users to easily derive food security indicators from household survey data. The software download and corresponding documentation can be found on the FAO [9] website. Please also see the Moltedo et al. (2014) [4] book published by the World Bank, which provides detailed instructions for analyzing food security using household survey data, and discusses the depth of food deficit indicator on pages 59-60.

Uses

The depth of food deficit is useful for problem identification, advocacy, and global and national monitoring. It is often used by researchers and practitioners to understand the degree of food insecurity in a country. Because it is available in the FAOSTAT Suite of Food Security Indicators for nearly all countries, it can be used to compare the severity of food deficit across multiple countries (Reddy et al., 2016 [10]).

Strengths and Weaknesses

The depth of food deficit is a cost-effective way to understand trends in food insecurity at the national level over time and across countries. The indicator does not attempt to measure the quality of the diet and therefore it only represents the severity of dietary energy inadequacy.

When the depth of food deficit is informed by the PoU [2] estimated through food consumption data from HCES [8], it can provide information about sub-populations and regions within a country, provided the HCES [8] has been designed to be representative at a sub-national level. One of the downsides of using HCES [8] data is that they are not always publicly available or easily accessible, and when they are, they may not be collected with sufficient frequency.

On the other hand, when the depth of food deficit is derived from the PoU [2] using the FBS [6] data, data are available on an annual basis dating back to 1961 and through FAOSTAT [7] are publicly accessible. However, using FBS [6] data means that the data cannot be disaggregated and thus information on the severity of hunger is only available at the national level. Therefore, it is not able to capture trends in the depth of hunger over short reference periods that may be associated with seasonality, price spikes, or climate-related shocks to the food system (Cafiero, 2014 [3]).

Data Source

HCES [8] or FBS [6] can be used to derive this indicator. The per capita daily average dietary energy consumption, needed for deriving the PoU [2], can be estimated through the Dietary Energy Supply [5] from the FBS [6] or the food consumption data collected in HCES [8]. If using the FBS [6] data from FAOSTAT it is worth noting that FAO has already paired this information with food composition data to produce information on the national supply of energy [5] (per capita/day). Otherwise, if using HCES [8] data, foods will need to be matched with a nationally relevant food composition data.

Underlying data used to estimate the depth of food deficit are: energy requirement derived from normative information on height and physical activity level and age/sex structure of the population and a measure of how food is distributed within the population. Most of this information is usually informed by food consumption data collected in surveys.

Links to guidelines

- FAO, (2017). "Food Security Indicators" [11]
- Lele et al., (2016). "Measuring Food and Nutrition Security: An Independent Technical Assessment and User's Guide for Existing Indicators" [12]
- Chandra Das, (2016). "Handbook of Research on Global Indicators of Economic and Political Convergence" [13]

Links to illustrative analyses

- Timmer, (2013). "Food Security in Asia and the Specific: The Rapidly Changing Role of Rice" [14]
- Reddy et al., (2016). "Towards sustainable indicators of food and nutritional outcomes in India" [10]
- UNDP, (2015) "Human Development Report: Statistical Annex" [15]

Expert review conducted by:

- Dr. Gero Carletto, Lead Economist and Manager of the Living Standards Measurement Study (LSMS) at the World Bank
- Ana Moltedo, Consultant on Food Security and Consumption Statistics, Food and Agriculture Organization
- Nathalie Troubat, Consultant on Food Security and Consumption Statistics, Food and Agriculture Organization

Food Security Dimensions

- Quantity [17]

Data Collection Levels

- National [18]
- Household [19]

Data Sources and Methods

- Food Balance Sheets (FBS)
- Household Consumption and Expenditure Surveys (HCES)

Requires Food Composition Database

- No [20]