



# National fruit and vegetable availability

## Overview

This indicator is a national-level estimate of the availability of fruits and vegetables and is an indirect measure of the nutritional quality of the food supply. Low fruit and vegetable consumption is one of the leading contributors to the global burden of non-communicable disease and death ([Lim et al., 2013](#) [1]). A [2003 Food and Agriculture Organization/World Health Organization \(FAO/WHO\)](#) [2] joint report recommends a minimum individual intake of 400g (or the equivalent of 5 servings) of fruit and vegetables per day (excluding potatoes and other starchy tubers) for the prevention of chronic diseases such as heart disease, cancer, diabetes, and obesity, as well as for the prevention and alleviation of several micronutrient deficiencies ([Ezzati et al., 2004](#) [3]). This indicator does not yield information on the affordability, access, or consumption of fruits and vegetables by different population groups within a given country, but it can be useful for determining whether a country's food supply contains enough fruits and vegetables to meet aggregate population needs. This indicator uses [Food Balance Sheet](#) [4] (FBS) data that can be accessed through FAO's [FAOSTAT website](#) [5]. Additional indicators of dietary quality that use FBS data and are covered in this Data4Diets platform include [national average supply of protein](#) [6] and [national energy available from non-staples](#) [7], among others.

## Method of Construction

This indicator can be calculated using [FBS](#) [4] data, which can be found on the [FAOSTAT website](#) [5] by selecting the 'Food Balance Sheets' option under the 'Data' tab. FAO calculates the national estimate of total food availability using data from a number of sources, including government agencies, marketing authorities, and industrial/manufacturing surveys, among others ([FAO, 2001](#) [8]). This national estimate is calculated as the sum of the elements of supply (production quantity, import quantity, and stock variation) minus the elements of utilization (export quantity, food manufacturing, feed, seed, waste, and other uses).

[FBS](#) [4] data can be used to construct this indicator for a given country and year (or range of years) by selecting 'Food supply quantity (kg/capita/year)' under the 'Elements' heading, and then 'Vegetables + (Total)' and 'Fruits Excluding Wine + (Total)' under the 'Items Aggregated' heading on the FBS page of [FAOSTAT](#) [9]. The total value for fruits and vegetables must then be multiplied by 1000 (to get grams from kilograms) and divided by 365 days (to get days from year).

## Uses

This indicator is used to gain an overview of the food availability and food quality available in a country. When data from individual or household surveys are unavailable, this indicator serves as a rough proxy for fruit and vegetable consumption at the population level ([FAO, 2016](#) [10]). Because the data are available annually for nearly all countries, this is a useful indicator for cross-country comparisons of fruit and vegetable availability, as well as for analysis of trends over time within a country. This indicator can help determine whether the availability of fruits and vegetables is enough to meet population needs, and can be useful for decision makers at the national level to inform policy action in order to increase fruit and vegetable availability through production or imports ([Siegel et al., 2014](#) [11]).

## Strengths and Weaknesses

One benefit of this indicator is that it can be calculated for nearly all countries (since it relies on [FBS](#) [4] data) and can be compared across time and space. Another strength of this indicator is that it is simple to interpret and lacks sampling and reporting biases associated with dietary recall data ([Lele et al., 2016](#) [12]). However, a downside of this indicator is that it does not reflect actual consumption of fruits and vegetables, but rather the availability of these foods. In addition, as a national-level estimate, it cannot be disaggregated by sex, age, or by any geographic scale smaller than the national level, nor can it detect disparities in consumption of fruits and vegetables across population groups or between seasons, as is possible with individual-level dietary data. This can be a problem in countries with extreme economic inequality, where high levels of availability in a handful of locations may mask the scarcity in other areas. In addition, although the [FBS](#) [4] accounts for food losses incurred at the distribution and processing levels, it does not account for plate waste at the household or individual level ([Lele et al., 2016](#) [12]).

## Data Source

The main source of data for this indicator is the FAO [FBS](#) [4] data on the [FAOSTAT](#) [5] website, which disaggregates elements of utilization and supply, and estimates total food available for human consumption. In addition, [Household Consumption and Expenditure Survey](#) [13] (HCES) data could be used to calculate a similar indicator, such as [household adequacy of fruit and vegetable consumption](#) [14]. Alternatively, market data such as [Euromonitor](#) [15] could be used to calculate the [fresh food retail volume](#) [16], or individual-level data such as [24-hour Dietary Recall](#) [17] or a [Food Frequency Questionnaire](#) [18] (FFQ) could be used to calculate consumption of specific food groups (e.g. fruits and vegetables).

## Links to guidelines

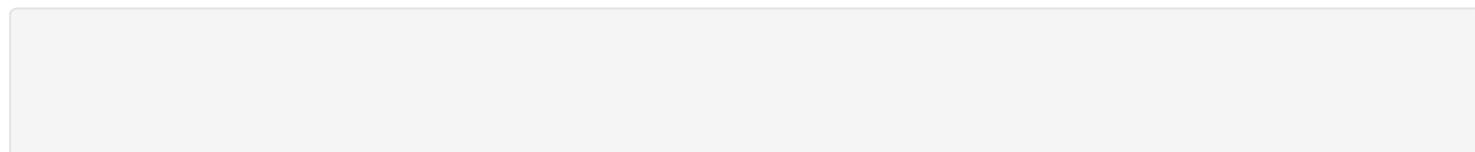
- [WHO, \(2003\). "Promoting fruit and vegetable consumption around the world"](#) [19]

## Links to illustrative analyses

- [Siegel et al., \(2014\). "Do We Produce Enough Fruits and Vegetables to Meet Global Health Need?"](#) [11]

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## Food Security Dimensions

- [Quality](#) [21]

## Data Collection Levels

- [National](#) [22]

## Data Sources and Methods

- [Food Balance Sheets \(FBS\)](#)

## Requires Food Composition Database

- [No](#) [23]

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