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**FAOSTAT Food and Diet Domain for the dissemination of statistics on
dietary data**

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Executive summary

The High-Level Panel of Experts on Food Security and Nutrition highlighted that there are still data gaps on people's food consumption, nutrient intake, and their nutritional status. According to the experts, policy makers are often not aware of the existence of data available or do not use the data appropriately. In this context, three FAO divisions embarked on an innovative joint effort to harmonize dietary data, increase its dissemination, and improve the utilization and comparability of food availability, food consumption, and diet diversity statistics and indicators. This initiative brings together, for the first time, statistics from individual food consumption surveys, women's dietary diversity data, household consumption and expenditure surveys (HCES), and supply utilization accounts (SUA); and disseminates them through a common "Food and Diet" domain on FAOSTAT. Statistics on nutrient supply, from SUA, are available for 186 countries from 2010. Statistics on apparent nutrient intake are based on 38 HCES conducted in 30 countries between 2010 and 2021. Five nationally representative individual quantitative dietary intake surveys from four countries provide information on nutrient intake. Statistics based on the minimum dietary diversity for women indicator are sourced from ten surveys in nine countries.

Suggested actions

- Recognize the importance of publishing anonymized survey microdata for better policies based on evidence.
- Recognize the importance of disseminating statistics on dietary data through FAO platforms.
- Provide demand-driven technical support to countries on producing food and nutrient statistics from different types of dietary data.

- Contact FAO colleagues involved in the dissemination of dietary data and statistics where there is an opportunity identified to share country information that is not yet shared through the FAO Food and Diet Domain or other FAO platforms.

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1. Introduction

The Food and Agriculture Organization of the United Nations (FAO)'s mandate includes raising levels of nutrition and ensuring access to safe, nutritious, and sufficient food for all. It is the custodian agency of the Sustainable Development Goal's (SDG) indicators for monitoring progress on target 2.1 (End hunger and ensure access to safe, nutritious and sufficient food), along with the World Health Organization (WHO), the lead agency responsible for the implementation of the United Nations Decade of Action on Nutrition.

Since 2017, FAO's annual flagship publication "The State of Food Security and Nutrition in the World" has reported on progress towards eliminating hunger and food insecurity (SDG target 2.1) and all forms of malnutrition (SDG target 2.2). These publications present evidence of the link between these two SDG targets. Furthermore, FAO spearheads work on sustainable agrifood systems for healthy diets and improved nutrition. FAO has the potential to enhance its leadership in promoting nutrition, food security and sustainable food systems within the framework of the Article I of its constitution, which states that one of the key functions of the Organization is "to collect, analyze, interpret and disseminate information relating to nutrition, food and agriculture."

Diets are the core link between food systems and their health and nutrition outcomes. They are also the vital element that connects SDG targets 2.1 and 2.2. Policy makers need to ensure that all parts of the food system work together to deliver high-quality diets and prevent food insecurity and malnutrition. Robust data on food availability, food consumption and diet diversity are needed to help explain the diverse forms of malnutrition that can potentially result from food insecurity, as well as to guide agrifood systems policies. The High-Level Panel of Experts on Food Security and Nutrition¹ highlighted that data gaps remain on people's food consumption, nutrient intake, and their nutritional status. According to the experts, often policy makers are not aware of the existence of data available and may not use the data appropriately.

2. Main body of the document

Though comparable statistics and indicators on food security and the nutritional status of individuals are available, data on food consumption and dietary trends (particularly from low-income countries) are currently scarce, not easily accessible, or not comparable, making them hard to interpret². For example, a recent study on the burden of disease related to diet, the "Health effects of dietary risks in 195 countries, 1990–2017"³, is based on a database of modelled dietary data that relies on estimates from various non-harmonized data sources which has been critiqued by researchers who concluded that

¹ High Level Panel of Experts. 2022. Data collection and analysis tools for food security and nutrition: towards enhancing effective, inclusive, evidence-informed, decision making. A report by the High Level Panel of Experts on Food Security and Nutrition of the Committee on World Food Security, Rome.

² Micha R., Coates J., Leclercq C., Charrondiere U.R., and Mozaffarian, D. 2018. "Global Dietary Surveillance: Data Gaps and Challenges." Food and Nutrition Bulletin 39 (2): 175–205. <https://doi.org/10.1177/0379572117752986>.

³ GBD 2017 Diet Collaborators. 2019. "Health Effects of Dietary Risks in 195 Countries, 1990–2017: A Systematic Analysis for the Global Burden of Disease Study 2017." The Lancet 393 (10184): 1958–72. [https://doi.org/10.1016/S0140-6736\(19\)30041-8](https://doi.org/10.1016/S0140-6736(19)30041-8).

evidence on dietary intake is currently insufficient to produce robust, reliable, and replicable estimates of quantitative intake across countries globally⁴.

The international nutrition community has long advocated for increased and higher-quality dietary data^{5,6}, including disaggregated data at subnational level. In recent years, several initiatives have progressed towards the goal to help fill⁷ is one such initiative, which brings together food-systems data from multiple sources in a user-friendly platform. In recent years, several initiatives have progressed towards the goal to help fill the global dietary data gap. The Food Systems Dashboard⁶ is one such initiative, which brings together food-systems data from multiple sources in a user-friendly platform.

Although a relevant amount of its data comes from FAO, a lot of the data shared through the Dashboard still lacks harmonization across the various sources.

Three FAO's divisions (the Food and Nutrition Division-ESN, the Statistics Division-ESS and the Fisheries and Aquaculture Division-NFI), responsible for food supply data from supply utilization accounts (SUA), apparent food consumption data from household consumption expenditure surveys (HCES), and individual-level data on food consumption (including the Minimum Dietary Diversity for Women [MDD-W] indicator), have identified several data gaps. These gaps include:

- (a) Statistics from the various sources are not harmonized and, therefore, not comparable. Divergences in estimates result from differences in data collection methods and, importantly, from the lack of harmonization in the definition of food groups and data processing.
- (b) Food consumption estimates from HCES were not previously disseminated. The FAO Statistics Division has been processing HCES data for decades to estimate the Prevalence of Undernourishment, but food consumption statistics have thus far not been published.
- (c) Food balance sheets, which are created from SUA data, are heavily utilized by nutrition and economic researchers. However, in many cases the information is used and interpreted inappropriately. The data was also limited in scope, covering only energy, protein and fat. There is a pressing need to better communicate and educate users on the appropriate uses of statistics on food availability and other dietary-related data.
- (d) There was no unified, integrated platform for all dietary-related statistics. Instead of creating additional new platforms, FAOSTAT⁸ was considered the most appropriate platform to publish harmonized statistics from the different dietary data types.

Therefore, ESS, ESN, and NFI, embarked on an innovative joint effort to harmonize the processing of dietary data, increase its dissemination and improve the utilization of comparable food supply, food consumption, and diet diversity statistics and indicators. This enhanced partnership between three FAO divisions positions FAO as the reference institution for providing the most up-to-date, reliable, harmonized and policy-relevant statistics and indicators on food supply, food consumption and diet diversity globally, shared through FAOSTAT as a new domain: *The Food and Diet Domain*.

The statistics are presented by geographic areas, sex-age groups and by food groups, from three distinct quantitative data sources: (a) supply utilization accounts; (b) household consumption and expenditure survey; and (c) individual quantitative dietary data. It also presents statistics on women's dietary diversity, as derived from the application of the MDD-W indicator.

⁴ Beal T., Herforth A., Sundberg S., Hess S.Y., Neufeld L.M. Differences in modelled estimates of global dietary intake. 2021. *Lancet*. May 8;397(10286):1708-1709. doi: 10.1016/S0140-6736(21)00714-5. PMID: 33965084.

⁵ Development Initiatives. 2018. "2018 Global Nutrition Report: Shining a Light to Spur Action on Nutrition." Bristol, UK.

⁶ Global Panel on Agriculture and Food Systems for Nutrition. 2016. "Food Systems and Diets: Facing the Challenges of the 21st Century." London, UK. <https://www.glopan.org/wp-content/uploads/2019/06/ForesightReport.pdf>.

⁷ Food Systems Dashboard. 2023. Available at: <http://www.foodsystemsdashboard.org/>.

⁸ FAO. "FAOSTAT Food and agriculture data". 2023. Available at: <https://www.fao.org/faostat/en/#home>

The SUAs provide an overview of a country's food, agriculture, fisheries, and aquaculture sectors for a calendar year⁹. The SUAs refer to individual products and their respective quantities, covering 530 food items. Of these items, 435 (82%) correspond to crops and livestock food products and 95 (18%) are associated to fisheries and aquaculture products. They are based on a balance between food supply and food utilization, where Supply equals Production plus Imports minus Change in Stocks, and Utilization comprises the addition of Exports, Food, Food-Processing, Tourist Food, Losses, Feed, Seed, Non-Food-Industrial and Other Uses. The Food component refers to products' quantities available in the country for human consumption.

$$\text{Supply} = \text{Production} + \text{Imports} - \text{Changes in Stock}$$

$$\text{Utilisation} = (\text{Exports} + \text{Foods} + \text{Food Processing} + \text{Tourist Food} + \text{Losses} + \text{Feed} + \text{Seed} + \text{Non-food industrial} + \text{Other uses})$$

The label "household consumption and expenditure survey" is used as an umbrella term for household-level surveys developed to inform economic policies, such as "Household Budget Surveys", "Household Income and Expenditure Surveys" and "Living Standard Measurement Surveys". These surveys collect information on household characteristics (e.g., region and urban-rural), household members characteristics (e.g., sex, age, education, food and non-food expenditures), and food quantities consumed and/or acquired during a reference period. It is worth noticing that these surveys were not purposely defined for food security analysis, but they have been widely used to assess the "access" dimension of food security¹⁰. The microdata for the HCES were downloaded from the World Bank Central Data Catalog¹¹ and national statistical websites. In cases where the microdata was not available online, we received access to the data and permission to upload the aggregate statistics from national statistical offices.

Individual quantitative dietary data are crucial for gaining insights into food consumption patterns, disaggregated by sex and age. Such data are key for developing evidence-based policies and programs for agriculture, nutrition, and food safety. The FAO/ WHO Global Individual Food consumption data Tool¹² (GIFT) was used as the source for individual quantitative dietary data. The datasets available on FAO/WHO GIFT were screened for inclusion in the new Domain, with surveys that were statistically representative at national level and available with survey weights being selected for inclusion. As new nationally representative datasets are shared through FAO/WHO GIFT they will also be prepared for inclusion in the Food and Diet Domain.

The data sources for statistics related to the MDD-W indicator are nationally representative surveys, sourced from The Demographic and Health Survey (DHS) Program country reports, the Living Standards Measurement Study from the World Bank, and retroactively calculated statistics from individual quantitative dietary data from FAO/WHO GIFT platform. The MDD-W indicator is a food group diversity indicator developed by FAO and partners that reflects one key dimension of diets – micronutrient adequacy. The MDD-W can be used for assessing diet diversity, evaluating the impact of programs, informing policies and setting targets. It is easily integrated into large-scale surveys, existing

⁹ FAO. "FAOSTAT - Supply Utilization Account". 2023. Available at: <http://www.fao.org/faostat/en/#data/SCL>.

¹⁰ Russell, J., Lechner, A., Hanich, Q., Delisle, A., Campbell, B., & Charlton, K. 2018. "Assessing food security using household consumption expenditure surveys (HCES): A scoping literature review". *Public Health Nutrition*, 21(12), 2200-2210. doi:10.1017/S136898001800068X.

¹¹ World Bank. 2023. "Microdata Library / Living Standards Measurement Study (LSMS)". <https://microdata.worldbank.org/index.php/catalog/lsms> (accessed Aug. 27, 2021).

¹² FAO and WHO. Global Individual Food consumption data Tool (GIFT). 2023. URL: <https://www.fao.org/gift-individual-food-consumption/data/en>.

data collection platforms, monitoring and evaluation frameworks, and research studies measuring dietary diversity¹³.

The Food and Diet domain, published on FAOSTAT, presents harmonized statistics from supply utilization accounts and household consumption and expenditure surveys. These statistics are harmonized in terms of the: (a) selection of high-quality food composition tables based on the FAO/INFOODS evaluation framework¹⁴, (b) selection of the nutrients based on health relevance and their availability in food composition tables, (c) use of standardized components identified by the FAO/INFOODS tagnames¹⁵, and (d) use of FAO/INFOODS food matching guidelines¹⁶. Food group statistics from these data types are further harmonized with those from individual level data by using the FAO/WHO GIFT nutrition-sensitive food group classification¹⁷.

The statistics from the individual quantitative dietary data benefit from the comprehensive harmonization process undertaken by the team who manage the FAO/WHO GIFT platform. To be inserted in the FAO/WHO GIFT platform, dietary data undergo a process of retrospective harmonization, which comprises several steps, including: (a) the use of the EFSA FoodEx2 classification¹⁸ to harmonize the food list; (b) the disaggregation of mixed dishes into their respective ingredients; (c) the data formatting to a standard template; and (d) the execution of data consistency and quality checks.

The calculation process used for the MDD-W statistics involved several steps. Firstly, the selection of eligible subjects (women of reproductive age, aged 15-19 years). Subsequently, the classification of reported food items into distinct MDD-W food groups was performed, using the FoodEx2 classification system as a standardized framework. This was followed by the computation of the food group diversity score (FGDS) for each subject, creating a discrete scale ranging from 0 to 10. With this scale, the overall prevalence of women reaching MDD-W ($FGDS \geq 5$) was calculated. Additionally, the consumption of each food group, including the 10 mandatory MDD-W food groups and the so called “unhealthy” food groups were also estimated, where available. All statistics were calculated at rural, urban and national level.

Table 1 presents the nutrients and Table 2 the statistics and indicators disseminated through the Food and Diet domain on FAOSTAT, by type of dietary data.

¹³ FAO. “Minimum dietary diversity for women. An updated guide for measurement: from collection to action”. 2021. Rome. doi: <https://doi.org/10.4060/cb3434en>.

¹⁴ Charrondiere, U.R., Stadlmayr, B., Grande, F., Vincent, A., Oseredczuk, M., Sivakumaran, S., Puwastien, P., Judprasong, K., Haytowitz, D., Gnagnarella, P. 2023. “FAO/INFOODS Evaluation framework to assess the quality of published food composition tables and databases - User guide”. Rome, FAO. <https://doi.org/10.4060/cc5371en>

¹⁵ FAO/INFOODS, “Tagnames for Food Components,” 2017. <http://www.fao.org/infoods/infoods/standards-guidelines/food-component-identifiers-tagnames/en/> (accessed Aug. 27, 2021).

¹⁶ FAO/INFOODS, “Guidelines for Food Matching: Version 1.2.,” 2012. [Online]. Available: <http://www.fao.org/docrep/017/ap805e/ap805e.pdf>.

¹⁷ FAO and WHO, “FAO/WHO GIFT - Food groups and sub-groups,” 2021. <http://www.fao.org/gift-individual-food-consumption/methodology/food-groups-and-sub-groups/en/> (accessed Oct. 08, 2021).

¹⁸ EFSA (European Food Safety Authority), 2015. The Food Classification and Description System FoodEx 2 (Revision 2). EFSA Supporting Publications 12 (5): 804E. <https://doi.org/10.2903/sp.efsa.2015.EN-804>.

Table 1. Nutrients disseminated through the Food and Diet domain on FAOSTAT, by type of dietary data.

Nutrient	Supply utilization accounts (SUA) data	Household consumption and expenditure (HCES) data	Individual food consumption data
<i>Energy</i>	X	X	X
<i>Protein</i>	X	X	X
<i>Fat</i>	X	X	X
<i>Carbohydrates available (i.e. excluding fiber)</i>	X	X	X
<i>Dietary fiber</i>	X	X	X
<i>Calcium</i>	X	X	X
<i>Iron</i>	X	X	X
<i>Magnesium</i>	X	X	X
<i>Phosphorus</i>	X	X	X
<i>Potassium</i>	X	X	X
<i>Zinc</i>	X	X	X
<i>Vitamin A [mcg RE and mcg RAE]</i>	X	X	X
<i>Thiamin</i>	X	X	X
<i>Riboflavin</i>	X	X	X
<i>Vitamin C</i>	X	X	X
<i>Vitamin B6</i>	*	X	X
<i>Vitamin B12</i>	*	X	X
<i>Cooper</i>	*		
<i>Selenium</i>	*		
<i>Total saturated fatty acids</i>	*		
<i>Total monounsaturated fatty acids</i>	*		
<i>Total polyunsaturated fatty acids</i>	*		
<i>Docosahexaenoic acid n-3 (DHA)</i>	*		
<i>Eicosapentaenoic acid n-3 (EPA)</i>	*		

*Statistics available for fisheries and aquaculture products only.

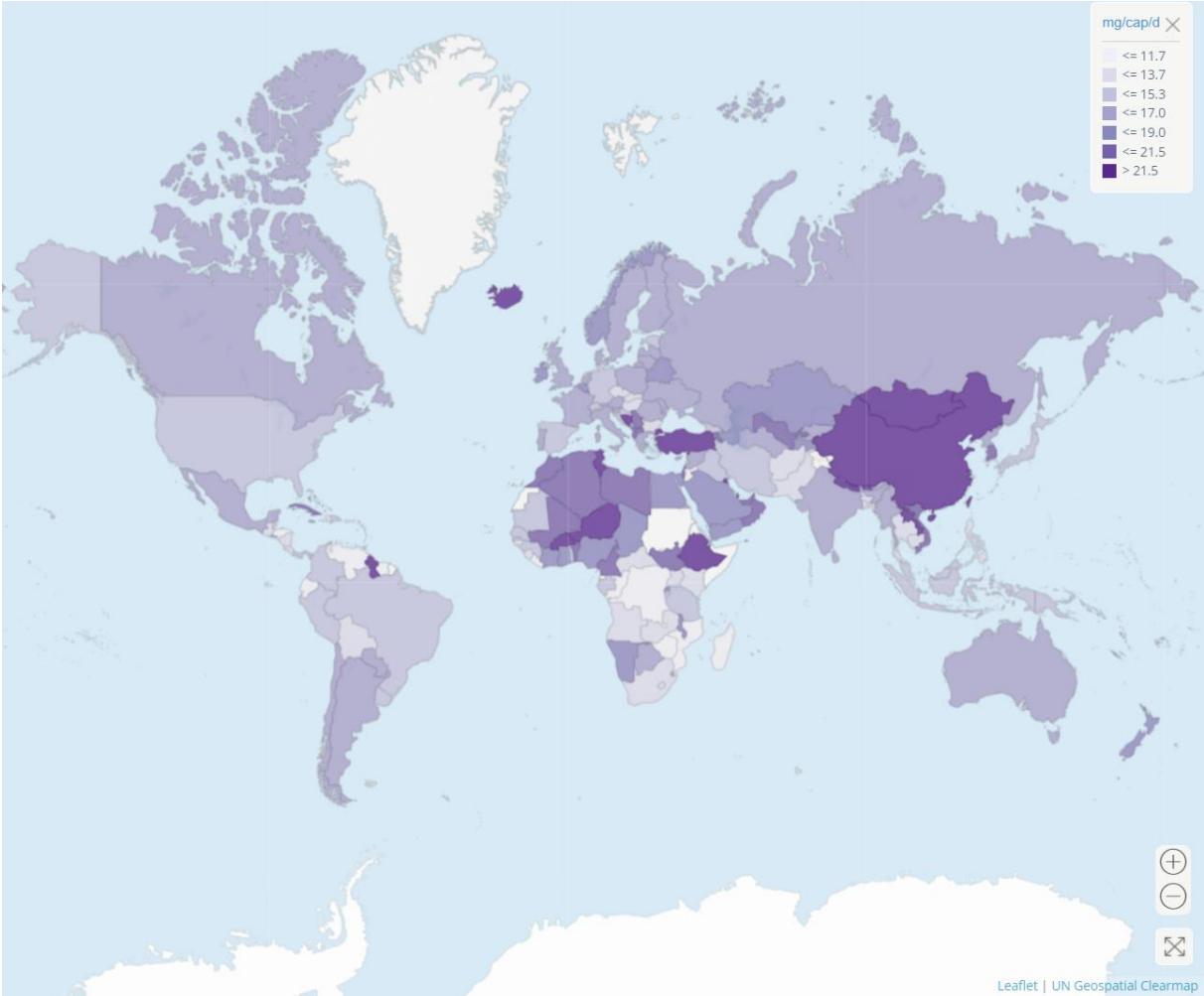
Table 2. Statistics and indicators disseminated through the Food and Diet domain on FAOSTAT, by type of dietary data.

		Supply utilization accounts (SUA) data	Household consumption and expenditure (HCES) data	Individual food consumption data	Data used to compute the Minimum Dietary Diversity for Women (MDD-W) indicator
Statistic	Level of disaggregation	By food group and for “all food groups”			
<i>Average nutrient supply</i>	National	x			
<i>Average apparent nutrient intake</i>	National		x		
	Urban/Rural		x		
	Sub-national		x		
	Income group		x		
<i>Average nutrient intake</i>	National			x	
	Urban/Rural			x	
	Sub-national			x	
<i>Confidence Interval of average apparent nutrient intake</i>	National		x		
	Urban/Rural		x		
	Sub-national		x		
	Income group		x		
<i>Food consumption, all subjects</i>	National		*	x	
	Urban/Rural		*	x	
	Sub-national		*	x	
	Income group		*		
<i>Food consumption, consumers only; Percentage of consumers; and Top 3 most consumed food items</i>	National			x	
	Urban/Rural			x	
	Sub-national			x	
<i>Percentage of women achieving MDD-W (MDD-W%)</i>	National				x
	Urban/Rural				x
<i>Percentage of women consuming each food group (consumption %)</i>	National				x
	Urban/Rural				x

*Statistics are not available for “all food groups”.

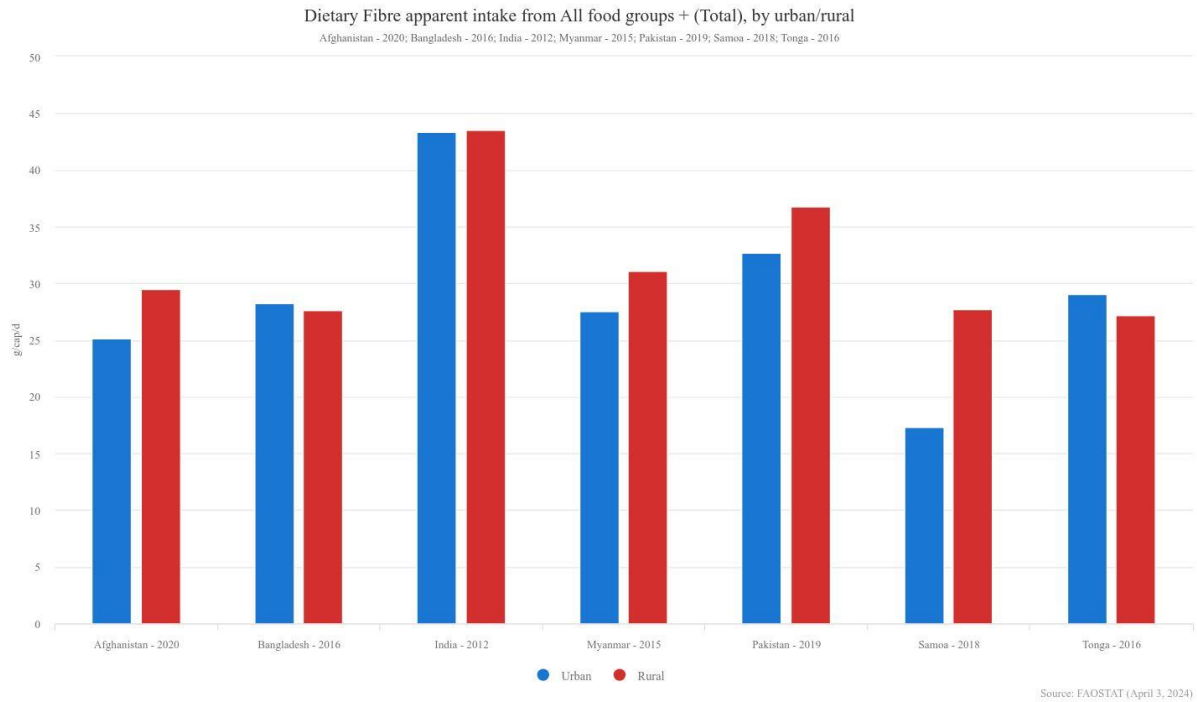
Figures 1, 2, 3, and 4 present examples of the type of statistics published on the Food and Diet domain.

Figure 1. Map presenting levels of iron supply in countries in 2021, based on SUA data.



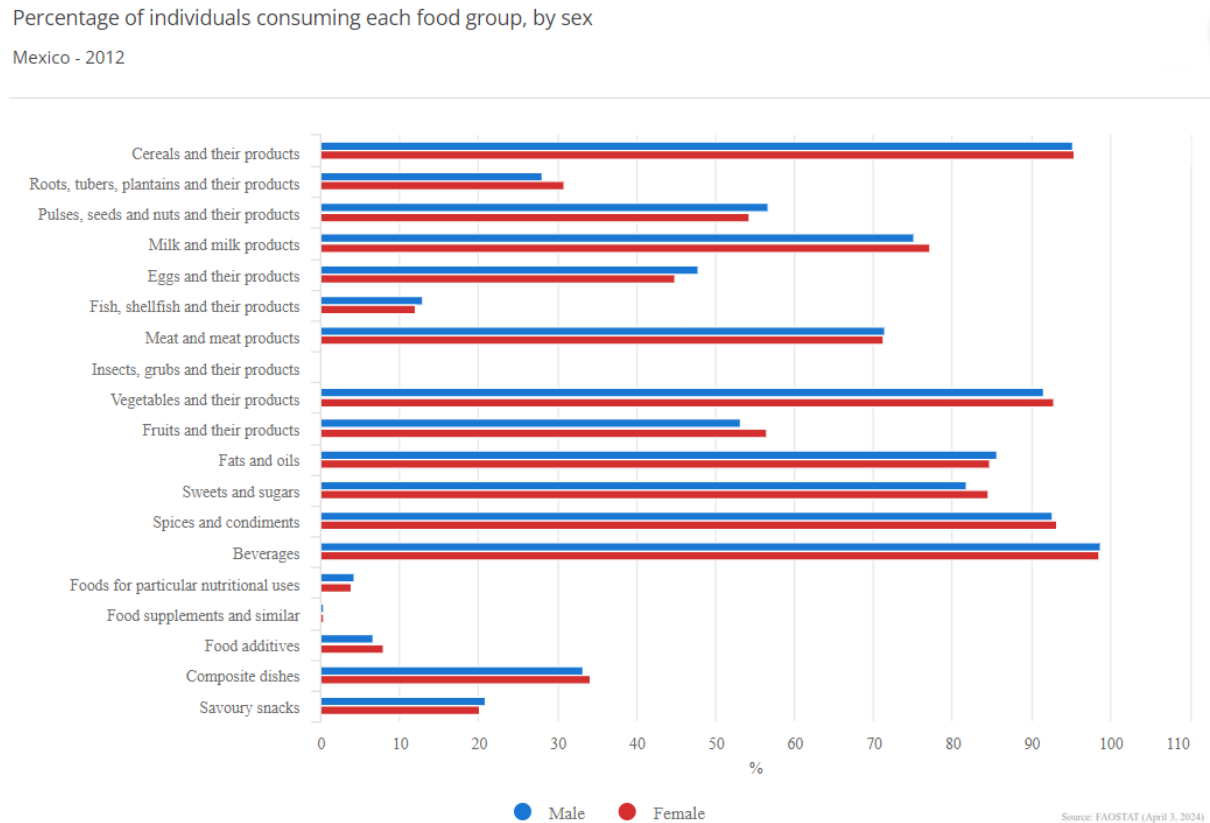
Source: FAO. 2024. Availability (Supply utilization accounts). In: FAOSTAT. Rome. [Cited February 2024]. <https://www.fao.org/faostat/en/#data/SUA>

Figure 2. Dietary fibre apparent intake, from all food groups, by urban and rural areas, based on HCES data from countries of the Asia and Pacific commission on agricultural statistics.



Source: FAO. 2024. Apparent intake (Household consumption and expenditure surveys). In: FAOSTAT. Rome. [Cited February 2024]. <https://www.fao.org/faostat/en/#data/HCES>

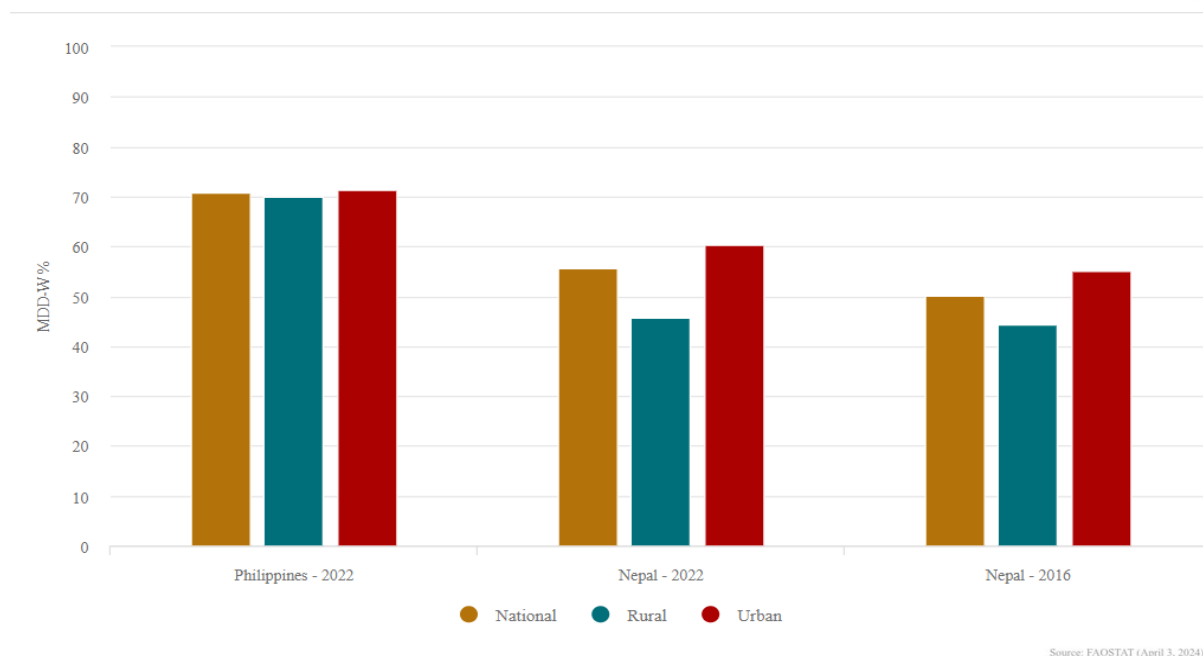
Figure 3. Contribution of food groups to total energy intake, by sex in Mexico in 2012, based on individual quantitative level data.



Source: FAO. 2024. Intake (Individual quantitative dietary surveys). In: FAOSTAT. Rome. [Cited February 2024]. <https://www.fao.org/faostat/en/#data/FDIQ>.

Figure 4. Prevalence of non-pregnant and non-lactating women of reproductive age achieving MDD-W, in countries of the Asia and Pacific commission on agricultural statistics.

MDD-W prevalence by survey, at national and urban/rural levels



Source: FAO. 2024. Diversity (MDD-W, Individual qualitative dietary surveys). In: FAOSTAT. Rome. [Cited February 2024]. <https://www.fao.org/faostat/en/#data/MDDW>.

3. Conclusions and Recommendations

The Food and Diet Domain has enabled the sharing of statistics on four distinct but complementary types of dietary data. This initiative, involving the FAO Statistics, Food and Nutrition, and Fisheries and Aquaculture Divisions, has enabled the establishment of this domain which aims to serve multiple stakeholders and fill data gaps. Prior to the launch of the “Food and Diet” domain, only statistics on supply of energy and macronutrients (protein and fat) were available on FAOSTAT. As a result of the development of a new Global Nutrient Conversion Table¹⁹ for the SUA data, led by the FAO Food and Nutrition Division, an update and extension of the available published statistics is now available¹⁹.

The domain currently provides food and nutrient statistics from HCES conducted in seven out of 30 countries from the Asia and Pacific commission on agricultural statistics (23%). It is important to note that countries have the potential to start narrowing data gaps by optimizing the use of HCES data already collected in the country. By leveraging existing data from these surveys, data gaps could be further narrowed minimizing efforts and maximizing invested financial resources, while at the same time enhancing national staff capacities in producing food and nutrient statistics.

The domain also presents statistics on the MDD-W indicator, which has been included as a core indicator in the demographic and health surveys (DHS) around the world. The inclusion of this indicator in forthcoming DHS will provide valuable insights into the dietary diversity and serve as a proxy for

¹⁹ Grande F., Ueda Y., Masangwi S. and Holmes B. 2024. Global nutrient conversion table for FAO supply utilization accounts. Rome, FAO. <https://doi.org/10.4060/cc9678en>

micronutrient adequacy level among women of reproductive age in the countries. This indicator is also collected as part of the Gallup World Poll. Additionally, it has been recently put forward as an additional indicator in the SDG framework (prevalence of minimum dietary diversity), together with the indicator for children aged 6-23.9 months, and will be considered by the Inter Agency and Expert Group on SDG indicators (IAEG-SDGs) during the 2025 comprehensive review.

The FAO/WHO GIFT platform serves as the source for individual quantitative dietary intake data for the Food and Diet domain. Only statistics for those surveys that are nationally representative are shared through the Food and Diet Domain. The ESN team managing the FAO/WHO GIFT platform supports national institutions, academia, and NGOs by facilitating the sharing of individual-level microdata, providing trainings on data harmonization and use. The platform also promotes the use of individual food consumption data to inform policies and actions. Publishing microdata on the FAO/WHO GIFT platform contributes to reducing data gaps by also presenting statistics on food consumption, nutrition, food safety, and environment.

The Food and Diet Domain will be extended as more dietary data and statistics become available and are processed. Further information on the Food and Diet Domain can be found in the [analytical brief](#) and related links as follows:

- [FAOSTAT](#)
 - [Sub-domain for Supply Utilization Accounts](#)
 - [Sub-domain for HCES](#)
 - [Sub-domain for individual quantitative surveys](#)
 - [Sub-domain for individual qualitative surveys \(MDD-W\)](#)