



Food and Agriculture
Organization of the
United Nations



UNLOCKING FOOD AND AGRICULTURE MICRODATA TO ACHIEVE THE SDGs: THE FAM CATALOGUE

27 OCTOBER 2022

FAO OFFICE OF CHIEF STATISTICIAN
(OCS)

INTRODUCTION

- This webinar is organized by the Office of Chief Statistician, which coordinates the statistical activities and leads the SDG monitoring work at FAO. It also represents the Organization in all international statistical fora
- The objective of this webinar is to promote the Food and Agricultural Microdata (FAM) catalogue established by FAO and the use of the microdata contained therein
- The FAM catalogue was created in 2019 to respond to the need for a corporate microdata dissemination platform.
- Before then, FAO never had a policy or a platform to disseminate microdata, leading to data graveyards and thus, undermining the return on investment of expensive data collection activities.
- While investing on the improvement of microdata dissemination is critical, ensuring their use is equally important.

PURPOSE AND OBJECTIVES

- The main target groups of this webinar are in particular non-FAO users, including researchers, journalists and decision-makers.
- At the end of this webinar, participants will have a full grasp of the data collections hosted by the FAM platform and its functionalities, as well as the potential use of FAM microdata for policy research and analysis.
- Thus, the webinar will:
 - Guide users through the features of the FAM platform and its functionalities
 - Inform users about the different collections hosted in FAM
 - Showcase the results of research projects based on the use of FAM data
 - Gather feedback to identify user data needs and understand how best to address them.

AGENDA

- Part I: Introduction to the FAM Catalogue
 - Overview, data collections and data access
 - FAM features and functionalities
- Part II: Use of FAM data
 - Case study on the use of FAM data: "Hunger amid plenty: Relative food insecurity and mental health and wellbeing in 160 countries"
 - Potential use of FAM data:
 - Food Insecurity Experience Scale (FIES) data
 - Resilience Index Measurement and Analysis (RIMA) data
 - Data in Emergencies (DIEM) data
 - National Forest Inventory (NFI) data
 - Pastoralist data
 - Dietary/nutrition data
- Questions & answers

PART I: INTRODUCTION TO THE FAM CATALOGUE


<https://microdata.fao.org>

Food and Agriculture Microdata Catalogue

 Browse Citations

- Years 
- Countries 
- Collections 
- License 

Showing 1-15 of 1,196

Popularity 

 **Annual Agricultural Area and Production Survey 2010**

Ecuador, 2010

National Institute of Statistics and Censuses (INEC), Agricultural Statistics Unit

Collection: Agriculture Census and Surveys

OVERVIEW, DATA COLLECTIONS & DATA ACCESS

□ Overview

- The ambition of the FAM catalogue is to be a one-stop shop for finding micro datasets related to food, agriculture, nutrition, forestry and all the other related domains relevant to FAO's mandate.
- Launched on July 15, 2019. Currently the catalogue has over 1,190 studies.
- Each study comprise metadata, related documents, and in most cases microdata.
- IT structure is based on the National Data Archive (NADA), developed by world bank.
- Metadata standard is based on the Data Documentation Initiative (DDI)

OVERVIEW, DATA COLLECTIONS & DATA ACCESS

□ Overview

- Different protocols were also developed by OCS
 - Microdata and Metadata Curation and Dissemination (MMCD) protocol which guides the microdata dissemination process and data publication workflow.
 - Statistical Disclosure Control (SDC) protocol which explains and guides the data anonymization procedure
- Data anonymization is especially important due to the need to protect the confidentiality of respondent.
- Thus, all microdata published on FAM are fully anonymized before dissemination.

OVERVIEW, DATA COLLECTIONS & DATA ACCESS

Overview

The data publication workflow includes

Step 1

- Data is prepared and submitted by data provider with metadata and relevant documentation

Step 2

- OCS reviews submission, conducts quality checks, prepare metadata and anonymize microdata

Step 3

- OCS uploads and publish the study on FAM, after review by data provider and validation by senior statistician

Step 4

- Users request to download dataset and each request is reviewed by OCS

OVERVIEW, DATA COLLECTIONS & DATA ACCESS

Data Collections

Type of Collection	Number of Studies
1. Food Security	634
2. Agricultural Census and Surveys	396
3. Agricultural Census Metadata	126
4. IFAD Impact Assessment Surveys	18
5. Data in Emergencies Monitoring Surveys	14
6. Nutrition	5
7. Forest Inventory Data	3

OVERVIEW, DATA COLLECTIONS & DATA ACCESS

Data Access

- Internal users can login with their FAO credentials, while external users can login with a google account.
- To access a licensed dataset, users have to select “GET MICRODATA” and fill a

STUDY DESCRIPTION

DATA DESCRIPTION

DOWNLOADS

GET MICRODATA

Application for Access to a Licensed Dataset

Fields marked with * are mandatory.

The information provided on this page will be kept confidential and will be used for internal purposes only.

First Name	Oluwakayode.Anidi
Last Name	
Organization	

FAM FEATURES AND FUNCTIONALITIES

- FAM has different filter options for users to find and select datasets.



Years

Countries

Collections

License

- Users can also find datasets using the keyword search option



Keywords...

Search

FAM FEATURES AND FUNCTIONALITIES

- ❑ Users can sort studies, either by popularity, relevance, year, title and country.
- ❑ Other features and functions of FAM include
 - ❑ Deposit data files and documents – **Only Internal users**
 - ❑ Browse relevant citations
 - ❑ Explore the study description – DDI metadata
 - ❑ Explore the data description
 - ❑ Download documents related to the study
 - ❑ Download microdata
- ❑ Brief Demo → [Food and Agriculture Microdata Catalog](#)

PART II: USE OF FAM DATA

CASE STUDY ON USE OF FAM DATA

Hunger amid plenty: Relative food insecurity and mental health and wellbeing in 160 countries

Frank J. Elgar, PhD

School of Population and Global Health, McGill University

Soc Sci Med. 2021 Jan;268:113556

<https://doi.org/10.1016/j.socscimed.2020.113556>

PART II: USE OF FAM DATA

Previous research found the health impacts of food insecurity are stronger in richer countries (Frongillo et al, 2019).

In this paper, we hypothesized that this pattern is a function of **relative deprivation**, not wealth.

According to relative deprivation theory, the stress associated with poverty is intensified by ‘upward’ social comparisons.

“The magnitude of a relative deprivation is the extent of the difference between the desired situation and that of the person desiring it” (Townsend, 1993, p. 10).

PART II: USE OF FAM DATA

Hypotheses:

H1. Relative food insecurity is associated with poor mental health and reduced wellbeing after absolute food insecurity is controlled.

H2. These associations are stronger where the national prevalence of food insecurity is lower, due to having more unfavorable social comparisons.

PART II: USE OF FAM DATA

Data were provided by the Gallup World Poll (2014-2019) available on FAM, which included the 8-item **Food Insecurity Experiences Scale** and indices of mental health symptoms, wellbeing and life satisfaction

- 160 countries (141 to 102 per cycle)
- 2900 subnational regions
- 928,043 individuals, 15 years and older

PART II: USE OF FAM DATA

The Yitzhaki index of relative deprivation was applied to FIES scores using national and subnational reference groups.

$$\text{Relative FI} = 1/N \sum (y_i - y_i), \forall y_i < y_i$$

Our analyses involved weighted Poisson regressions of mental health and wellbeing and linear (Tobit) regressions of life satisfaction

Covariates: age, gender, community size, income, country and year.

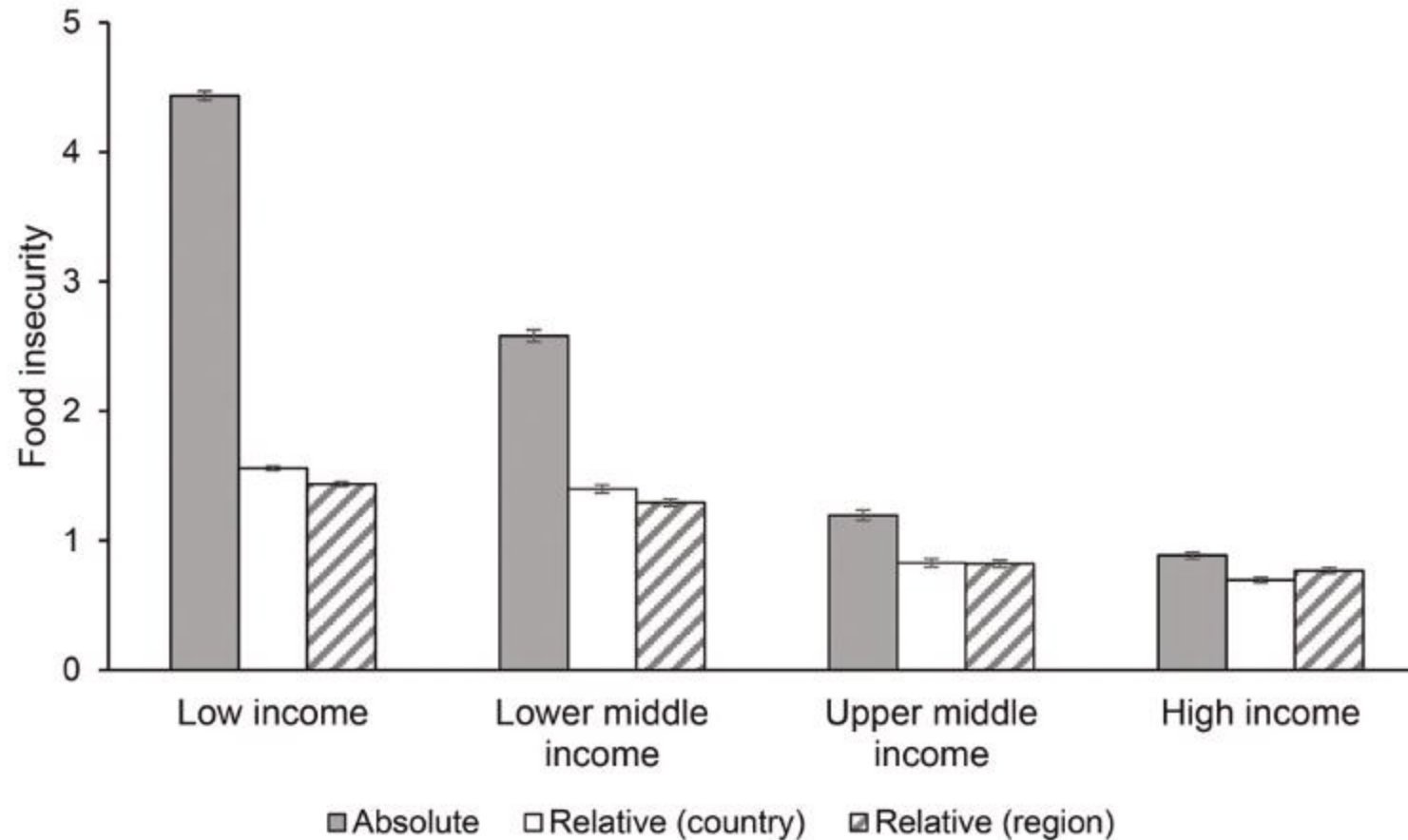


Fig. 1. Absolute and relative food insecurity by World Bank income levels (n = 160). Bars represent country average scores on the Food Insecurity Experiences Scale and Yitzhaki index of relative food insecurity, calculated using country and regional reference groups. Error bars represent 95% confidence intervals.

PART II: USE OF FAM DATA

Support for H1:

We found positive associations of both absolute and relative food insecurity with mental health symptoms, and negative associations with wellbeing and life satisfaction.

PART II: USE OF FAM DATA

Table 3

Poisson regression of mental health symptoms by absolute and relative food insecurity and interactions with the prevalence of moderate or severe food insecurity.

Variable	Bivariate associations		Mutually adjusted		Mutually adjusted with interactions		
	IRR	95% CI	IRR	95% CI	IRR	95% CI	
	Absolute FI	1.13** (1.13, 1.13)	1.02** (1.01, 1.03)	1.04** (1.03, 1.05)	Relative FI	1.26** (1.25, 1.27)	1.20** (1.19, 1.22)
Absolute FI * FI prevalence			1.10** (1.07, 1.13)			1.10** (1.07, 1.13)	
<i>Absolute FI at low FI prevalence</i>			<i>1.02** (1.01, 1.03)</i>			<i>1.02** (1.01, 1.03)</i>	
<i>Absolute FI at high FI prevalence</i>			<i>1.11** (1.09, 1.13)</i>			<i>1.11** (1.09, 1.13)</i>	
Relative FI * FI prevalence			0.74** (0.69, 0.78)			0.74** (0.69, 0.78)	
<i>Relative FI at low FI prevalence</i>			<i>1.34** (1.30, 1.37)</i>			<i>1.34** (1.30, 1.37)</i>	
<i>Relative FI at high FI prevalence</i>			<i>1.12** (1.07, 1.16)</i>			<i>1.12** (1.07, 1.16)</i>	

Note: Shown are incidence rate ratios (IRR) and 95% confidence intervals (CI). Mutually adjusted regressions are also adjusted for gender, age group, and household income (see [supplementary Table S1](#)). All models are adjusted for the fixed effects of country differences. Simple slopes (in italics) are shown where the interaction is significant ($p < 0.05$) and correspond to high and low country-level prevalence of food insecurity (mean \pm 1 SD).

* $p < 0.05$, ** $p < 0.01$.

Table 4

Poisson regression of positive well-being by absolute and relative food insecurity and interactions with country-level prevalence.

Variable	Bivariate associations		Mutually Adjusted		Mutually adjusted with interactions		
	IRR	95% CI	IRR	95% CI	IRR	95% CI	
	Absolute FI	0.96** (0.96, 0.97)	0.99** (0.98, 0.99)	0.98** (0.97, 0.98)	Relative FI	0.94** (0.94, 0.94)	0.97** (0.96, 0.97)
Absolute FI * Prevalence					0.99 (0.97, 1.00)		
Relative FI * Prevalence					1.06** (1.03, 1.09)		
<i>Relative FI at low FI prevalence</i>					<i>0.88** (0.86, 0.91)</i>		
<i>Relative FI at high FI prevalence</i>					<i>0.97 (0.93, 1.01)</i>		

Note: Shown are incidence rate ratios (IRR) and 95% confidence intervals (CI). Mutually adjusted regressions are also adjusted for gender, age group, and household income (see [supplementary Table S2](#)). All models are adjusted for the fixed effects of country differences. Simple slopes (in italics) are shown where the interaction is significant ($p < 0.05$) and correspond to high and low country-level prevalence of food insecurity (mean \pm 1 SD).

* $p < 0.05$, ** $p < 0.01$.

Table 5

Tobit regression of life satisfaction by absolute and relative food insecurity (FI) and interactions with country-level prevalence.

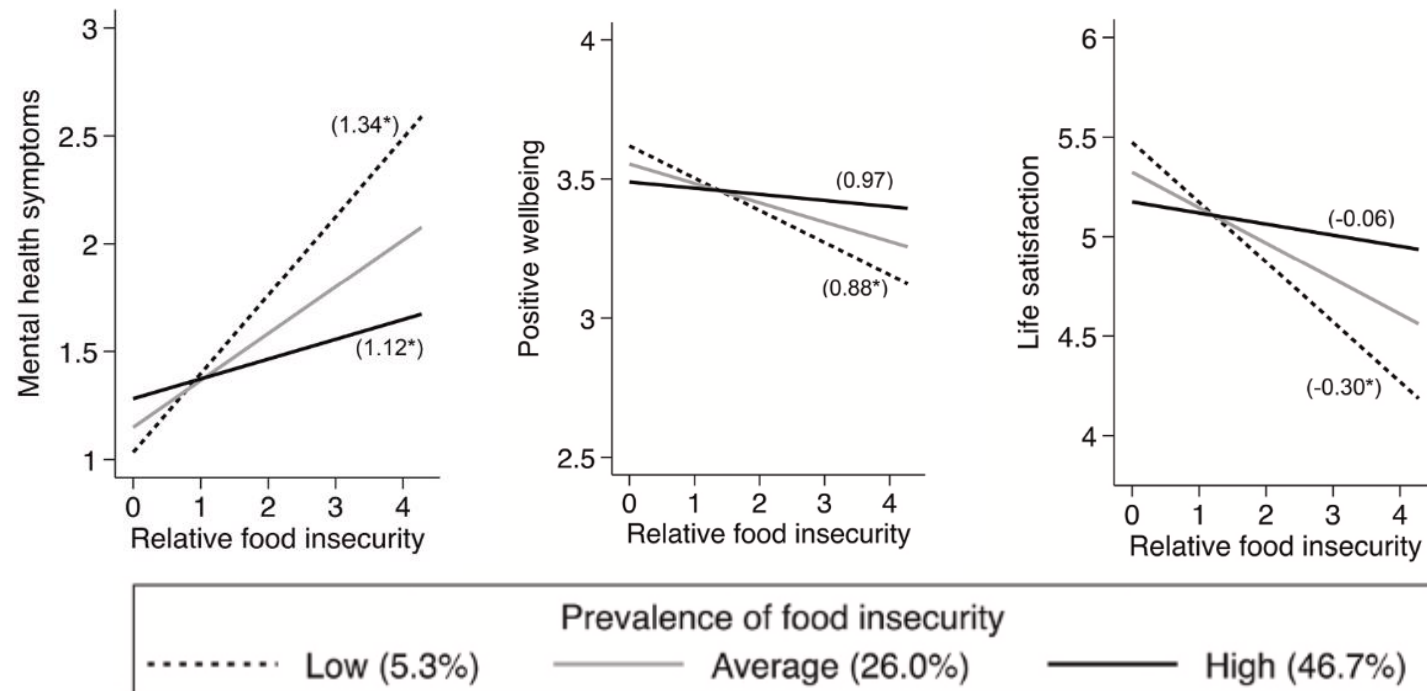
Variable	Bivariate associations		Mutually adjusted		Mutually adjusted with interactions		
	b	95% CI	b	95% CI	b	95% CI	
	Absolute FI	-0.24** (-0.25, -0.23)	-0.10** (-0.12, -0.08)	-0.12** (-0.14, -0.09)	Relative FI	-0.42** (-0.43, -0.41)	-0.22** (-0.19, -0.14)
Absolute FI * Prevalence					-0.24** (-0.33, 0.16)		
<i>Absolute FI at low FI prevalence</i>					<i>-0.06*</i> (-0.09, -0.02)		
<i>Absolute FI at high FI prevalence</i>					<i>-0.18**</i> (-0.20, -0.15)		
Relative FI * Prevalence					0.49** (0.33, 0.66)		
<i>Relative FI at low FI prevalence</i>					<i>-0.30**</i> (-0.35, -0.26)		
<i>Relative FI at high FI prevalence</i>					<i>-0.06 (-0.13, 0.02)</i>		

Note: Shown are linear slopes (b) and 95% confidence intervals (CI). Mutually adjusted regressions are also adjusted for gender, age group, and household income (see [supplementary Table S3](#)). All models are adjusted for the fixed effects of country differences. Simple slopes (in italics) are shown where the interaction is significant ($p < 0.05$) and correspond to high and low country-level prevalence of food insecurity (mean \pm 1 SD).

* $p < 0.05$, ** $p < 0.01$.

PART II: USE OF FAM DATA

Support for H2: Associations of relative food insecurity are stronger where the prevalence of food insecurity is lower.



PART II: USE OF FAM DATA

Conclusions:

Mental health consequences of food insecurity are sensitive to social context.

The surest way to *feel* food insecure is to be continually reminded of how little food you have when others have plenty.

ACKNOWLEDGEMENTS

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Funding:

Canadian Institutes for Health Research (PJT-162463; PJT-165971)

Social Sciences and Humanities Research Council (435-2019-1083)

Canada Research Chairs

PART II: USE OF FAM DATA

Food Security

Food Insecurity Experience Scale (FIES)

SDG Indicator 2.1.2 and beyond

PART II: USE OF FAM DATA

□ General introduction

- Food insecurity as an experienced condition of inability to **access food**
- A measurable **latent trait**, the severity of which is revealed by its consequences
- **Self-reported** occurrence of typical experiences are used to estimate the probability that each respondent (household or individual) belongs to the different classes (moderately or severely) of food insecurity
- The **prevalence of food insecurity** in a population, at a given level of severity or more, is then estimated as the cumulated probability, across the respondents in a representative sample of the population, to belong to the class defined by that range of severity

PART II: USE OF FAM DATA

□ General introduction

□ The FIES survey module:

During the last 12 MONTHS, was there a time when:

1. You were **worried** you would run out of food because of a lack of money or other resources?
2. You were unable to eat **healthy** and nutritious food because of a lack of money or other resources?
3. You ate only a **few kinds of foods** because of a lack of money or other resources?
4. You had to **skip a meal** because there was not enough money or other resources to get food?
5. You **ate less** than you thought you should because of a lack of money or other resources?
6. Your household **ran out of food** because of a lack of money or other resources?
7. You were **hungry** but did not eat because there was not enough money or other resources for food?
8. You went without eating for a **whole day** because of a lack of money or other resources?

Mild food insecurity

Severe food insecurity

Anxiety about ability
to procure adequate food

Compromising quality
and variety of food

Reducing quantities,
skipping meals

Experiencing hunger



PART II: USE OF FAM DATA

- Content of the main variables
 - Case ID
 - The 8 FIES questions
 - Sampling weights
 - Year
 - Household composition
 - Computed variables (raw score, respondent parameters and errors, FI probabilities)
 - A set of socio-demographic variables (age, education, urban/rural, gender, income)

PART II: USE OF FAM DATA

□ Suggested potential use

□ To compute SDG indicator 2.1.2: Prevalence of food insecurity in the population based on FIES

□ To explore determinants and associations between food insecurity and other variables

□ Suggested links:

<https://fies.shinyapps.io/ExtendedApp/>

<https://www.fao.org/in-action/voices-of-the-hungry/analyse-data/en/>

PART II: USE OF FAM DATA

Resilience Index Measurement and Analysis (RIMA)



Resilience Index Measurement and Analysis, Madagascar, 2019

Madagascar, 2019 [GET MICRODATA](#)

Reference ID MDG_2019_RIMA_v01_EN_M_v01_A_OCS

Producer(s) Food and Agricultural Organization of the United Nations, CAETIC Développement

Collections [Food Security](#)

Metadata [Documentation in PDF](#) [DDI/XML](#) [JSON](#)

[RIMA data in FAM catalogue: click here](#)

PART II: USE OF FAM DATA

□ General introduction

□ RIMA is a quantitative approach that estimates household resilience to food insecurity

□ RIMA data collected all over the world (especially Africa) since 2008

□ 19 datasets shared

- Mali, Niger, Chad, Senegal, Mauritania, Nigeria, DRC, Uganda, Madagascar, Myanmar
- 2014 – 2021 (priority to most recent datasets)
- Regional coverage

PART II: USE OF FAM DATA

□ Content of the main variables

- LSMS-type survey; Short RIMA questionnaire
- Unit of analysis: the household
- Socio-demographic characteristics of households; Access to basic services; Productive and non-productive assets; Income-generating activities; Formal and informal safety nets; Social networks; Shocks (idiosyncratic and covariate, including climate shocks) and coping strategies; Food security indicators (FCS, HDDS, FIES, food expenditures); Conflict exposure (when relevant)

PART II: USE OF FAM DATA

□ Suggested potential use

- Tracking the progress of SDGs (indicators 1.4.1; 2.1.2; 7.1.1)
 - regional level
 - Malabo Declaration (indicator 6.1 i) – regional level
 - Targeting; Needs assessment; Impact evaluation
 - Research on resilience and food security (e.g., Notre Dame University, University of Florence, York University)

PART II: USE OF FAM DATA

DIEM: Data in Emergencies Information System

data-in-emergencies.fao.org

PART II: USE OF FAM DATA

□ General introduction

Launched in June 2020 to better understand the impact of shocks on agricultural livelihoods.

DIEM Monitoring collects, analyses and disseminates household data on agricultural livelihoods and food security in food crisis contexts.

Multi country coverage

Regularly updated

Aims to inform decision-making and support evidence-based programming.

PART II: USE OF FAM DATA

Content of the main variables

More than 100 indicators related with 5 thematic areas.

DIEM data

- Open
- Standardized
- Authoritative
- Up-to-date
- Rapid data-cleaning



Microdata published on FAM platform

Aggregated datasets, maps, dashboards, reports and questionnaires available on [DIEM Hub](#).

PART II: USE OF FAM DATA

□ Suggested potential use

Programming (emergency response, anticipatory action, resilience)

Food security phases classification (IPC, CH)

Policy-making

Trends analysis

Further thematic research

Risk analysis

PART II: USE OF FAM DATA



Forest Inventory Data

PART II: USE OF FAM DATA

□ General introduction

- ← Forest data is essential for evidence-based and effective policy and decision-making.
- ← National forest monitoring systems generate **reliable** and **accessible data** on the status and trends of forests and land cover.
- ← **National forest inventories** - compile data and provide estimates on relevant variables about characteristics of forests and forested landscapes.
- ← The Forestry Division has implemented a project ([CBIT-Forest](#)) aiming to work with countries towards open and transparent data for climate action.
- ← The FAM 'Forest Inventory Data' collection contains metadata, microdata and related information on **national forest inventories**.

More info: *Towards open and transparent forest data for climate action: experiences and lessons learned* ([En](#), [Es](#), [Fr](#)).

PART II: USE OF FAM DATA

Content of the main variables

Carbon, deadwood	Tree biodiversity
Land ownership	Forest Production
Tree volume and biomass	Forest health
Use of forest products	Forest fire evidence
Land use, land cover	Tree biodiversity
Canopy cover	

PART II: USE OF FAM DATA

□ Potential use

- NGOs, private sector, academia and research institutions.
- Formulation, monitoring, and adjustment of projects (REDD+, restoration), support NFI design, global biodiversity and carbon studies and studies that integrate field data and remote sensing and use of artificial intelligence among others.

PART II: USE OF FAM DATA

Microdata sets on the economics of pastoral households

Presenter : Ivana Mardesic, Pastoralist Knowledge Hub, FAO, Animal Production and Health Division

PART II: USE OF FAM DATA

□ General introduction

- Project «Pastoralist-Driven Data Management System” :
 - financed by IFAD
 - Data collected by pastoral organisations with technical support of FAO and CIRAD
 - 3 countries : Mongolia (National Federation of Pasture User Groups), Argentina (Redes Chaco) and Chad (Réseau Billital Maroobé)
 - Results :
 - First survey (census) : reach as many pastoral households as possible (a bit less than 10 000 in Chad and Argentina, more than 100 000 in Mongolia)
 - Second survey (in-depth economic analysis) : between 1000 and 2000 households in each country, based on a representative sampling strategy, covering all ecoregions
 - Survey template that was adapted thanks to the expertise of each organisation
 - Collection led in 2018 and 2019

PART II: USE OF FAM DATA

□ Content of the main variables

□ First survey (“census“)

- General information on the household, number and types of livestock, breed, type of movements and transhumance, status of land, tensions related to land or water

□ Second survey (more in-depth)

- Economic data : disaggregated data on livestock production (live animals, dairy, wool, hides, etc.), agricultural production, income, selfconsumption and expenditures (feed, water, animal health, services,...) by season
- Shocks, effects, and adaptation strategies (in Chad and Argentina)

PART II: USE OF FAM DATA

□ Suggested potential use

□ What has been done :

□ Analysis of the economics of pastoral systems

- Contribution to the national GDP (ex. 11% of the GDP in Chad, and 27% if we incorporate selfconsumption, <https://www.fao.org/3/cb1271en/cb1271en.pdf>)

□ What could be done :

□ Data interesting to public/private sector : milk, wool, leather production capacities at national level

□ Mapping of the movements of pastoralists in the countries

□ Cross-sectional analyses:

□ Ex. between shocks and different socio-economic categories of herder

□ Gender-focused analysis

□ Use the seasonality of the incomes and expenditures -> tool to identify critical times for pastoral households

□ Resilience index

□ Overlapping with other global or national datasets : land degradation, biodiversity, climate change

□ Please feel free to reach out : ivana.mardesic@fao.org, gregorio.velascogil@fao.org

PART II: USE OF FAM DATA

DIETARY AND NUTRITION DATA

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PART II: USE OF FAM DATA

□ General introduction to dietary data

Food Balance Sheets/Supply Utilization Accounts – National food availability



Household Consumption and Expenditure Surveys – Household food acquisition
/ apparent consumption



Individual quantitative food consumption – Dietary surveys collecting data through
24-h recalls or food records



PART II: USE OF FAM DATA

Collation of individual quantitative dietary data by FAO



The screenshot shows the top navigation bar of the FAO website, including the FAO logo and the text 'Food and Agriculture Organization of the United Nations'. Below this is the 'FAO/WHO GIFT | Global Individual Food consumption data Tool' header, which includes logos for the FAO and the World Health Organization. A navigation menu contains tabs for 'Overview', 'Data and indicators', 'Inventory of surveys', 'Resources', and 'Methodology'. The main content area features a banner with two blue plates of food and the text 'FAO/WHO GIFT: Better data, better policies, better diets. Providing tailored answers for health, nutrition and agriculture policies.'



Indicators and summary statistics in the form of infographics

Microdata available for download

Name

- consumption_user.csv
- FAO_WHO_GIFT_Code_book.xlsx
- FAO-WHO Data acknowledgment.txt
- subject_user.csv



FAM

PART II: USE OF FAM DATA

Content of the main variables

“Subject” file – information on the individuals

Subject ID

Geographical location and type of area

Age and sex

Anthropometrics

Physiological condition of women and infants

“Consumption” file – information on consumption

Subject ID

Number of survey days

Description of all foods consumed by subject by survey day

Amounts consumed of each food

Energy and nutrient content of each food consumed

PART II: USE OF FAM DATA

□ Suggested potential use

• Nutrition:

- Understand what people eat and drink all over the world
- Understand energy and nutrient intakes of different population groups
- Identify groups at risk of malnutrition
- Inform nutrition-sensitive policies and programmes in different sectors
- Inform the development of dietary guidelines
- Inform fortification programmes
- Monitor and evaluate impact of interventions and policies

• Food safety:

- Inform dietary exposure risk assessments (when linked to chemical occurrence data)

THANK YOU!

Visit the FAM Catalogue:

<https://www.fao.org/food-agriculture-microdata/en/>

Sign up to our newsletter:

http://newsletters.fao.org/k/Fao/subscription_form_sdg_indicators

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