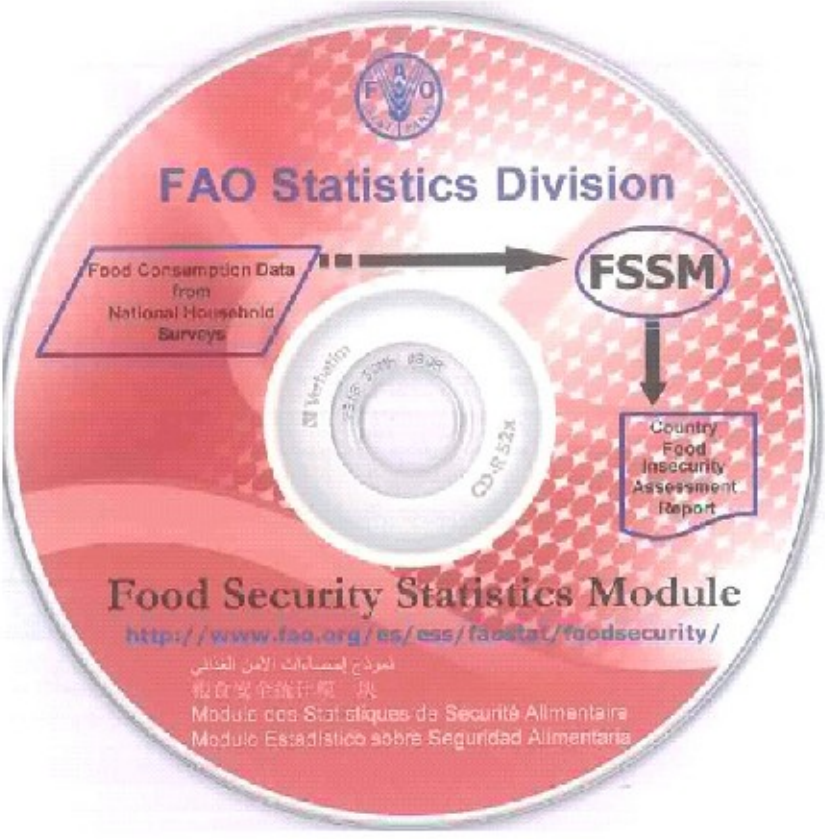

FAO Statistics Division
Food Consumption Data from National Household Surveys
FSSM
Country Food Insecurity Assessment Report
Food Security Statistics Module
http://www.fao.org/es/ess/faostat/foodsecurity/
نموذج إحصائيات الأمن الغذائي
粮食安全统计模块
Module des Statistiques de Securité Alimentaire
Modulo Estadístico sobre Seguridad Alimentaria

# FOOD SECURITY STATISTICS MODULE (FSSM)

The FAO Statistics Division has developed the Food Security Statistics Module (FSSM) software to help National Statistical Organizations (NSO) to estimate food consumption and security statistics derived from food consumption data collected in National Household Surveys (NHS). One of the main uses of these statistics is the assessment and monitoring of the national and sub-national food security situation in the context of the World Food Summit and Millennium Development Goals targets on hunger reduction. The outputs of the FSSM are based on inputs for the national decision-making processes in the economic and social policy analysis and programme implementation.

The FSSM software aims at improving the quality, consistency and availability of food security statistics useful for assessing and monitoring food deprivation and other relevant statistics at the national and sub national levels. It also provides a suite of harmonized food indicators for the global community to measure the progress towards the MDG goal 1, target 2, indicator 5 (prevalence of undernourishment) and inputs for countries Poverty Reduction Strategy Papers (PRSP).

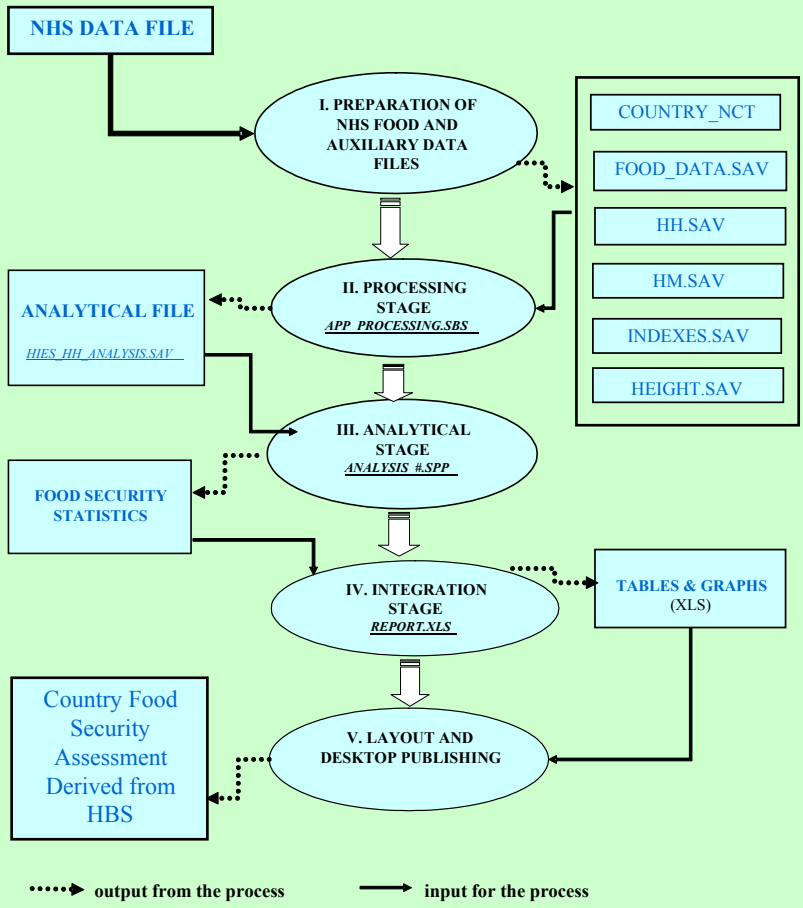
The FSSM software consists in a set of programs developed to process food consumption, income and other relevant data, implement statistical procedures for estimating food security statistics, integrate results in standard tables and prepare charts and graphs ready for publication.

The SPSS software implements all statistical procedures and algorithms. Excel of Microsoft Office produces final tables for country reports on food insecurity. The Box below presents an overview of the procedures of the FSSM software from the original country NHS data file to the final production of a technical report on food insecurity assessment.

NHS data files contain all information collected from each household during the household reference period sampled over the NHS reference period. They usually contain a large number of records, given the number of sampled households and the number variables related to each household, its members and the numbers of items in household consumption (including food) and expenditure. The NHS data file is usually country specific due to the wide-spread use of electronic computers and availability of several program platforms for data entry and editing on the markets. The NHS data file structure is not a simple flat data file with records (rows) and variables (columns), but a complex one with information on three hierarchies of statistical units: households, household's members and expenditure items.

The FSSM uses the NHS detailed data on food consumption and income together with other variables related to household and member characteristics, particularly household's head, for cross sectional analysis with demographic and socio-economic factors.

**Box: Overview of the food consumption data processing for the estimation of food security statistics derived from national household survey data**




The ***FOOD.sav*** is the main data file containing food consumption details in quantity and values for each reported food item identified with a unique food item code as defined by national or international household coding systems. The most commonly used international commodity classification is the International Classification of Individual Consumption by Purpose (COICOP) which has been developed more recently replacing the previously widely used System of National Accounts (SNA). In any adopted commodity classifications, the food commodity group should include food, non-alcoholic and alcoholic beverages as well as food consumed away from home with specific and easily identified food codes. Many country NHS data files identify the food data in both quantity and monetary values according to the source of acquisition (purchases, own consumption, away from home or from other sources such as gifts, remittances, in-kind payment, aid, etc.). However, food purchased and consumed away from home in restaurants, street vendors or food courts is a separate expenditure food code in monetary values only.

The household data file (***HH.sav***) contains relevant information on geographical description and characteristics of households, which are for building up sub-national population groups for comparative analysis of food consumption patterns and levels.

The household member data file (***HM.sav***) has variables such as gender, age, attained-height, education level and occupation are useful to determine the profiles of food insecure population groups.

The nutrient conversion table (***COUNTRY_NCT.sav***) data file contains nutrient conversion factors for the list of food items in the NHS expressed as per 100 gram edible portion. The preparation of the NCT is a challenging task that requires external data on nutrient values available from country

or regional food composition tables. The ***COUNTRY_NCT.sav*** data file contains a detailed list of all food items identified in the NHS together with the corresponding food codes, food, commodity group to which the food item belongs. The nutrient values per 100 gms edible portion for each food item as well as their density coefficient and refuse factor are included in the data file. This manual provides some basic guidelines for preparing the country NCT, which should however be performed in consultation with nutritionists in the health sector. The NCT can be used for future NHS with some marginal amendments.

The monthly Food Price Index (FPI) factors are used to inflate or deflate all aggregated food monetary values at household level. A similar procedure is performed using CPI for total household consumption, total household expenditure and income on the assumption that they also follow the price change trends. This method is implemented using the data file ***INDEXES.sav*** with the Consumer Price Index and Food Price Indexes.

The FSSM also includes a module MDER_ADER which calculates the estimates of the minimum dietary energy requirement (MDER) used to measure prevalence of undernourishment estimates. Country age, sex and height distribution data is an essential input for the computation of MDER. As the NHS does not usually collect height data from the households members, the ***HEIGHT.sav*** data file gives the attained height distribution of the population by age and sex and needs to be prepared from data of national health surveys.

The output file ***HH_ANALYSIS_DATA.sav*** is obtained after processing the five NHS prepared data files discussed above. This file serves as input to implement the analytical procedures of the FSSM. It contains adjusted aggregated monetary, quantity and nutrients values by each food source and weighted aggregated values of total consumption income and expenditure at household level. The variations due to household size, difference in household collection periods and other random errors due to sampling and non-sampling factors have been partially removed by averaging household values on per person per day basis.

***HH_ANALYSIS_DATA.sav*** data file contains a large number of derived variables on food consumption, suitable to compute a wide range of food security statistics. The basic household descriptive food consumption estimates are in terms of monetary and dietary energy values. Those estimates are at national and sub national level. Regions, geographical locations, household composition, size or economic and socio characteristics of the head of the household, etc. are classificatory variables for categories with a sufficient number of households to yield reliable and consistent estimates of food security statistics.

The food security statistics are computed at national and subnational levels and for fractiles of population grouped according to the household income or expenditure. These are two closely related economic variables, each having some limitations regarding the concept and data collection procedures.

Household income data as collected in the NHS relates to different concepts of income (actual, usual or current) which further varies within the different sources (gross income, net income after taxes, net profit, etc.). In addition, it is well known about the reluctance of income earners to reveal their true income especially, those earning self-employment income. Households are more willing to recall and report their details of expenditure items, which can be closely checked and edited during the collection process so that errors are minimized. When household income data are unreliable, household consumption expenditure data are used as the economic classificatory variable.

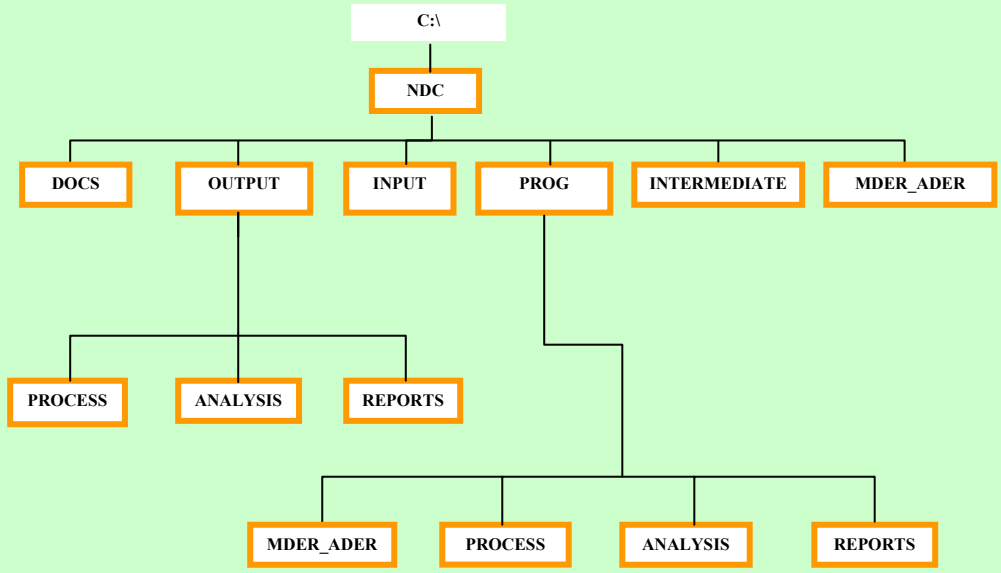
The classification of households by fractiles (decile, quintile or tertile) of daily per person income/expenditure is widely used because all variations due to measurement units of the economic classificatory variable have been removed. It also dampens some non-sampling errors arising from the different collection periods of food data consumption. The fractile classes are obtained using a

sampling weighted aggregation of the daily per person household total income and expenditure. Estimates of food security statistics are obtained for fractiles based on the weighted economic variable using household sampling weight and number of persons at national or sub national or even other population groups.

Deciles of income or total expenditure classify households in groups containing ten percent of the total population. The first lowest ten percent grouping which relates to those households with the smallest income or total expenditure is called the first decile. The next lowest ten percent is the second decile and so forth. The last ten percent decile is called the tenth or highest decile. Quintiles group ordered household on weighted daily per person household income or expenditure respectively into five groups. Those fractile groups are chosen such that the groups contain sufficient number of households for estimating reliable statistics. Food consumption statistics are estimated for each quintile/decile group.

Processing and analyzing NHS food data files involve the production and management of several types of files that need to be organised by specific folders as depicted in box below. These folders are automatically created when inserting the FSSM CD-ROM.

**Box: Organizing NDC directory, Sub-directories and Folders for Executing the FAO Procedures on the C: drive**




The PROCESS procedures produce the output ***HH_ANALYSIS_DATA.sav*** using the SBS script document program file that defines and computes all the different food security statistics at household and food item levels. The ANALYSIS procedures are made up of specific analytical variables facility programs which additionally require a few external country parameters such as population, under five mortality rates and birth rate data.

Finally the REPORT procedures prepare a set of 28 final excel tables with the corresponding charts for the elaboration of the final technical country food insecurity assessment report.