Analysis tools of food consumption trends

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Introduction

The question of food is at the centre of many debates at the beginning of this 21st century. In developed countries, faced with a plethora of food products as a result of a productivist system, we are witnessing profound changes in patterns of food consumption and the emergence of new health concerns.

Obesity affects 20 to 30% of the population of rich countries, while 850 million people in the world are undernourished.

The urgent need to develop sustainable national and international food policies seems clear. For this purpose, it is useful to have data sources, which allow us to determine food consumption and to develop observation tools in order to obtain comprehensive and consistent assessments according to specific analytical objectives. The difficulty of analysing trends in the consumption of food products within a consistent framework and over the long term gives rise in large part to disparity in the information available

By means of the data sources available to us in the *Observatoire de la Consommation Alimentaire** (Food Consumption Observatory) in Belgium and which will be presented in detail, we will endeavour to outline the specificities of each source, their strong points and their limits as well as any complementarity among them.

The analysis of food consumption trends is conditioned by the sources of information available. These must be considered separately according to whether they derive from a quantitative approach based on estimates of supply or whether they were established by a panel. Specific surveys of consumption, which are not only quantitative but also qualitative, provide further information.

** The Food Consumption Observatory (L'observatoire de la consommation alimentaire - OCA):*

Definition

This independent research and development tool was set up in Belgium in September 2003 by the Ministry of Agriculture and Rurality of the Walloon Region.

The two essential players in the OCA are, on the one hand, the Centre de Recherches et d'Information des Organisations de Consommateurs (CRIOC) [The Consumer Organisations' Centre for Research and Information], a public interest establishment founded in 1975 by the Belgian consumers' organisations and, on the other hand, Gembloux Agricultural University (FUSAGx), in particular its Rural Economics and Development Unit and its Statistics and Information Technology Unit.

Role

The public interest tasks assigned to the OCA are:

- *Management of an observatory for the study of the representations, attitudes and practices of consumption and of the markets including the coordination of surveys, the production and distribution of summaries of the survey findings;*
- *Conduct of specific thematic studies (in particular studies of prices, communication, tests of products and concepts) related to the perception of consumers according to the needs of the potential beneficiaries of the l'APAQ-W (Agency for the promotion of quality agriculture in Wallonia);*
- *Updating and expansion of documentation on consumer behaviour;*
- *Management of an observatory facility for the collection of statistics on production in the agricultural industry, including the gathering of available information specifically in relation to the problems of food consumption and, more broadly in relation to the agricultural, horticultural and agri-food sector, and the carrying out of specific statistical studies according to the needs of the potential beneficiaries of the APAQ-W;*
- *Setting up a database based on the results of the EBM (Enquête sur le budget des ménages) [household budget survey] provided by the National Statistics Institute (INS);*
- *Communication of the results to the producers, the sectors concerned, the commercial distribution networks, the general public and the press.*

Available data

Food balance sheets and the household budget survey provided by the INS.

1. Food balance sheets

1.1. Historical background of food balance sheets

Food balance sheets present a comprehensive picture of the pattern of a country's food supply during a specified reference period. The first attempts at preparing food balance sheets date back to World War I. Food balance sheets were the major source of data when, in 1936, at the request of the League of Nations Mixed Committee on the Problem of Nutrition and its Sub-Committee on Nutritional Statistics, a systematic international comparison of food consumption data was prepared.

During World War II, the interest in food balance sheets increased considerably. The Inter-Allied Committee on Post-war Requirements used them in 1942/43 in their studies of post-war requirements in European countries.

From the outset, the Food and Agriculture Organization of the United Nations (FAO) has given considerable importance to furthering the development of food balance sheets, reflecting their usefulness in analyzing the food situation at the level of individual countries. At its Fourth Session in Washington in 1948, the FAO Conference recommended that governments be encouraged to develop their own food balance sheets and that FAO assist those governments that find it difficult to do so. It was also proposed that in future food balance sheets be published regularly for as many countries as possible.

In 1949, the *Handbook for the Preparation of Food Balance Sheets* was printed

Starting with the 1979-81 issue, three-year average food balance sheet were published in a standardized format; 146 countries were covered. The publication showing standardized food balance sheets for the average 1984-86 included, in addition to the food balance sheets for individual countries, tables showing long-term series of *per caput* supplies, by major food groups, in terms of product weight, calories, protein and fat. These tables were shown also for the world, developed and developing countries. The 1994-96 issue covered about 180 countries.

Food balance sheets were the main source of data used in the assessment and appraisal of the world food situation which FAO made for the pre-war period in its *First World Food Survey* (1946), as for the next published surveys in 1952, 1963, 1977, 1985 and 1996.

In constructing the food balance sheets, both official and unofficial data available in the Statistics Division and other Units concerned in FAO have been used and missing data have been estimated on the basis of surveys and other information as well as technical expertise available in FAO.

Today, FAO establishes food balance sheets for practically every country in the world and for fairly long periods. The data currently accessible on line (http://faostat.fao.org) cover the period 1990-2004 (and from 1961 in the archives) for more than 200 countries and products.

In Belgium, balance sheets of basic agricultural products were established annually by the Ministry of Agriculture's Centre d'Economie agricole (agricultural economics centre - CEA) until 2002 and by the National Statistics Institute (INS) since 2002. They are sent, as for every member state of the EU to the Statistical Office of the European Communities (EUROSTAT).

1.2. Nature of food balance sheets

To restate, food balance sheets present a comprehensive picture of the pattern of a country's food supply during a specified reference period. The total quantity of foodstuffs produced in a country added to the total quantity imported and adjusted to any change in stocks that may have occurred since the beginning of the reference period gives the *supply* available during that period. On the *utilization* side a distinction is made between the quantities exported, fed to livestock, used for seed, processed for food use and non-food uses, lost during storage and transportation, and food supplies available for human consumption at the retail level, i.e. as the food leaves the retail shop or otherwise enters the household. The *per caput* supply of each such food item available for human consumption is then obtained by dividing the respective quantity by the related data on the population actually partaking of it. Data on *per caput* food supplies are expressed in terms of quantity and - by applying appropriate food composition factors for all primary and processed products - also in terms of energy, protein and fat.

Assessment of food consumption by means of balance sheets admittedly often overestimates actual consumption. This is why we will speak of "apparent consumption". This "apparent" consumption concerns individual (household) consumption both at home and away from home and the consumption of institutions (hospitals, prisons, educational and religious institutions…).

What is of interest about the balance sheet method, based on balance sheets established over many years and for many countries, is that it makes possible a temporal and spatial analysis of changing food consumption trends.

Regularly drawn up for many years, annual food balance sheets show the changes in total national availability of food products, reveal changes which may have taken place in the types of food consumed – hence in the structure of the diet.

By bringing together the larger part of the food and agricultural data in each country, food balance sheets are useful in making a detailed examination and appraisal of the food and agricultural situation in a country. As estimates of national aggregates, they are suitable for estimating the overall shortages and surpluses in a country. They are also useful in developing projections of future food supply needs or the future demand for food, in setting targets for agricultural production and trade and for establishing relationships between national food supplies, famine and malnutrition as well as evaluating national food and nutrition policies.

A comparison of the quantities of food available for human consumption with those imported will indicate the extent to which a country depends upon imports (import dependency ratio) to feed itself. The amount of food crops used for feeding livestock in relation to total crop production indicates the degree to which primary food resources are used to produce animal feed which is useful information for analyzing livestock policies or patterns of agriculture.

Food balance sheets measure food consumption from a food supply perspective. They do not give any indication of the differences that may exist in the diet consumed by different population groups, e.g. people of different socio-economic groups, geographical areas within a country. Neither do they provide information on seasonal variations in the total food supply.

1.3. Sources for basic information and limits

Food balance sheets are assembled from a variety of sources. The quality of the balance sheets and their coverage vary considerably among countries and commodities. Inaccuracies and errors may be introduced at each stage of a balance sheet's construction. The user of these data must therefore bear in mind their limitations**.**

The food balance sheet is not a matter of observed but of calculated consumption, dependent on the quality of the primary data used for the estimate (data on production, foreign, stock variations, on the assessment of the number of consumers…).

Concerning production statistics, it is necessary to state that these cover only marketed foodstuffs. So non-marketed food – i.e. food that is produced at home or obtained from hunting, fishing or gathering – is not included, although this can, in certain countries, be a significant proportion of the supply.

Production statistics may not be available for all commodities needed. Even where the statistics are available, they are not always reliable. This may be due to the fact that crop patterns and utilization of some crops in developing countries are sometimes rather complicated, making it difficult to estimate the production. The estimation of production of some crops is further complicated because they are continuously harvested at regular or irregular intervals over a long period of time, e.g. cassava and certain fruits and vegetables. Moreover, for certain crops, the produce is not completely harvested; a portion is held back as a reserve from which to draw if the need arises or even left to rot, e.g. cassava and plantains. Moreover, certain kinds of food may not be covered by food balance sheets because they are not included in national production statistics. Meat, such as that of game, wild animals and insects, may be excluded for this reason. Under conditions such as those prevailing in many developing countries, this meat may form a substantial part of the low consumption level of animal protein.

Import and export data may be accurate in the majority of countries, but in some countries there may be significant amounts of trade across national boundaries that go unrecorded. Moreover, import and export transactions may not receive equal attention from the custom's administration because taxes or quantitative controls are generally concentrated more on import items than export. As a consequence, the reliability of export data may also be questionable.

For an accurate analysis of the quantity consumed in relation to an assessment of the health risk or of the nutritional quality of the ration, for example, it is necessary to bear in mind that, in the quantities estimated by this method, no account is taken of losses at the retail level (cutting, etc.), in storage or during preparation. Similarly, the quantities intended for consumption by pets could appear as consumption by humans. The FAO recommends including these “losses” in the 2003 food balance sheet manual but the data are drawn from industrial surveys of various sources and risk lacking in consistency.

2. The panels

While the consumption data derived from food balance sheets serve essentially to observe the global change in the course of time in the use of basic agricultural products and make it possible to make spatial comparisons, it is, however, not possible on the basis of these data to analyse variations in individual consumption according to the characteristics of consumers.

Within a country, for a more detailed analysis of the socio-economic (income, household composition, level of education, occupation) or geographic (region of habitation) factors which may cause variations in the food behaviour of consumers, we have to have recourse to direct surveys using consumer panels.

According to Lagrange (1995), the panel, an English term, is a permanent sample of households, individuals, shops, businesses, etc., which is used for gathering information.

These consumer panels are the tools used by public institutions (for example, the European Union household panel set up by EUROSTAT) or private market research companies for analysing buying behaviour.

In Belgium, at the public level, we have the Household Budget Survey (Enquête sur le Budget des Ménages) and at the private level, buying panels of two large companies: AC Nielsen and GFK.

2.1. Household Budget Survey

A national household budget survey (EBM) exists in a number of countries. The methodology used by the Statistical Office of the European Communities (EUROSTAT)[•] for compiling all the European data is given in appendix 1 of this document.

For further information about the surveys of different countries, reference should be made to the national sites. By way of example, we were given the Consumer Expenditure Survey (http://stats.bls.gov/cex) to consult for comparative studies with the USA.[••]

[•] Eurostat is the statistical office of the European communities, established in 1953. Its task consists of gathering information from the different European statistical institutes and analysing them, the objective being to provide comparable harmonised figures to the European institutions in such a way as to enable them to define, implement and analyse community policies. The data cover the European Union, its member states as well as its partners and are published under various themes and in various collections.

[••] Duquesne B., Matendo S., Lebailly Ph (2006). *Profiling food consumption: comparison between USA and EU* - USDA and AIEA2 International Meeting "Competitiveness in Agriculture and in the Food Industry: US and EU perspectives"-University of Bologna- June 15-16, 2006. Symposium Proceedings, 11p.

In Belgium, the INS (National Statistics Institute) has a consumer panel to carry out the household budget survey (EBM). This survey determines in detail the structure of the average consumption expenditure of a household resident in Belgium. On the basis of the results of these surveys, a weighting coefficient is assigned to each of the goods and services which make up the price index basket. These products and services are chosen in such a way as to reflect as faithfully as possible the consumption habits of the population. Household budget surveys have been organised in Belgium since 1854. Originally conducted at intervals of 7 to 8 years, these surveys have been held every year since the edition of 1995-1996.

The standardisation of the household budget survey following the recommendations of the Statistical Office of the European Communities (EUROSTAT) makes it possible, moreover, to make comparisons between the different member states over the long term.

Since 1999, when doing the household budget survey, INS has been exhaustively questioning a sample of about 300 households monthly. Following the example of other European countries such as Britain ("Expenditure and food Survey"), this survey is ongoing and annual in Belgium, whereas, in France, for example, the survey is conducted every five years.[◊]

The field covered by the survey is the whole supply of food products for the home, whether these are bought, given as a present, or self produced (produced by the household: kitchen garden, small scale breeding) or taken from store (self provision). Expenditure on food outside the home is also included (meals taken in a restaurant, a canteen, a fast food outlet), but recorded as a whole without detailing the nature or composition of the meals.

Each of the 300 households is surveyed for 30 days running. The survey is conducted without interruption throughout the year with monthly renewal of the panel of 300 households, which brings the number of sample Belgian households surveyed to 3,000. The data provided by the survey are extrapolated to the approximately four million Belgian households.

Households, drawn randomly from the national register according to a sampling plan designed to guarantee representativeness over the country's three regions, are invited to participate in the survey. The positive response rate being around 10%, 10 times too many letters are sent out to obtain approximately 300 households every month (7 groups of ten households in Brussels, 12 groups in Wallonia and 16 groups in Flanders.

Households are invited to participate 2 months before the month when they will be questioned and if they accept, they return a short form making it possible to classify them according to their socio-occupational category.

Households that participate satisfactorily receive a financial compensation (from EUR 75 for 2 persons to EUR 125 for 5 persons or more).

Participating households are visited by the researcher, who will monitor their group during the month before they are asked to answer the questions.

◊ Details concerning France: personal communication by Pierre Combris - *INRA, Laboratoire de Recherche sur la Consommation (Consumption Research Laboratory).*

With the necessary explanations, the researcher hands over the notebook in which they must make a detailed daily note of their receipts and expenses. The researcher will visit them three more times: at the beginning of the survey month to see if the household has begun to fill the notebook and has done this correctly, at the beginning of the month following the survey to collect the and check the notebook and a last time to complete the household questionnaire and the individual questionnaires.
The household questionnaire completed by the researcher with the help of the household includes questions on housing, the equipment and appliances owned by the household (cars, television, washing machine…), on purchases of such equipment over 4 months (the month of the survey and the previous 3 months), on periodic expenses (which are not all monthly and therefore are not all included in the notebook). Since 1 January 2003, there is also a table on travel (covering 4 months) to make up for the interruption in the survey during periods spent abroad.
The individual questionnaire makes it possible to have more precise knowledge of the socio-occupational characteristics of each member of the household and his/her usual income (the month of the survey may be atypical for income).

For each purchase of a food product, the nature of the data collected concerns the precise designation of the product, the cost and the corresponding quantity. Details such as "fresh", "deep frozen", "preserved" or "organic" (since 2003) supplement the information.

An indication of the place of purchase will also appear in the future.

For self supplied products, the valuation is made by the researcher with the help of the market prices observed.

In the nomenclature of the INS, four levels of detail are distinguished: the general category (2 figure code), the generic group (3 figure code), the category of expenditure (4 figure code) and the specific product (6 figure code).

In the general category of food products, 9 generic groups are distinguished: Bread and cereals – Meat – Fish – Milk, cheese and eggs – Edible oils and fats – Fruit – Vegetables – potatoes and other tubers – Sugar, sweets and confectionary – Other food products.

If drinks and food outside the home are added, more than 400 different products are listed.
It must be emphasised that the method of collecting information differs somewhat according to the country. Thus, in France, each of the 10,000 households that make up the sample is surveyed for only 14 days, and two fortnights in the year are not covered by the survey (the first two weeks of August and the second two weeks of December).

From the budget survey, it is possible to analyse food consumption according to the following household characteristics: the regions where people live and the zones according to population density (urban, semi-urban, rural), the socio-occupational status (employee, worker, self-employed, retired, unemployed), the age of the reference person (the person who makes the greatest contribution to household income), the number of economically active persons in the household, the income, the type of household (a single person, a childless couple, a one-child

couple, number of children…), the level of education of the members of the household.

This survey also makes it possible to measure the relative importance of food expenditure for different categories of product but also in relation to other expenditure such as those devoted to, for example, health care, sports, physical well-being.

2.2. Private buying panels

Despite the large amount of information concerning food consumption available in the household budget survey, some questions, such as the choice of product brands and labels, or the choice of distributors are unanswered.

Consumer panels managed by market research companies observe purchases from surveys made in the home. These make possible continuous monitoring of the markets: expenditure, bulk purchases, average price, number of potential buyers, frequency of purchases, quantity of purchases, brand loyalty and product types.

The advantages of these panels are the duration of the observation, the continuity and level of detail. Since a household participates for a minimum of one year (4 years for some) we can suppose that the data better reflect the consumption of the household while avoiding bias due to stocking of products or the absence of infrequently consumed products (products over- or under- estimates when a household's expenses are recorded over a short period). Day-by-day observation in real time means that it is possible to analyse the reaction of consumers to a sales promotion or to the announcement of a health crisis. Lastly, the precise identification of the products (variety, brand, label) permits an additional level of analysis. By contrast, for the overall analysis of a household's consumption, the data drawn from these panels are insufficient since they do not take into account self provision or food eaten outside the home.

The private panels available in Belgium are managed by two large companies: the GFK group and the AC Nielsen group.

The GFK panel is the reference that is most used today. It is based on a sample of households which regularly transmit information on their purchases by means of a data collection terminal (bar code reader) installed in the home. The reading is done direct from the packaging of the product if this has a bar code. For products without a bar code, such as fresh produce, for example, the panellists have a booklet with specific codes.

The Nielsen group studies food consumption by means of two panels. The distributor panel is a permanent sample of retail points of sale – to be specific, at large-scale distributors – making it possible to monitor continuously and at regular intervals the sale of mass consumption products through the different distribution circuits. Besides this, the Nielsen "Home Panel" service is a continuous study of consumers based on a representative sample of households. Every week, the households send in their receipts. The results are then drawn from the total value of the receipts.

3. Pinpoint surveys

Evaluation of food consumption in relation to health (nutritional aspect, risk assessment) cannot be made accurately from the tools previously described. It needs observational tools, which make it possible to know the effective food intake of individuals and their modes of consumption.

3.1. The Belgian food consumption survey

In 2004, a survey of food consumption was conducted in Belgium by the Scientific Institute of Public Health with the following specific objectives:

- providing information on the distribution of food and nutrient consumption;
- comparing the meal model, food consumption, energy input and nutritional value with the recommendations;
- identifying the groups at risk of inadequate or excessive consumption of specific nutrients or foods
- assessing the current nutritional recommendations concerning nutrients and examining the possibility of transposing them into nutritional recommendations based on the foods themselves;
- estimating the presence of contaminants, additives and other chemical products in food;
- evaluating the knowledge, attitudes and behaviour of consumers concerning food hygiene in the home.

The subject of the study broadly followed the recommendations of the European 'European Food Consumption Survey Method' project (EFCOSUM) [1].
The food consumption data were collected with the help of a recall of consumption within the last 24 hours (interview) combined with a written food frequency questionnaire (FFQ). The information and the socio-demographic data on the characteristics of the life style of the respondent were obtained by means of an oral questionnaire. Another questionnaire made it possible to evaluate the food safety aspects in households. These three questionnaires are available on the website of the Scientific Public Health Institute (*Institut Scientifique de Santé publique* [2]). The EPIC-SOFT software developed by the International Agency for research on Cancer (IARC) was used for the recall of the last 24 hours[3]. The researchers also carried out two types of measurement: measurement of the temperature of the refrigerator and the freezer and measurement of the waist.

[1] Brussaard JH, Johansson L, Kearney J. Rationale and methods of the EFCOSUM project. Eur J Clin Nutr. 2002; 56 Suppl 2:S4-S7.
[2] http://www.iph.fgov.be/epidemio/food/. 2005.
[3] Slimani N, Valsta L. Perspectives of using the EPIC-SOFT programme in the context of pan-European nutritional monitoring surveys: methodological and practical implications. Eur J Clin Nutr. 2002; 56 Suppl 2:S63-S74.

The population was chosen from the National Register. The sample was divided into 4 age groups (15 – 18, 19 – 59, 60 – 74 and over 75) and by gender into 8 groups of 400 persons. The composition of the sample was established in several steps:

- stratification by region and province
- selection of municipalities
- selection of persons from the municipalities.

For the food consumption survey, the work on the ground was spread over one year in order to take seasonal differences into account.

It was important, for the present survey, for the researcher responsible for the interview to have sufficient knowledge of foodstuffs in order to be able to interpret the foods mentioned correctly, the recipes and the methods of preparation. Only dieticians who had followed specific training were sent out as researchers.
Among the 7543 people contacted, 42% participated in two interviews. Few people refused to participate in the second interview. In the sample selected, each person was given a weight making it possible to extrapolate the estimates from the survey population (1623 women and 1622 men) to the whole Belgian population aged from 15 upward. An adjustment factor for the season and the day of the interview was also taken into consideration for the estimate of usual consumption.
For the calculation of the energy input, of the macro- and micro-nutrient intake, the foods mentioned by the participants had to be related to the most appropriate foods in the food composition table. For this purpose, the NUBEL [4] composition table was used together with supplementary tables (the Belgian Paul Lambin Institute table (IPL), the Dutch NEVO table and the British McCance and Widdowson table).

Measurement of the usual consumption of a population is made fairly complex because of the large daily variation (intra-individual variability) of food consumption.[5] A minimum of two consumption recalls for the last 24 hours was therefore indispensable. The Nusser method and the C-Side[6 & 7] software made it possible to isolate the intra-individual variance from the overall variance. The standard deviations of the usual consumption of the population were therefore solely the result of the intra-individual variance.

A summary of the progression of the survey is given in appendix 2 of this document. The results may be consulted on the http://www.iph.fgov.be/epidemio/epifr/foodfr site.

[4] http://www.internubel.be/. 2005.
[5] Willet W. Nature of variation in the diet. Nutritional Epidemiology. New York: Oxford University Press 1998.
[6] Dodd, K. W. A technical guide to C-SIDE. Software for Intake Distribution Estimation. Technical Report 96-TR 32, 1-68. 1996. Department of Statistics and Center for Agricultural and Rural Development; Iowa State University.
[& 7] Iowa State University. A user's guide to C-SIDE. Software for Intake Distribution Estimation. Technical Report 96-TR 31, 1-69. 1996. Department of Statistics and Center for Agricultural and Rural Development; Iowa State University.

3.2. Other qualitative surveys

Besides the tools mentioned above, specific surveys have been conducted by public or private bodies with the aim of analysing a certain mode of consumption, (for example, the consumption of ready meals, nibbling, patronage of fast food outlets…) or a target population (adolescents, the old, immigrant populations, disadvantaged populations…).

The data gathered by these surveys can be useful in the interpretation of the quantitative analyses available from permanent public tools such as the balance sheets and the household budget survey or from private ones (buying panels of market research companies).

Conclusion

Data collected by means of the different tools for observing food consumption are different since they depend on the aims of the methods used. A permanent survey, which would make it possible to monitor, both quantitatively and qualitatively, individual food consumption of a vast random sample, exhaustively over a long period, seems hardly imaginable.

It is important therefore to use a maximum of data sources, while taking their particular limits into account if one wants to study food consumption consistently over the long term. It is necessary to continue attempts at harmonisation such as those undertaken by Eurostat for the establishment of supply balance sheets and the household budget surveys of European countries.

Appendix 1

Household Budget Surveys
Summary Methodology

GEOGRAPHICAL AREA	European Union and "candidate countries" (details in the summary methodology: geographical coverage)
DATA CATEGORY	Aggregate tables from the Household Budget Surveys

Eurostat, Statistical Office of the European Communities,
Unit F3 Living conditions and social protection statistics
L-2920 Luxembourg

1. Concepts, definitions and classifications

STATISTICAL CONCEPT

Household Final Consumption Expenditure

DEFINITION OF INDICATORS

Final Consumption Expenditure per household and per adult equivalent as an average for the whole population and broken down by several cross-sectional variables

CLASSIFICATION SYSTEM AND CONFORMITY WITH OFFICIAL STANDARDS

COICOP-HBS 1997 (Classification Of Individual Consumption by Purpose adapted for the Household Budget Surveys – revision of 1997) which is upwards compatible the COICOP classification revised by the OECD in 1995

Other classifications used for certain cross-sectional variables are: NUTS-1 for geographic regions, ISCED for education levels and ISCO-88 (COM) for occupations.

2. Scope / coverage of the data

GEOGRAPHICAL COVERAGE

10 Member States for 1988 (BE, DE, EL, ES, FR, IT, LU, NL, PT and UK)

15 Member States for 1995

15 Member States and 12 Candidate Countries (all except Turkey) for 1999

STATISTICAL UNITS

Households and household members

STATISTICAL POPULATION

Individual private households

3. Accounting conventions

REFERENCE PERIOD

One complete year per round: 1988, 1994 and 1999

RECORDING OF TRANSACTIONS

Household Budget Surveys are carried out by means of combinations of questionnaires and diaries over variable periods of time depending on the countries and on the type of products.

4. Nature of the basic data

DATA SOURCES USED

Surveys carried out by the National Statistics Institutes using their own methodologies, which are not perfectly harmonised

TYPE OF SURVEY

Random household surveys for all countries except Germany, Czech Republic and Slovak Republic (quota sampling).

TECHNIQUES OF DATA COLLECTION

Interview questionnaires for general and aggregated data filled in either by a household member or by an interviewer and diaries for detailed consumption expenditure filled in by the household members.

5. Compilation practices (data processing)

COMPILATION OF EUROPEAN AGGREGATES

The Member States supply micro-data files (with records for individual households and household members) which are harmonised, standardised, aggregated and tabulated by Eurostat.

The Candidate Countries supply aggregated tables following a template proposed by Eurostat.

The European aggregates for the EU-15, the Euro-zone and the New Member States were calculated by Eurostat in the following way:

- All figures on household consumption expenditure, including the breakdowns, were computed using the household population size of each country as a weight.
- All figures on structure of consumption expenditure, including the breakdowns, were computed using the total household final consumption expenditure of each country as a weight.

ADJUSTMENTS

Adjustments for the difference between the survey and the reference periods using consumer price indexes.

Adjustments for purchasing power parities (average index for the whole household final consumption expenditure).

DATA VALIDATION OF STATISTICAL DATA

Control tables produced by Eurostat for each country were validated by the respective National Statistical Institutes.

REVISION POLICY

New data are compiled and uploaded with an approximate periodicity of 5 years. Uploads are not simultaneous for each country because they do not supply their data simultaneously; therefore the last data round may remain incomplete during a certain period of time.

Errors are corrected whenever detected.

6. Other aspects

There is no legal basis. Hence each country has its own targets, methodology and survey programming. Data supplied by each country are not perfectly harmonised. After each round, some harmonisation efforts have been carried out and each new round of data collection is better harmonised than the previous one. However, some problems of comparability among countries still remain. Generally speaking, more recent data are better harmonised than old data and data from the Member States are better harmonised than data from the Candidate Countries.

Consumption expenditure on COICOP headings linked to activities that might be considered as non-socially correct (e.g. consumption of alcoholic beverages, narcotics or prostitution) used to be underreported by the surveyed households, and hence these figures are not reliable.

In order to assess the impact of these problems of comparability on data analyses, we recommend consulting the following Eurostat publications:

- 'Family Budget Surveys in the EC. Methodology and recommendations for harmonisation' (ISBN 92-826-6193-8) for the reference year 1988
- 'Household Budget Surveys in the EU. Methodology and recommendations for harmonisation. 1997'" (ISBN 92-827-9805-4) for the reference year 1994
- 'Household Budget Surveys in the EU. Methodology and recommendations for harmonisation. 2003' for the data of the Member States in the reference year 1999
- 'Household Budget Surveys in the Candidate Countries. Methodological analysis, 2003' for the data of the Candidate Countries in reference year 1999

In general, comparability between any two different rounds may be problematic, because of the numerous methodological changes introduced by most countries over the time.

Appendix 2

National food consumption survey

SCIENTIFIC INSTITUTE OF PUBLIC HEALTH

Epidemiology Unit

Objectives

1. Providing information on average food and nutrient intake of the population at the individual level.
2. Estimation of intake of contaminants, additives and other chemicals in food.
3. Study of differences in meal pattern, energy intake, food and nutrient intake between the different subgroups of the population as defined by the socio-demographic and age variables.
4. Study of the adequacy of energy intake, food and nutrient intake in the different subgroups of the population in view of the dietary recommendations.
5. Identification of subgroups at risk for a deficient or excessive intake of specific foods or nutrients.
6. Translate the dietary recommendations based on nutrients to dietary recommendations based on food.

Methods

- Sample of all inhabitants of Belgium, stratified per region, province and community, and constructed on the basis of the National Register using the household as sample unit.
- More than 3,200 people will be questioned by 64 dieticians, recruited by the National Institute for Statistics (NIS).
- Instruments:
    - face to face questionnaire to be filled out by each selected person:
        - constitution of the household
        - information on the respondent
        - education and employment
        - physical activity
        - smoking behaviour
        - health status
    - 24h recall of each selected person using EPIC-soft (a computerized standardized interview programme developed by IARC (International Agency for Research on Cancer) and used in 10 European countries in context of the EPIC study (European Prospective Investigation into Cancer and Nutrition).
    - written questionnaire to be filled out by each selected person: the food frequency questionnaire which evaluates the:
        - exposure to fat-soluble contaminants such as PCBs and dioxins
        - exposure to water-soluble contaminants such as pesticides
        - exposure to additives

- written questionnaire to be filled out by each household evaluating food safety at household level.

Year of implementation

Since 2003

Level of accomplishment

- Development of the Belgian EPIC-soft version to collect interactive 24h recalls.
- Development of the questionnaires.
- Sampling of the selected communities for the fieldwork of 2004.
- Time schedule:

2003: development of the questionnaires
protocol for sampling design
preparation of the fieldwork
pilot study (September 2003)
training of the interviewers (December 2003)
2004: performing fieldwork during the whole year 2004
data input
2005: data analysis
2006: reporting of the results

Publications

1. **Articles published in scientific journals**
    1. Temme L, Huybrechts I, Van Oyen H.
    De Belgische voedselconsumptiepeiling.
    Voeding NU 2006. Jaargang 8; nummer 11: 23-26.
    2. Temme L, Huybrechts I, Van Oyen H.
    De Belgische voedselconsumptiepeiling.
    Tijdschrift voor Voeing en Dietetiek 2006. Jaargang 3: pag 2-6.
    3. De Vriese S, De Backer G, De Henauw S, Huybrechts I, Kornitzer K, Leveque A, Moreau M, Van Oyen H.
    The Belgian Food Consumption survey: aims, design and methods.
    Arch Pub Health, 63, 1-16, 2005
2. **Abstracts of communications** (available on request)
    1. Temme E, Huybrechts I, Van Oyen H.
    Waist circumference and levels of physical activity in Belgium.
    EUPHA, Montreux, Switzerland, November 2006.
    2. Huybrechts I, Temme E, Van Oyen H, De Backer G, Moreau M, Levêque A, De Henauw S.
    Calcium intake, food sources and seasonal variations in the Belgian.
    EUPHA, Montreux, Switzerland, November 2006.

3. Huybrechts I, Temme L, De Henauw S, De Backer G, Levêque A, Van Oyen H.
   Energy and macronutrient intake in the Belgian population
   Public Health Nutrition 2006; 9: 65
4. Temme L, Huybrechts I, Van Oyen H.
   Iron intake and its food sources in Belgium
   Public Health Nutrition 2006; 9: 104
5. Van Oyen H, De Vriese S, Moreau M, Huybrechts I.
   The gap between food based dietary guidelines and the usual food consumption in Belgium, 2004.
   Paper presented at SEER, Seattle, US, June 2006.

3. **Books and chapters of books**

4. **Reports** (available on request)
   1. Seghers K.
      Estimating the distribution of usual dietary intake by short-term measurements: a comparison of several statistical approaches.
      Thesis U-Hasselt. Master in Biostatistics 2006.
   2. Kajungu Kateeba D.
      Assessment of estimated intake of Nitrate and Nitrite for the Belgian adult population.
      Thesis U-Hasselt. Master in Biostatistics 2006.
   3. De Vriese S, Huybrechts I, Moreau M, Van Oyen H.
      Enquête de consommation alimentaire Belge 1 - 2004 : Rapport
      Institut Scientifique de Santé Publique, mars 2006, Rapport : D/2006/2505/16.
      De Belgische Voedselconsumptiepeiling 1 - 2004 : Rapport
      Wetenschappelijk Instituut Volksgezondheid, maart 2006, Depotnummer : D/2006/2505/17.
   4. De Vriese S, Huybrechts I, Moreau M, Van Oyen H.
      Enquête de consommation alimentaire Belge 1 - 2004 : Synthèse
      Institut Scientifique de Santé Publique, mars 2006, Rapport : D/2006/2505/15.
      De Belgische Voedselconsumptiepeiling 1 - 2004 : Synthese
      Wetenschappelijk Instituut Volksgezondheid, maart 2006, Depotnummer : D/2006/2505/19.

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Federal authorities

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