The use of household budget survey data for monitoring food availability in Europe – the Data Food Networking (DAFNE) initiative

Antonia Trichopoulou & Androniki Naska
for the DAFNE team

Dept. of Hygiene and Epidemiology
Medical School, University of Athens
WHO Collaborating Centre for Nutrition

Sources of nutritional data

<table>
<thead>
<tr>
<th>Level</th>
<th>Source</th>
<th>Type of data</th>
</tr>
</thead>
<tbody>
<tr>
<td>Population</td>
<td>Food Balance Sheets (FBS)</td>
<td>Ecological; large units</td>
</tr>
<tr>
<td>Household</td>
<td>Household budget surveys (HBS)</td>
<td>Ecological; small units</td>
</tr>
<tr>
<td>Individual</td>
<td>Nutrition surveys (INS)</td>
<td>Analytical; individuals</td>
</tr>
</tbody>
</table>

Source: EURONUT, Report 9, 1987
Food Balance Sheets I

- Assembled by the Food and Agriculture Organisation (FAO)
- Completed at national level
- (Annual food production + imports) – (Exports + animal feed + industrial uses + agricultural uses)
- Food disappearance data

Food Balance Sheets II

(+)ve characteristics
- Annually collected
- National coverage
- Nutrient estimations

(-)ve characteristics
- Refer to food supply at country level
- Accuracy differs between countries and commodities
- Waste and food given to pets not recorded
- Own production underestimated
Household budget surveys I

- Collected by the National Statistical Offices
- Nationally representative
- Household food purchases + Foods offered to members as gifts + Own production
- Linked to socio-demographic factors
- Food availability at household level

Household budget surveys II

(+)ve characteristics
- Available world-wide
- Conducted at periodic intervals, using comparable methodology
- Nationally representative sample
- Data on socio-demographic characteristics

(-)ve characteristics
- Refer to food availability at household level
- No data collected on meals out of home
- Data on waste, food given to pets, supplements, lactating women not recorded
Individual nutrition surveys I

- Food intake of free living individuals, over a specified time period

Assessment methods

- Recall methods
  - 24HDRecall
  - FFQ

- Record methods
  - 24HDRecord
  - 7 day weighed diary

Individual nutrition surveys II

(+ve characteristics)
- Evidence on food quantities consumed
- Assessing mean food consumption and nutrient intake
- Estimation of distribution of food and nutrient intake

(-ve characteristics)
- May lack national coverage
- Various methodologies for dietary assessment
- Variation in data reporting
- Demanding for investigators and subjects
The DAFNE initiative

Objective: To develop a European, regularly updated databank of comparable food and socio-economic information, as a tool for monitoring trends in food habits in Europe.

Supported by the European Commission, through: the “Cooperation in Science and Technology with Central and Eastern European Countries”, the “Agriculture and Agro-Industry, including Fisheries - AIR”, the “Agriculture and Fisheries - FAIR”, the “COST Action 99 - Food Consumption and Composition Data” programmes and the Health Monitoring Programme of DG-SANCO.

The DAFNE participants

- **Austria**: I. Elmadfa, University of Vienna
- **Belgium**: AM Remaut de Winter, University of Gent
- **Finland**: MA Berg, Statistics Finland
- **France**: JL Volatier, AFSSA
- **Germany**: IU. Leonhauser, University of Giessen
  - G. Karg, University of Technology Munich
- **Greece**: A. Trichopoulou, Univ. of Athens (Coordinating Centre)
- **Hungary**: G. Zajkas, NIFHN
- **Ireland**: C. Kelleher, National University of Ireland, Galway
  - S. Friel, National University of Ireland, Galway
- **Italy**: A. Turrini, INRAN
- **Luxembourg**: A. Schmitt, Nutrition Policy Group
- **Norway**: K. Trygg, University of Oslo
- **Poland**: W. Sekula, National Food and Nutrition Institute
- **Portugal**: MDV Almeida, University of Porto
- **Spain**: O. Moreiras, University of Madrid
- **Sweden**: M. Sjostrom, Karolinska Institute
- **UK**: M. Nelson, University of London
## The DAFNE databank

<table>
<thead>
<tr>
<th>Countries</th>
<th>Years of HBS data</th>
</tr>
</thead>
<tbody>
<tr>
<td>Austria</td>
<td>1999-2000 (analysis in process)</td>
</tr>
<tr>
<td>Belgium</td>
<td>1987-88, 1996-97, 1999</td>
</tr>
<tr>
<td>Finland</td>
<td>1985, 1990, 1998 (analysis in process)</td>
</tr>
<tr>
<td>Hungary</td>
<td>1991</td>
</tr>
<tr>
<td>Italy</td>
<td>1990, 1993, 1996</td>
</tr>
<tr>
<td>Luxembourg</td>
<td>1992</td>
</tr>
<tr>
<td>Poland</td>
<td>1988</td>
</tr>
<tr>
<td>Sweden</td>
<td>1989, 1995-96 (analysis in process)</td>
</tr>
<tr>
<td>United Kingdom</td>
<td>1985 – 1999 (15 surveys)</td>
</tr>
</tbody>
</table>
The DAFNE Food Classification Scheme

- Cereal & cereal products
- Meat & meat products
- Eggs
- Milk & milk products
- Vegetables (fresh & processed)
- Pulses
- Potatoes & other starchy roots
- Total added lipids
- Fish and seafood
- Fruit (fresh & processed)
- Nuts
- Juices (vegetable and fruit)
- Alcoholic beverages
- Non-alcoholic beverages
- Sugar & sugar products

Socio-demographic characteristics

- Locality
  (rural, semi-urban & urban)
- Education
  (elementary, secondary & higher)
- Household composition
  (8 groups)
- Occupation
  (manual, non-manual & retired)
Estimation of daily availability

\[ x = \frac{\sum_{i=1}^{n} x_i}{\sum_{i=1}^{n} k_i} \]

Where:
\( x_i \): the availability per day in grams of a food item for the household \( i \),
\( k_i \): the size of household \( i \) and
\( n \): the number of households in the sample.

Estimation of daily availability (weighted)

\[ x = \frac{\sum_{i=1}^{n} w_i x_i}{\sum_{i=1}^{n} w_i k_i} \]

Where:
\( x_i \): the availability per day in grams of a food item for the household \( i \),
\( k_i \): the size of household \( i \) and
\( n \): the number of households in the sample.
\( w_i \): the weighting factor of household \( i \), (usually reflects the type of the family in the sample relative to the nation).
* In France data were collected in 1991

Source: The DAFNE databank (www.nut.uoa.gr)
DAFNE  Data Food Networking

Percentage of low consumers

<table>
<thead>
<tr>
<th>Countries</th>
<th>Fruit &lt; 150 g/p/day</th>
<th>Vegetable &lt; 250 g/p/day</th>
</tr>
</thead>
<tbody>
<tr>
<td>Belgium</td>
<td>68</td>
<td>76</td>
</tr>
<tr>
<td>France</td>
<td>59</td>
<td>71</td>
</tr>
<tr>
<td>Germany</td>
<td>45</td>
<td>88</td>
</tr>
<tr>
<td>Greece</td>
<td>30</td>
<td>50</td>
</tr>
<tr>
<td>Hungary</td>
<td>66</td>
<td>76</td>
</tr>
<tr>
<td>Italy</td>
<td>34</td>
<td>71</td>
</tr>
<tr>
<td>Luxembourg</td>
<td>41</td>
<td>83</td>
</tr>
<tr>
<td>Norway</td>
<td>69</td>
<td>93</td>
</tr>
<tr>
<td>Poland</td>
<td>81</td>
<td>75</td>
</tr>
<tr>
<td>Portugal</td>
<td>55</td>
<td>83</td>
</tr>
<tr>
<td>Rep. of Ireland</td>
<td>74</td>
<td>80</td>
</tr>
<tr>
<td>Spain</td>
<td>30</td>
<td>72</td>
</tr>
<tr>
<td>United Kingdom</td>
<td>70</td>
<td>78</td>
</tr>
</tbody>
</table>


Mean availability of meat and meat products, milk (total) and low-fat milk by quintiles of the households’ food expenditure ratio. Data from the Greek HBS 1998-99 (quantity/person/day)

Mean availability of cereals, fresh fruits and fresh vegetables by quintiles of the households' food expenditure ratio.

Data from the Greek HBS 1998-99 (g/person/day)


Compatibility of household and individual nutrition survey data in Europe and Disparities in food habits -
- the FAIR 3096 project

Coordinated by:
Antonia Trichopoulou
Dept. of Hygiene and Epidemiology
Medical School, University of Athens
Compatibility of household budget and individual nutrition surveys

To evaluate whether household budget and food consumption surveys can converge, given the limitations and inconsistencies present in both, in order to describe the dietary habits of the studied population

- Belgium
  HBS data of 1987-88 vs. the Belgian Interuniversity Research on Nutrition and Health - BIRNH (1980-85)

- Greece
  HBS data of 1993-94 vs. Data collected in 1994, in the Greek EPIC study

- Norway
  HBS data of 1992/93/94 vs. the NORKOST study (1993-94)

- United Kingdom
  HBS data of 1985/86/87/88 vs. The NDNS survey of British adults (1987-88)
Methodology I

- Household budget data refer to foods available to all household members

**INDIVIDUALISATION**

- Household budget food data refer to the beginning of the dietary chain
- Individual nutrition surveys record the daily or the habitual food intake of individuals

**CONVERT FOOD INTAKE INTO FOOD AVAILABILITY**

Methodology II

- Consumed quantity of cooked simple food (INS data)
- Consumed quantity of raw simple food
- Purchased quantity of raw simple food (HBS-like data)

Yield factors

- Consumed quantity of a cooked mixed dish and recipe (INS data)
- Consumed quantity of raw recipe ingredients
- Purchased quantity of raw ingredients (HBS-like data)

Recipe-based calculation

Edible Proportion Factors

Edible Proportion Factors
Results

Pearson coefficients of mean daily individual values (in g) of principal food groups, evaluated through HBS and INS and expressed in percent of total daily dietary intake (in g).

<table>
<thead>
<tr>
<th>Food Group</th>
<th>Coefficient</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cereals</td>
<td>0.57</td>
</tr>
<tr>
<td>Meat and meat products</td>
<td>0.82</td>
</tr>
<tr>
<td>Fish and seafood</td>
<td>-0.04</td>
</tr>
<tr>
<td>Milk and milk products</td>
<td>0.96</td>
</tr>
<tr>
<td>Total added lipids</td>
<td>0.42</td>
</tr>
<tr>
<td>Starchy roots (potatoes)</td>
<td>0.74</td>
</tr>
<tr>
<td>Pulses</td>
<td>0.68</td>
</tr>
<tr>
<td>Vegetables</td>
<td>0.91</td>
</tr>
<tr>
<td>Nuts</td>
<td>0.44</td>
</tr>
<tr>
<td>Fruits</td>
<td>0.93</td>
</tr>
</tbody>
</table>

Wishing to retrieve information?

Visit our web site at:  
www.nut.uoa.gr
The DAFNE-Software (*DafneSoft* v2.0) can be freely downloaded at:

www.nut.uoa.gr