Introduction

The results presented in this report are based on Finnish Household Budget Surveys (HBS) conducted in years 1985, 1990 and 1998. The responsible unit for the collection of consumption/expenditure data is the unit of Social Statistics at Statistics Finland. The tradition of Finnish household expenditure surveys goes back to the beginning of the last century, however, at first the surveys covered only limited population groups like urban workers or the rural population. From year 1966 onwards the Finnish HBS data represents all Finnish households and the Finnish HBS have been very widely used for academic research in several areas of economical, welfare and lifestyle studies.

The data have been collected between varying time periods. The last surveys have been conducted in years 2001-02, 1998, 1996, 1995, 1994 (annual surveys 1994-1996 with smaller samples), 1990, 1985 and 1981. The surveys have periodically also included data on amounts of food purchased by the households. From the above mentioned years, the data collected in 1998, 1990 and 1985 also included data on food amounts. These data were selected to be integrated in the DAFNE databank through the DAFNE IV-project and the University of Athens received a permission to use Statistics Finland data files for this purpose. Statistics Finland has been the Finnish co-ordinator of the project and nutritionists of the Nutrition Unit of the National Public Health Institute in Finland took part in the project as experts.

The consumption/expenditure classification includes about 800 individual headings. The consumption and income concepts and classifications recommended by the United Nations or Eurostat HBS Working Group are applied, as far as possible, in Finland. The standard types of classifications used are socio-economic groups, household type, income brackets and areas.
The data have been compared with other similar types of information, as for example the national accounts. The coherence with other statistics is satisfactory. Main results are published in Statistics Finland’s web-pages and in Income and Consumption - publication series. The more detailed data are not published but are available upon request at Statistics Finland.

**Material and Methods**

**Material**
The DAFNE IV data for Finland are based on Statistics Finland's national HBS undertaken in 1985, 1990 and 1998. The households in the surveys were selected by drawing samples of individuals from the Population Register. The final sample sizes after excluding non-responders were 8,200 households in 1985, 8,258 in 1990 and 4,359 in 1998. In the surveys, a household was defined as persons who fully or partially share meals or otherwise use their income together. Average sizes of the households in Finland were 2.4 (1985), 2.3 (1990) and 2.2 (1998) members per household.

The target population consisted of permanently resident private households, i.e. the household population, in Finland. Non-resident persons and those institutionalised for prolonged periods in hospitals, old people’s homes, care institutions, prisons, etc., were excluded from the surveys. In 1998, there were 2.355 million households in Finland.

**Methods**
The Finnish HBS data were collected using three different methods: interviewing, diary keeping and using administrative registers. After the interviews, the households kept diaries of all their expenses and food quantities for two weeks. The food quantity data included also consumption of foodstuffs from own production (as fish, vegetables, berries, fruits). At the beginning of the surveys the sample households were further randomly divided into 26 diary-keeping periods of two weeks over the
entire survey year so that data on consumption during different seasons can be collected as amply as possible.

Response rates were 69.6 %, 70.2 % and 63.4 % in 1980, 1990 and 1998, respectively. Weighting factors are applied to allow for differential response rates among different types of households.

In Finnish HBS data the numbers of food items in quantities ranged from 242 to 269. These food items have been further classified under the 15 main DAFNE groups, as well as under 56 specific groups, in accordance to the DAFNE classification scheme.

In the DAFNE databank households were classified according to different socio-economic characteristics: locality, education and occupation of the household head and composition of the household. According to procedures of Statistics Finland, during the interview the household member with the highest personal income during the last 12 months was defined as the reference person of the household (household head).

Locality of the residence (urban, semi-urban and rural): Finland has over 400 municipalities, which were characterized as urban, semi-urban or rural according to the proportion of people living in respective settlements (urban, semi-urban or rural) and the population of the largest settlement of the group. This variable was directly used to classify households under the three DAFNE categories (rural, semi-urban, urban).

Education of household head (illiterate/elementary, secondary and higher education): In the Finnish HBS, the information concerning the educational level of the household members was retrieved from the Statistics Finland's Register of Completed Education and Degrees. Registers include only completed education. Persons with incomplete education were classified under the same category with those of elementary school education.
Occupation of household head (manual, non-manual, retired, unemployed, others): Information on the person’s activity with the longest duration for the last 12 months was used to classify household heads according to their occupational status.

Results
Table 1 presents the mean availability of 15 food groups in Finland by year of survey. Availability of eggs, added lipids, potatoes, milk and milk products has decreased during the period between 1985 to 1998 (Figure 1).

During the same period, availability of nuts, fruit and vegetable juices, sugar and sugar products, alcoholic beverages, vegetables and meat has increased (Figure 2). The results did not show any remarkable time trends in availability of cereals, fish and seafood, fruits and non-alcoholic beverages.

There were considerable socioeconomic differences in food availability (Figure 3.). Availability of milk and milk products, cereals and cereal products, fish and seafood, and potatoes was higher among households whose head had elementary education compared to households the head of which had higher education in all survey years.

However, in 1998 the availability of cereal and cereal products increased markedly in those households whose heads had higher education and was approaching the availability of those whose heads had elementary education. The availability of alcoholic beverages was higher in those households whose head had higher education compared to those with elementary education.

There were also large urban-rural differences in food availability (Figure 4). Availability of milk and milk products, cereals and cereal products, meat and meat products, and potatoes was higher among rural households when compared to the urban ones. The daily household availability of alcoholic beverages and to a lesser extent vegetables was higher among urban households when compared to rural ones.
Validity of the Finnish HBS food availability estimates

For some food items, the Finnish HBS data were compared with the Food Balance Sheet data (FBS) (http://faostat.fao.org/faostat/). The comparisons between the HBS and the FBS data for Finland showed partly similar trends and partly also equal consumption levels. However, these two data sets are not exactly comparable, due to different classifications and concepts. HBS consistently underestimates food consumption because the information does not cover the meals consumed when eating out. It is estimated that in year 2001, for example, one third of Finns used restaurant, staff canteen or school canteen services on a daily basis (ACNielsen 2003).

When comparing these two data sets, adequate consistency was observed in the case of eggs, cereals and cereal products, fish and seafood, added lipids, fruit and vegetable juices (Figure 5). Comparisons showed both, equal trends and close food availability levels (g/day/person).

The consistency reduced in the case of fruits, vegetables and alcohol availability (Figure 6). For fruits, the trends were contradictory; for the vegetable and alcohol availability the trends were about parallel, but the levels differed remarkably.

Discussion

Comparisons of data collected with different methods are difficult. Food balance sheets take account of all foods produced in the country and imported, excluding foods that are exported. In the household budget surveys, data are gathered at household level. In both methods, neither loss during preparation nor foods acquired but not consumed are taken account. Furthermore, in HBS foods eaten out of home are not included. Neither can it be defined which member/members of the household ate which food and in what amounts. In the specially designed food consumption surveys only food actually eaten by each person is asked. Consequently, food consumption surveys are expected to be the best method for studying food consumption at the individual level, which is the main aim in epidemiologic studies. However, these surveys also have drawbacks, the biggest being underreporting, which is a growing problem due to increasing health consciousness. People report more eagerly foods that they assume they should eat and in quantities that they consider
reasonable and not the amount they actually ate. In FBS this problem is avoided. Also in HBS underreporting is probably a minor problem, since these surveys are not health oriented but their point of view is economic. In conclusion, food balance sheets and household budget surveys are good to describe the availability of foods or ingredients at household or country level or for undertaking international comparisons, but food consumption surveys should be used when data on food consumption and nutrient intake at individual level are needed.
Table 1: Overall mean food availability in Finland, by survey year (quantity/person/day).

<table>
<thead>
<tr>
<th>Food Group</th>
<th>Mean availability</th>
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<tbody>
<tr>
<td></td>
<td>1985</td>
</tr>
<tr>
<td>Eggs (pieces)</td>
<td>0.44</td>
</tr>
<tr>
<td>Potatoes and other starchy roots (g)</td>
<td>136</td>
</tr>
<tr>
<td>Pulses (g)</td>
<td>1.22</td>
</tr>
<tr>
<td>Nuts (g)</td>
<td>0.59</td>
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<tr>
<td>Cereals and cereal products (g)</td>
<td>202</td>
</tr>
<tr>
<td>Milk and milk products (g)</td>
<td>591</td>
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<tr>
<td>Meat, meat products and dishes (g)</td>
<td>140</td>
</tr>
<tr>
<td>Vegetables (fresh and processed) (g)</td>
<td>95</td>
</tr>
<tr>
<td>Fish, seafood and dishes (g)</td>
<td>29</td>
</tr>
<tr>
<td>Fruits (fresh and processed) (g)</td>
<td>153</td>
</tr>
<tr>
<td>Total added lipids (g)</td>
<td>39</td>
</tr>
<tr>
<td>Alcoholic beverages (ml)</td>
<td>52</td>
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<tr>
<td>Non alcoholic beverages (ml)</td>
<td>523</td>
</tr>
<tr>
<td>Sugar and sugar products (g)</td>
<td>48</td>
</tr>
<tr>
<td>Juices (fruit and vegetable) (ml)</td>
<td>32</td>
</tr>
</tbody>
</table>

Source: the DAFNE databank.
Figure 1. Mean availability of added lipids, potatoes, milk and milk products in Finland by survey year, (g/person/day)

Source: HBS - Finland / DAFNE database.
Figure 2. Mean availability of nuts, fruit and vegetable juices, sugar and sugar products, alcoholic beverages, vegetables, meat and meat products in Finland by survey year, (g/person/day)

Source: HBS - Finland / DAFNE database.
Figure 3. Mean availability of fish and seafood, alcoholic beverages, potatoes, cereals and cereal products and milk and milk products, in Finland by educational level of the household head in 1998, (g/person/day)

Source: HBS - Finland / DAFNE database.
**Figure 4.** Mean availability of alcoholic beverages, vegetables, potatoes, meat and meat products, cereals and cereal products, milk and milk products, in Finland by locality of the dwelling in 1998 (g/person/day).

Source: HBS - Finland / DAFNE database.
Figure 5. Mean availability of eggs, cereal and cereal products, added lipids, fruit and vegetable juices based on HBS data and food balance sheet (FBS) data in Finland by survey year, (g/person/day).
Figure 6. Mean availability of potatoes, fruits, vegetables and alcoholic beverages based on HBS data and food balance sheet (FBS) data, in Finland by survey year, (g/person/day).
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