

# **Diet and Healthy Ageing**

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# OVERVIEW

Assessment of diet

EPIC

ANEMOS- DAFNE

CHANCES

# Assessment of diet

<p>Individual foods or food groups</p> <p>Individual nutrients</p>	<p>Dietary patterns:</p> <p>Combinations of foods (or nutrients? )</p>
<p><b>Advantages:</b></p> <p>Easy to implement in a statistical model</p> <p>Easy to interpret</p>	<p><b>Disadvantages</b></p> <p>Difficult to define, difficult to implement, difficult to interpret</p>
<p><b>Disadvantages</b></p> <ul style="list-style-type: none"> <li>➤ Difficult to account for statistical interaction.</li> <li>➤ Difficult to model biological interactions between dietary components e.g. small effects from individual foods may be evident only through a combination of foods.</li> <li>➤ Problems of multiple comparisons- multiple exposures.</li> </ul>	<p><b>Advantages:</b></p> <ul style="list-style-type: none"> <li>➤ Able to incorporate complex or synergistic effects of many dietary components (foods and nutrients) without having to specify them</li> <li>➤ Bypass the problem of colinearity or multiple-exposures</li> <li>➤ Express the overall, simultaneous exposure to many different dietary risk factors</li> </ul>

Source: C. Bamia



# DIETARY HABITS OF THE ELDERLY

## Heterogeneity between and within countries

- Health status – degree of dependence
- Institutionalization
- Food availability
- Identification of country specific data on dietary habits and malnutrition in the elderly and frequency of main chronic conditions related to dietary habits
- Identification of key factors of the nutritional status of the elderly
- Definition of the role of health policy makers in promoting knowledge on nutrition and dietary recommendations

# Dietary patterns

## A priori:

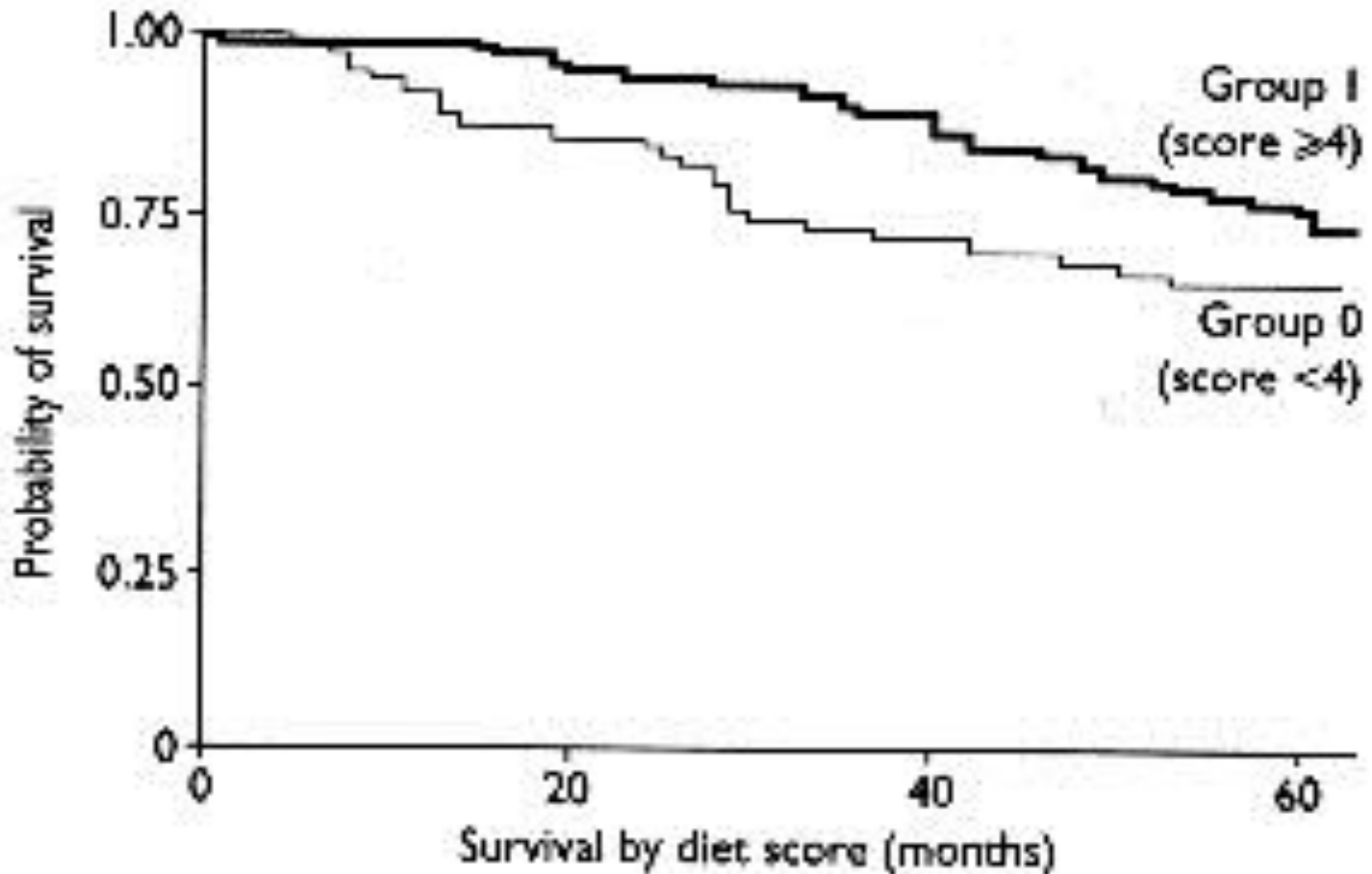
Reflect hypothesis-oriented combinations of foods and nutrients  
Operationalised through the calculation of a graded score, which identifies groups with “good” or “bad” dietary/nutritional habits.

## A posteriori

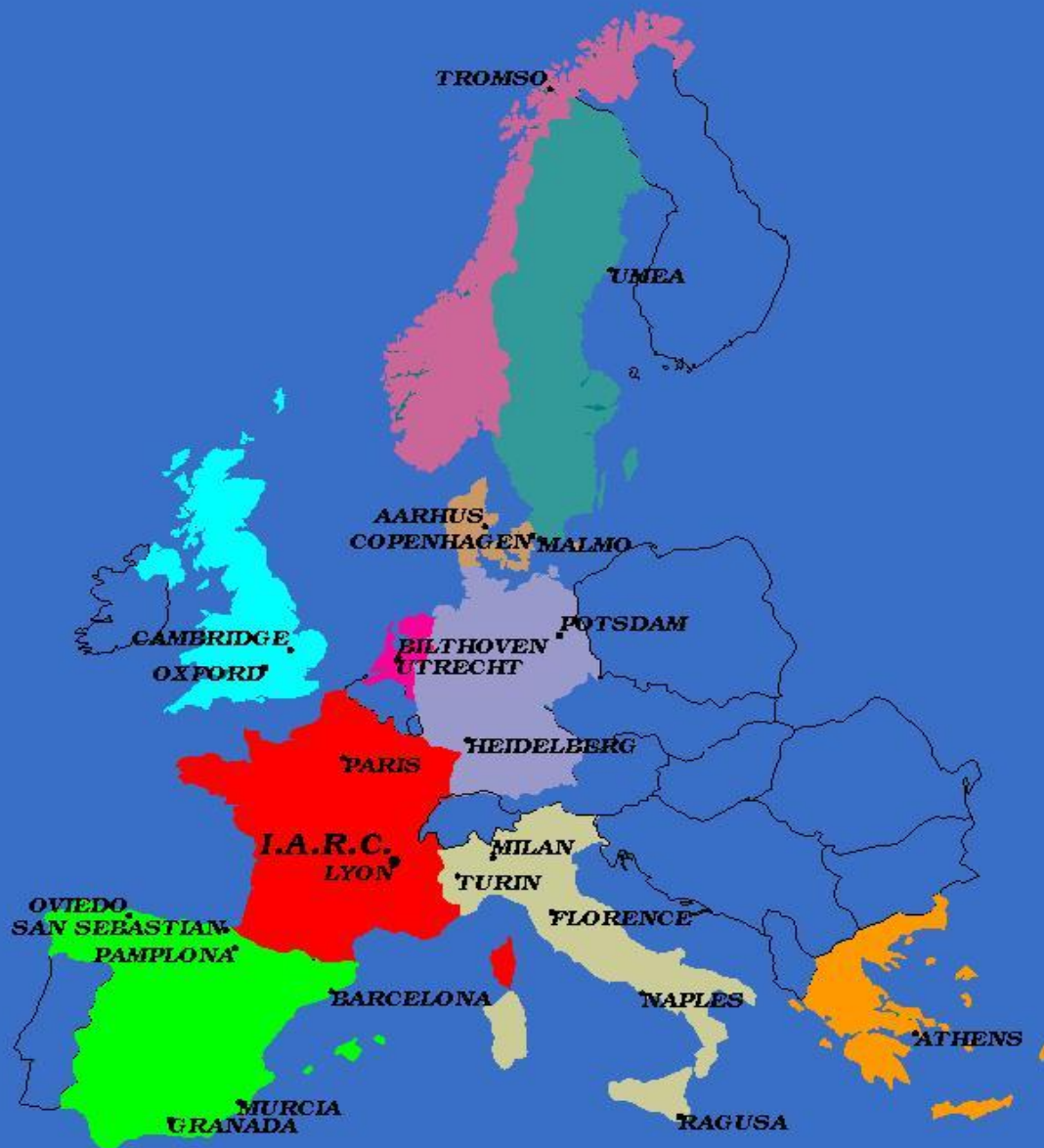
Use the observed dietary data in order to extract dietary patterns.  
Build on statistical exploratory methods

- Principal component analysis
- Factor analyses
- Cluster Analysis
- Reduced rank regression
- Latent variable model analysis

# Diet and overall survival in elderly people



# EPIC participating countries





## The role of diet on the longevity of elderly Europeans



100 000 elderly Europeans

$\geq 60$  years at enrolment

from 9 European countries, participants of EPIC



# DIETARY PATTERNS AMONG OLDER EUROPEANS

## The EPIC Elderly study

- ✓ To identify dietary patterns using the *a-posteriori* approach in EPIC-elderly participants ( $\geq 60$  years at recruitment).
- ✓ To assess the relation of age and gender, socio-demographic, somatometric and lifestyle variables with the extracted dietary patterns.

# Dietary variables

Consumption in grams per day of 22 food groups

Potatoes      Vegetables      Legumes      Fruit

## Cereals and products

- Pasta, Rice and Other Grain
- Bread
- Other Cereals(flour, flakes, starches, salty and aperitif biscuits, pastry, etc.)

Meat and products      Dairy products      Fish      Eggs

Sugar & Confectionery      Cakes      Condiments and sauces      Soup      Soy

## Added lipids

- Vegetable oils
- Margarines
- Butter

## Beverages

- Non Alcoholic
- Wine
- Other alcoholic

## Principal Components / scoring coefficients for dietary variables. The EPIC Elderly study

	<i>Positive scoring coefficients</i>	<i>Negative scoring coefficients</i>	<i>Dietary pattern</i>	<i>Cumulative total variation explained (%)</i>
<b>PC1</b>	Vegetable oils (0.46) Fruits (0.34) Pasta, rice & other grain (0.34) Vegetables (0.33) Legumes (0.25)	Non alcoholic beverages (-0.31) Potatoes (-0.27) Margarine (-0.24)	<b>Vegetable based type diet</b>	14.6
<b>PC2</b>	Other cereals (0.33) Cakes (0.32) Condiments & sauces (0.29) Margarine (0.28) Sugar and Confection. (0.22) Dairy products (0.20)	Meat (-0.36) Bread (-0.28) Other alcoholic beverages (-0.26) Wine (-0.25) Eggs (-0.20)	<b>Sweet and fat dominated diet</b>	24.3

# Dietary habits of elderly Greeks

- intakes of fruits-vegetables-legumes > 500 g/d
- moderate consumption of meat, cereals, dairy products
- low consumption of eggs, sugar confectionery
- total fat >35% of total energy intake (mostly olive oil)
- moderate consumption of protein-carbohydrates
- moderate alcohol consumption (wine with meals)

(Trichopoulou et al., Am J Clin Nutr 1995)

**Degree of adherence of 182 elderly residents of three Greek villages to Mediterranean diet**

**19% ≤ 2 components of diet score**

**57% ≥ 4 components of diet score**

# Modified Mediterranean diet and survival: EPIC-Elderly cohort

## Results

*per 2-unit increase in Mediterranean diet score*

A higher degree of adherence to the Mediterranean diet was associated with

8% reduction in overall mortality:

But the reduction was considerably higher in Mediterranean countries like  
Spain and Greece

**Modified Mediterranean diet and survival after myocardial infarction:  
the EPIC-Elderly study**

**2671 EPIC participants  
from nine countries  
60 years or older**

**had prevalent myocardial infarction but no stroke  
or cancer at enrollment**

# **Modified Mediterranean diet and survival after myocardial infarction:**

## **The EPIC-Elderly study**

**Increased adherence to modified Mediterranean diet by two units**

**was associated with**

**18% lower overall mortality rate**



ISPRA, October 2014



# Consortium on Health and Ageing: Network of Cohorts in Europe and the United States (CHANCES)

Grant Agreement number: 242244

Duration: 1/2/2010 - 31/1/2015

Coordination: Hellenic Health Foundation (HHF)

HHF





## The **CHANCES** project aims

to combine and integrate on-going cohort studies

in order to

produce evidence on ageing-related health characteristics and determinants in Europe, **and their socio-economic implications.**

### **15 cohorts**

participate in the project, covering populations from:

**18** EU Member States, **4** associate countries, **3** additional countries.

The combination of these different studies would lead to an **integrated approach** for the study of health in the elderly.

# CHANCES medians of the Healthy Diet Indicator Score for 396,391 participants, 1988-2011

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<b>Cohort</b>	<b>Total HDI (max. 70 points)</b>
<b>EPIC-ELDERLY</b>	
Spain	46
Netherlands	45
Greece	54
Sweden	46
Denmark	40
<b>HAPIEE</b>	
Czech Rep	48
Russia	42
Poland	42
<b>NIHA-ARP</b>	
United States	53
<b>Rotterdam Study</b>	
Netherlands	44
<b>SENECA</b>	
Europe	47

Source: modified from Jankovic et al. Am J Epidemiol. 2014



# **Adherence to a Healthy Diet According to the World Health Organization Guidelines and All-Cause Mortality in Elderly Adults From Europe and the United States**

**HDI scores are based on 6 nutrients and 1 food group and ranged from 0 (least healthy) to 70 (healthiest diet).**

**Median HDI scores ranged from 40 to 54 points across cohorts.**

**For a 10-point increase in HDI score**

**the pooled adjusted hazard ratios were 0,90 (CI 0.87,0,93) for men and women combined.**

**These estimates translate**

**to an increase in life expectancy of 2 years at the age of 60 years)**

# Life expectancy / Disease Rates in U.S., Greece

## and Japan, in 1960's

		U.S.	Greece	Japan
Life expectancy at age 45 in years	(M)	27	31	27
	(F)	33	34	32
Coronary Heart Disease	(M)	189	33	34
	(F)	54	14	21
Cerebrovascular Diseases	(M)	30	26	102
	(F)	24	23	57
Breast Cancer	(F)	22	8	4
Stomach Cancer	(M)	6	10	48
	(F)	3	6	26
Colon, Rectal Cancer	(M)	11	3	5
	(F)	10	3	5
Total Cancer	(M)	102	83	98
	(F)	87	61	77



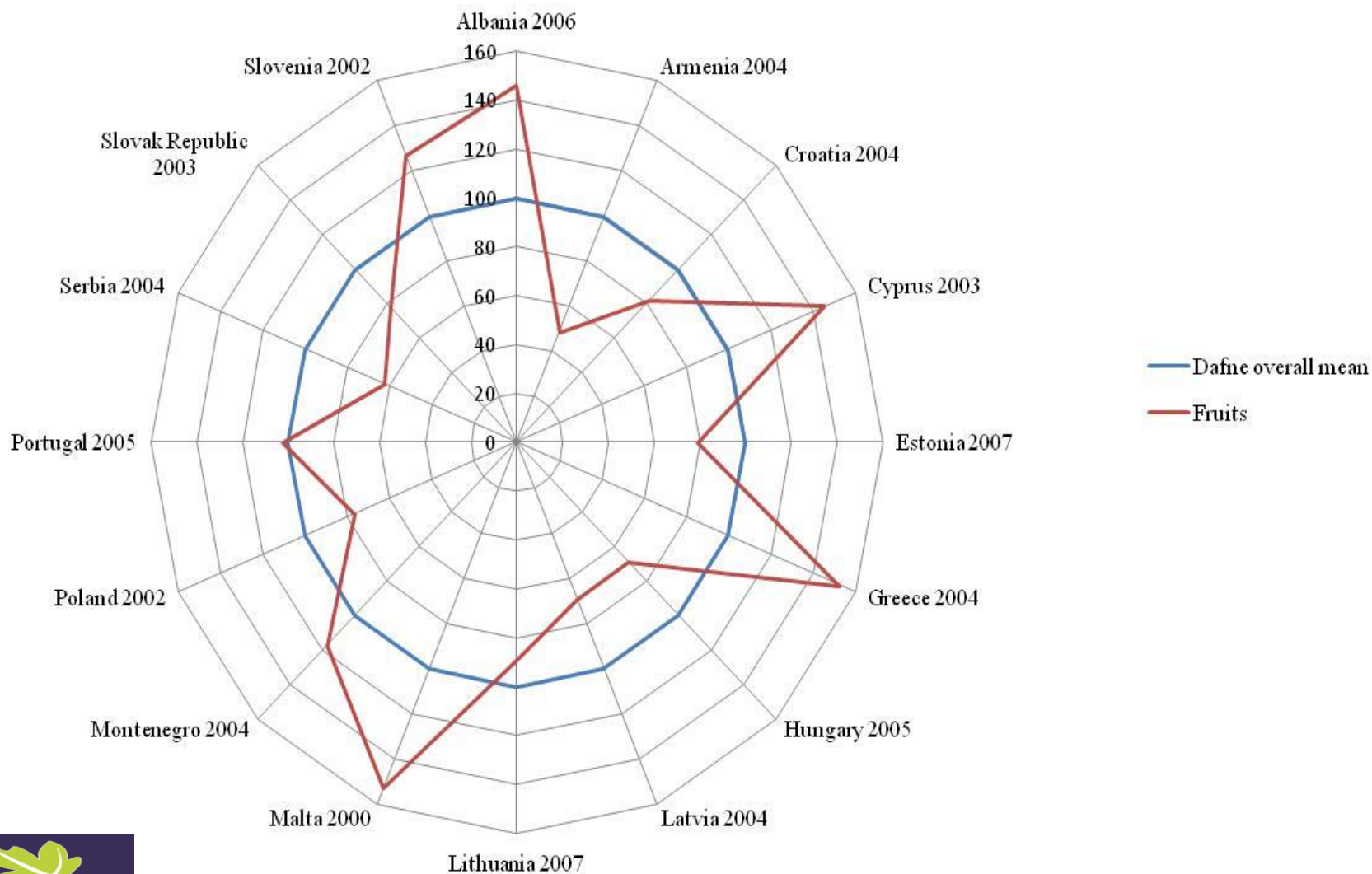
# Pan –European Food Data Bank based on Household Budget Surveys



**The Dafne-AnemosSoft website is fully operational only  
throughout Internet Explorer browser**

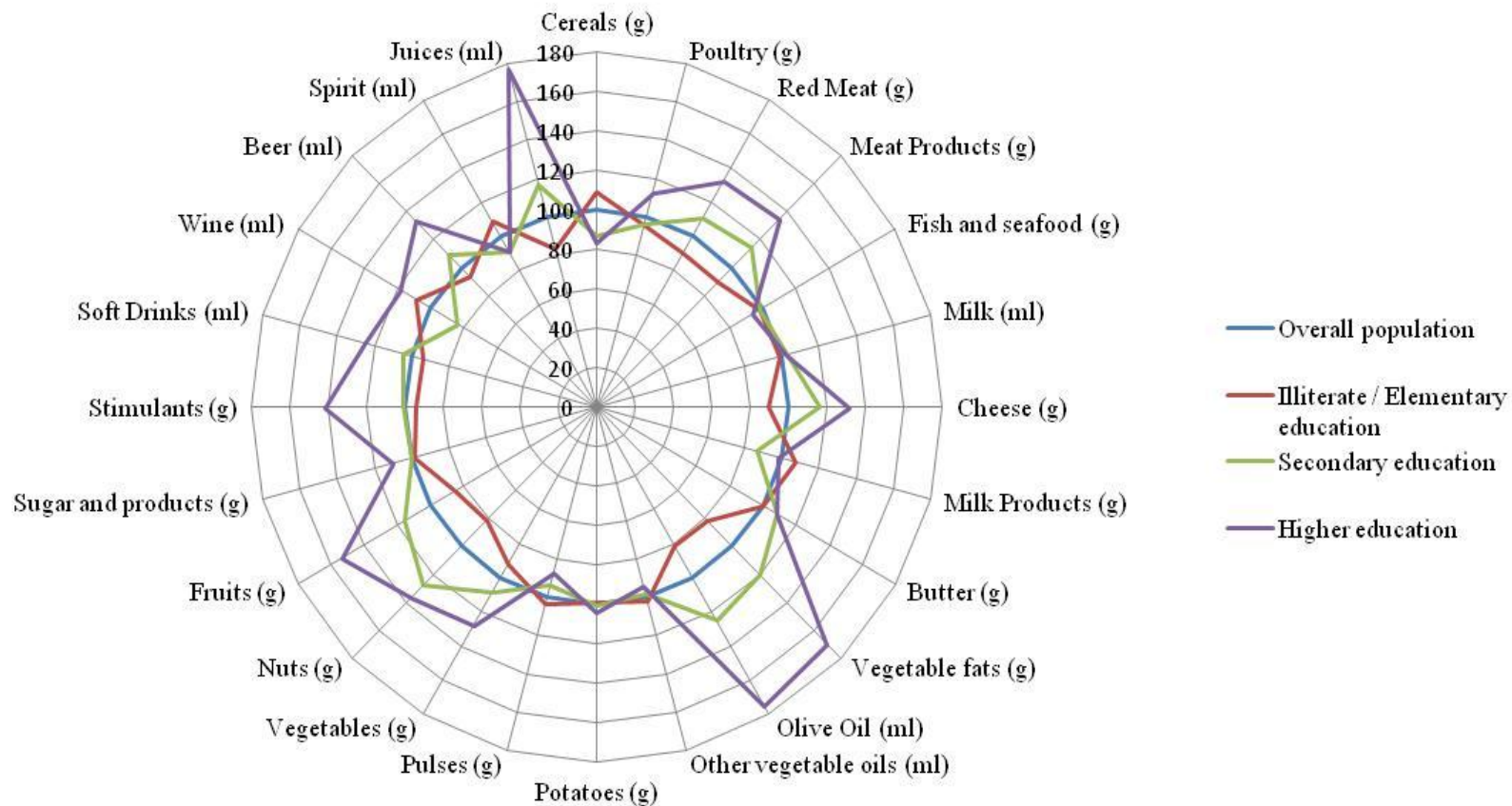
<http://www.hhf-greece.gr/dafnesoftweb/>

**Deviation (%) of the daily individual availability of fruits (fresh and processed) by country, from the Dafne overall mean**

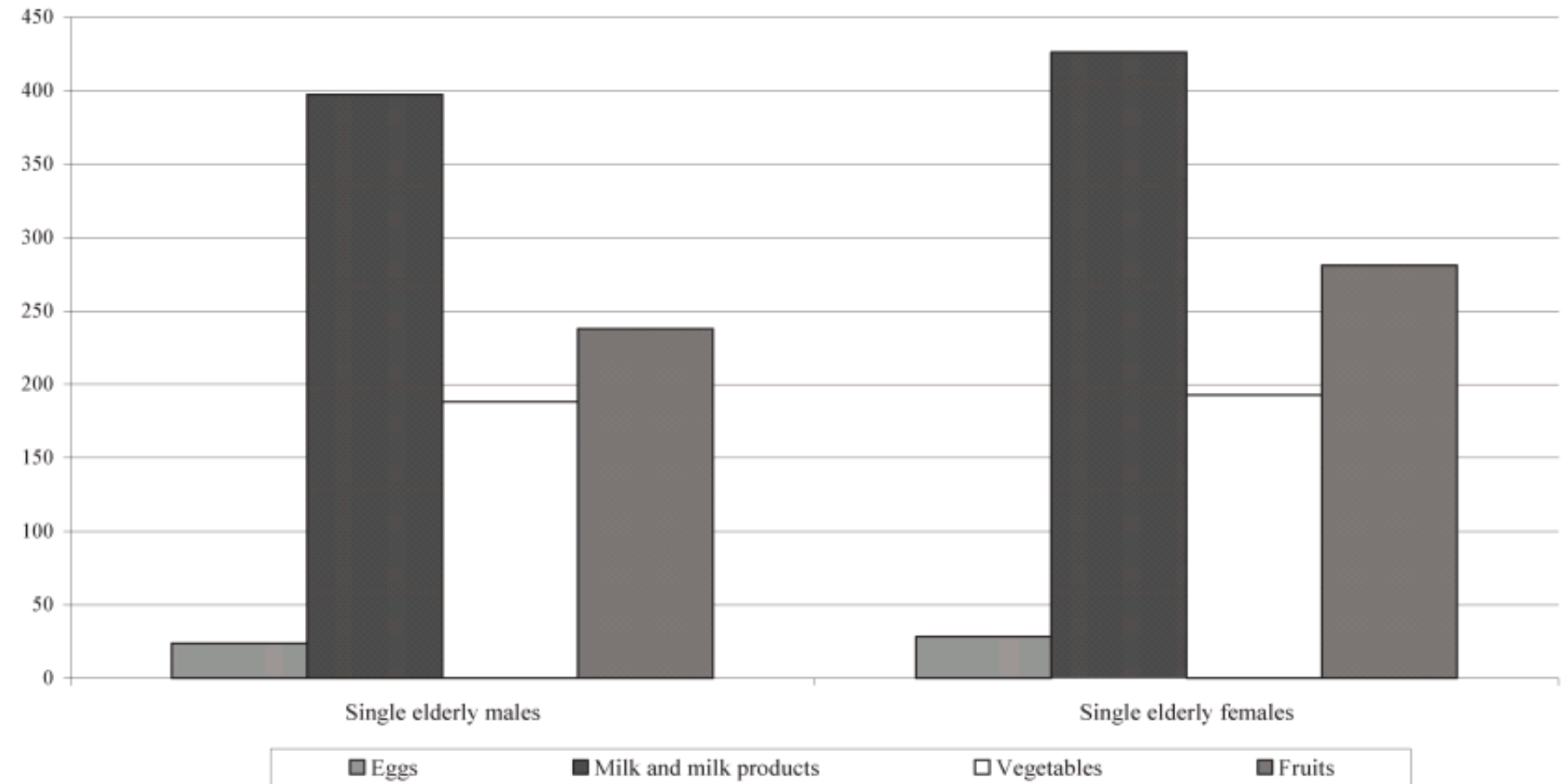


**Deviation (%) of the daily individual availability among socioeconomic groups defined on their educational status, from the mean availability in the overall country's population.**

**ALBANIA 2006**



# The DAFNE databank: the past and future of monitoring the dietary habits of Europeans



Mean daily individual availability of selected foods among elderly Europeans\* living alone (g/person per day) (source: the DAFNE databank).

*Asterisk:* Values are calculated as weighted arithmetic means of the mean availability values of ten European countries (Austria, Belgium, Finland, Germany, Greece, Ireland, Italy, Norway, Portugal and the UK)





# hydrria

DIET & HEALTH OF THE GREEK POPULATION

**hy**geia, **d**iet, **r**esearch **i**n **a**ll

# Nutrition and ageing: the future

- The need for research on the elderly and their nutritional habits has been addressed, but...
- Already existing dietary patterns have to be clearly defined and their associations with major causes of mortality and disability in the elderly have to be specified.

**Give years to life and life to years**

**THANK YOU**

