## Food consumption - Case study: Finland

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## Background

- Different types of food consumption data
- Different uses of the data
- Recent activities



# BACKGROUND



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### Facts about Finland

- Population: 5.5 million
- Area: 338 440 km<sup>2</sup>
- 187 888 lakes
- Most sparsely populated country in the EU
- Member of the EU since 1995
- Currency: Euro
- Life expectancy: Men 78 years, women 84 years
- Official languages: Finnish (89%) and Swedish (5%)

Suomi' Finland



# Role of the Nutrition Unit of THL in food information, food consumption data collection and use in Finland

- Evidence-based data on nutrition to experts, decision-makers and the public
- The National Food Composition Database "Fineli" – open data (<u>www.fineli.fi</u> – in Finnish, Swedish and English)
- Dietary data collection and intake assessment system "Finessi"
- National Dietary Surveys among adults every 5th year since 1982
  - The FinDiet Survey in a sub-sample of the FinHealth Study
  - Dissemination of results and data for other users
- Nutritional epidemiology (data collected by validated FFQ methods based on the Fineli database, Finessi calculation system and the most consumed foods evaluated in the FinDiet Surveys)





## How to improve nutrition?

- Monitoring the starting point
- Research and risk assessment
- Nutrition policy collaboration
- Legislation
- Education (nutritionists, dietitians, nurses, doctors, teachers, food scientists)
- Nutrition recommendation and dietary guidelines
- Implementation programs of the recommendations and guidelines
- Fortification of foods
- Catering services comprise an important channel to promote healthy nutrition
- Food production

# **DIFFERENT TYPES OF DATA**



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### Food consumption monitoring tools in Finland

- Food Balance Sheets since 1950s (Ministry of Agriculture and Forestry) – per capita data
- Questionnaire data, e.g. National Health Behaviour Questionnaires – annual data since 1978
- National Food Consumption Surveys (Food records, 24h dietary recall) since 1982
- Food Frequency data since 2000 (epidemiologic research)



## Food consumption in Finland 1950-2005\*

kg/person/year



# PROPORTION (%) OF THE POPULATION EATING FISH MORE THAN 200 g PER WEEK



(Dietary Guidelines - Fish two to three times a week. National Nutrition Council 2005.

FINLAND

2nd Croatian Food Safety Risk Assessment Conference and the World Food Day 2017 (Similä et al. 2005)

# The FINDIET Surveys in a sub-sample of the FINRISK/FinHealth Studies

- FINDIET (n= about 2000) in a sub-sample of the FINRISK/FinHealth
- Every fifth year since 1982
- Adults 18/25-64/74 years old
- Monitoring instruments:
  - Questionnaires
  - 48h dietary recall (FINDIET 2012), 2x24h dietary recall (FINDIET 2017)
  - FPQ on rarely eaten foods (2017)
  - FFQ (130 foods)
  - Biomarkers (e.g. S-vitD, 24h U-Na, U-I excretion)







## DIFFERENT USES OF THE DATA



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### **Dietary survey data needs**

- To identify population groups with unhealthy diets
- To identify foods which are key sources of nutrients
- To quantify levels of dietary exposure to potentially toxic substances and to identify foods which are key sources of such substances to support risk analysis
- To monitor and evaluate the effects of projects, policies and programmes aimed at improving diets
- To develop food, diet and health related policies, activities, guidance and tools.



### Starting point for dietarary and health policy actions – you need to know the baseline

### Actors in food and nutrition policy

- National Nutrition Council (recommendations, guidlines, food fortification activities)
- Ministry of Social Affairs and Health
- Ministry of Agriculture and Forestry







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RAVITSEMUSSITOUMUS

4. Kasvikset (vihannekset, juurekset, marjat & hedelmät)

Visio

1. Suola 2. Rasvan laatu

3 Sokeri

5. Tuotteet lapsille 6. Annos- ja pakkauskoot 7. Lounaat (ateriat ia välipalat) 8. Ruokaohjeet

Sisältösitoumukse

### Intake of salt in working age men and women



# Dietary sources of salt (%) among men and (women) in Finland (FINDIET 2012 Study)



### Vitamin D intake in different age groups



(Helldán et al. 2013, THL Findiet 2012 survey)

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### Sources of vitamin D among men (25-64 yrs)



(Helldán et al. 2013, THL Findiet 2012 survey)

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### **Risk assessment activities**

- Finnish Food Safety Authority Evira
  - chemical risk assessments
  - microbiological risk assessment
  - methodological development
  - basis for Total Diet Studies
- European Food Safety Authority (EFSA)
  - EFSA Comprehensive European Food Consumption Database







## Dietary survey data use in food regulatory science

Scientific Opinion on the safety of caffeine

Scientific Opinion on the risks to public health from perchlorate in food

Scientific Opinion on the risks to public health related to the presence of chlorate in food

Scientific Opinion on the risks for human health related to the presence of tetrahydrocannabinol (THC) in milk and other food of animal origin

Scientific Opinion on the re-evaluation of ascorbic acid (E 300), sodium ascorbate (E 301) and calcium ascorbate (E 302) as food additives

Scientific Opinion on the re-evaluation of dodecyl gallate (E 312) as a food additive

Extension of use of extracts of rosemary (E 392) in fat-based spreads

Scientific Opinion on the re-evaluation of chlorophylls (E 140(i)) as food additives

Scientific Opinion on re-evaluation of chlorophyllins (E 140(ii)) as food additives

Scientific Opinion on re-evaluation of copper complexes of chlorophylls (E 141(i)) and chlorophyllins (E 141(ii)) as food additives

Scientific opinion on the safety of the extension of use of steviol glycosides (E 960) as a food additive

Scientific Opinion on the re-evaluation of sorbic acid (E 200), potassium sorbate (E 202) and calcium sorbate (E 203) as food additives

Scientific Opinion on the re-evaluation of oxidised polyethylene wax (E 914) as a food additive

Scientific Opinion on the re-evaluation of polyethylene sorbitans (E 432-436) as food additives

Scientific Opinion on nitrofurans and their metabolites in food (link)

Scientific Opinion on Dietary Reference Values for calcium Scientific Opinion on Dietary Reference Values for vitamin E as α-tocopherol Scientific Opinion on Dietary Reference Values for cobalamin Scientific Opinion on Dietary reference values for phosphorus Scientific Opinion on Dietary Reference Values (DRVs) for magnesium

Source: <u>www.efsa.europa.eu</u> (20 publications between April and July 2015)

### **Methodological applications**

- Starting point in Total Diet Studies (TDS) (EFSA 2011)
- Basis for developing FFQ's for nutritional epidemiology
- Basis for developing picture books for portion size estimation in dietary surveys
- Starting material for predictive intake modelling and reformulation.
- Method development (e.g. 24h food list for modelling purposes, usual intake modelling)
- Comparison and validation studies (e.g. food databases, dietary intake vs. biomarkers)



# Dietary survey data the basis for total diet studies (TDS)







EFSA Journal 2011; 9(11):2450

#### JOINT GUIDANCE OF EFSA, FAO AND WHO

#### Towards a harmonised Total Diet Study approach: a guidance document<sup>1</sup>

European Food Safety Authority (EFSA), Parma, Italy<sup>2, 3</sup>

Food and Agriculture Organization of the United Nations (FAO), Rome, Italy

World Health Organization (WHO), Geneva, Switzerland



### Labelling helps to reach the salt recommendations



### **Determinants of non-communicable disease risk factors**



**Fig. 1** Observed and predicted decline in serum cholesterol based on dietary changes in all subjects without lipid-lowering medication (*n* 4761; ○, PUFA; ●, dietary cholesterol; △, SFA; ▲, PUFA + dietary cholesterol + SFA; □, PUFA + dietary cholesterol + SFA + *trans* fatty acids; ■, observed serum cholesterol)

**Fig. 2** Observed and predicted decline in serum cholesterol based on use of lipid-lowering medication and dietary changes in all subjects (*n* 4963;  $\bigcirc$ , medication effect;  $\bigcirc$ , dietary effect;  $\triangle$ , medication + dietary effect;  $\blacktriangle$ , observed serum cholesterol)



### Other use

- Associations between overweight, physical activity, sedentary life style, sleep and dietary intakes
- Dietary determinants of chronic disease risk factors
- Relationships between school lunch attendance and dietary intakes
- Relationship between socio-economics disparities or food insecurity and dietary intakes
- Risk-benefit analyses
- EU and international projects (e.g. FACET, TDS Exposure, FOOD4ME)



# Daily intake of fat and fatty acids (E%\*) in working age women



\*Total energy does not include the energy derived from fiber.

Changes in 2007-2012:

p < 0.001 (Carbohydrates, fat and protein)

(THL/ FINDIET 1992, 1997, 2002, 2007 and 2012 surveys)

### Serun cholesterol levels in men 30 to 59 years old



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### Consumption of red meat and processed meat products by education among men and women in Finland 1997-2012



Men

Women



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### Trans fat intake (EN%) for adults $\geq$ 20 yrears (2010)



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## **RECENT ACTIVITIES**



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## Sampling of the FinHealth 2017 Survey

#### Frame:

National Population Register: Permanent recidents in Finland

#### Sampling strategy:

- Stratified random sampling:10 300 adults, 18+ years
- 15 largest cities and 35 HCDs from the rest of Finland
- Proportion sampled corresponds to pop. size of each stratum and number sampled equal in all HCDs.





### Sample of the FinDiet 2017 Study

Alltogether	8300*	37,2 %	3090	
65-74 years	1500	45,3 %	680	>260
18-64 years	6800	35,4 %	2410	>780
Age group	FinHealth sample by age group	FinDiet sample (% from FinHealth)	Subjects invited	EFSA Requirement

\* The total FinHealth sample n=10300



### Partisipation rate 1972-2012, 30–59 year old men



The EU Menu Finland – the FinDiet 2017 team completed the food consumption data collection one week ago (≈3500 interviews)



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### **Summary: Food consumption data**

- Is the corner stone for food and nutrition policy activities
- Serves as the starting data (in addition to the occurrence data) for risk assessments
- It helps to identify population groups with unhealthy diets, key sources of nutrients and is the basis for fortification programs
- To monitor and evaluate the effects of projects, policies and programmes aimed at improving diets
- It also serves in developments of dietary assessment and nutrition epidemiology methods.



### Thank you!

### **Questions?**



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