Euroopa Maaelu Arengu Põllumajandusfond: Euroopa investeeringud maapiirkondadesse

KErn Kompetenzzentrum für Ernährung

2018/12/04 Ministry of Rural Affairs of Estonia

Product Reformulation for a Healthier Europa - current situation and the challenges to the food industry

Tallinn, 04.12.2018

Summery

- Definition of Reformulation
- Need for Reformulation?
- The Target Ingrediens
- German Strategie
- European Countries

www.euro.who.int: 23.06.2017

Parliament in Estonia approves legislation taxing soft drinks

- … From 1 January 2018, the legislation will introduce a tax on nonalcoholic beverages (carbonated and noncarbonated drinks, 100% juice drinks and sweetened milk drinks)…
- …The highest tax rate of 30 euro cents per litre will be introduced gradually. Starting in 2018…
- …The tiered tax gradient aims to stimulate product reformulation over time.

Definitions

To *reformulate* is to rework or improve an original plan.

- **“Food reformulation”**

is the reduction of salt and calories from sugar and saturated fat in processed foods**.**

(The Dutch National Institute for Public Health and the Environment-RIVM)

- **„Product Reformulation“**

HEALTHY FOOD AMERICA
Moving Science to Action

Why the original plan has to be reworked?

Nutrient-related diseases such as

- **Obesity and eating disorders**
- **Chronic diseases such as**

  - Cardiovascular disease
  - Hypertension
  - Cancer
  - Diabetes mellitus

www.britannia.com

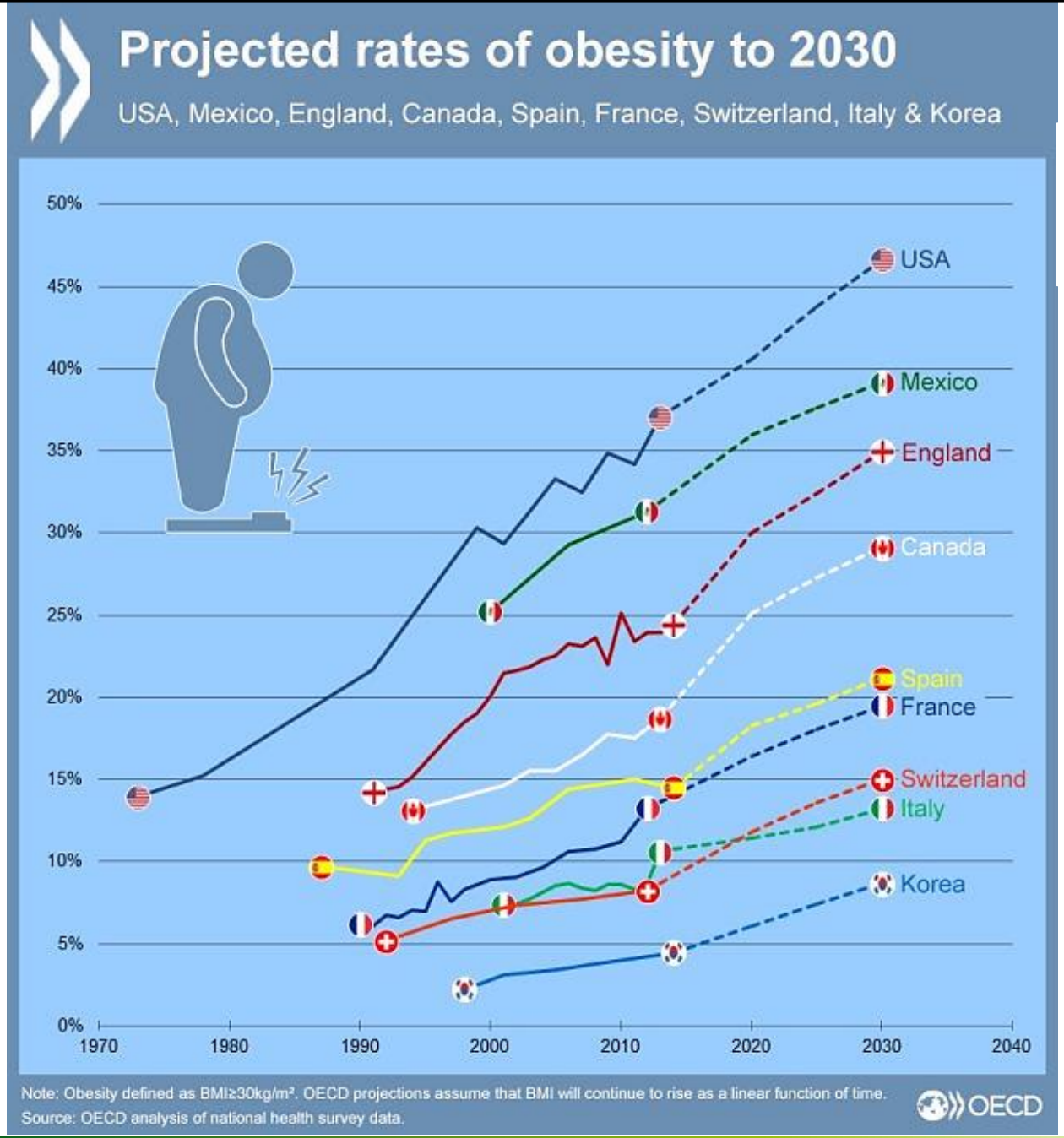
plus
  - Osteoporosis and bone
  - Dental disease

www.who.int

Apple or pear? Man or women?

Heart disease
Stroke
Diabetes
Hypertension
Some type of cancer

Chronic diseases
Arthrosis
Gallstone



Source: https://twitter.com/oecd/status/896687954231537664

Body mass index: relative weight for height

$$\text{Body Mass Index} = \frac{\text{Weight (in kg)}}{\text{Height}^2 \text{ (in m)}}$$

Health-related classifications:

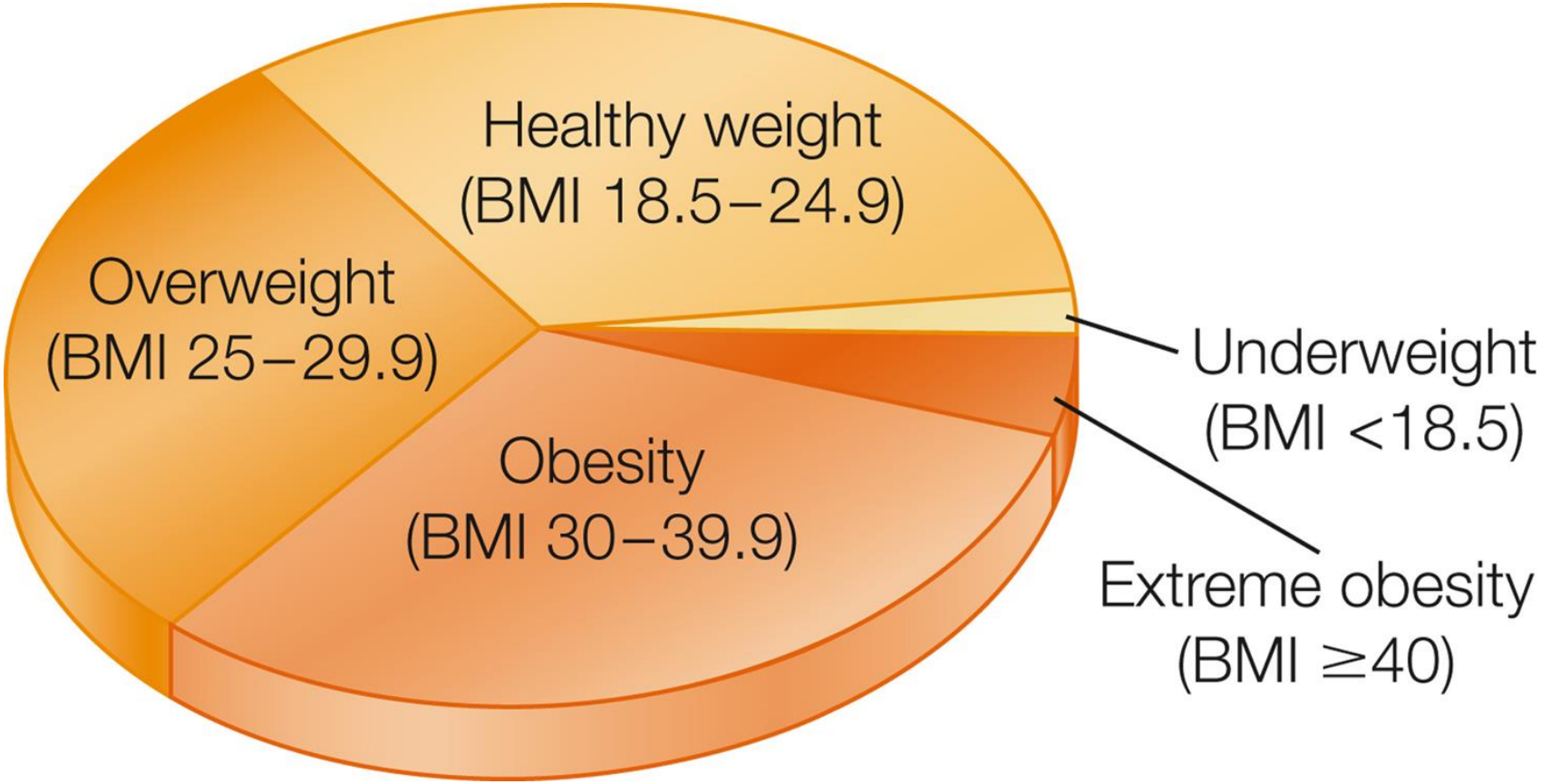
BMI = 18,5 to 25,9

(not a measure of body composition great variations)

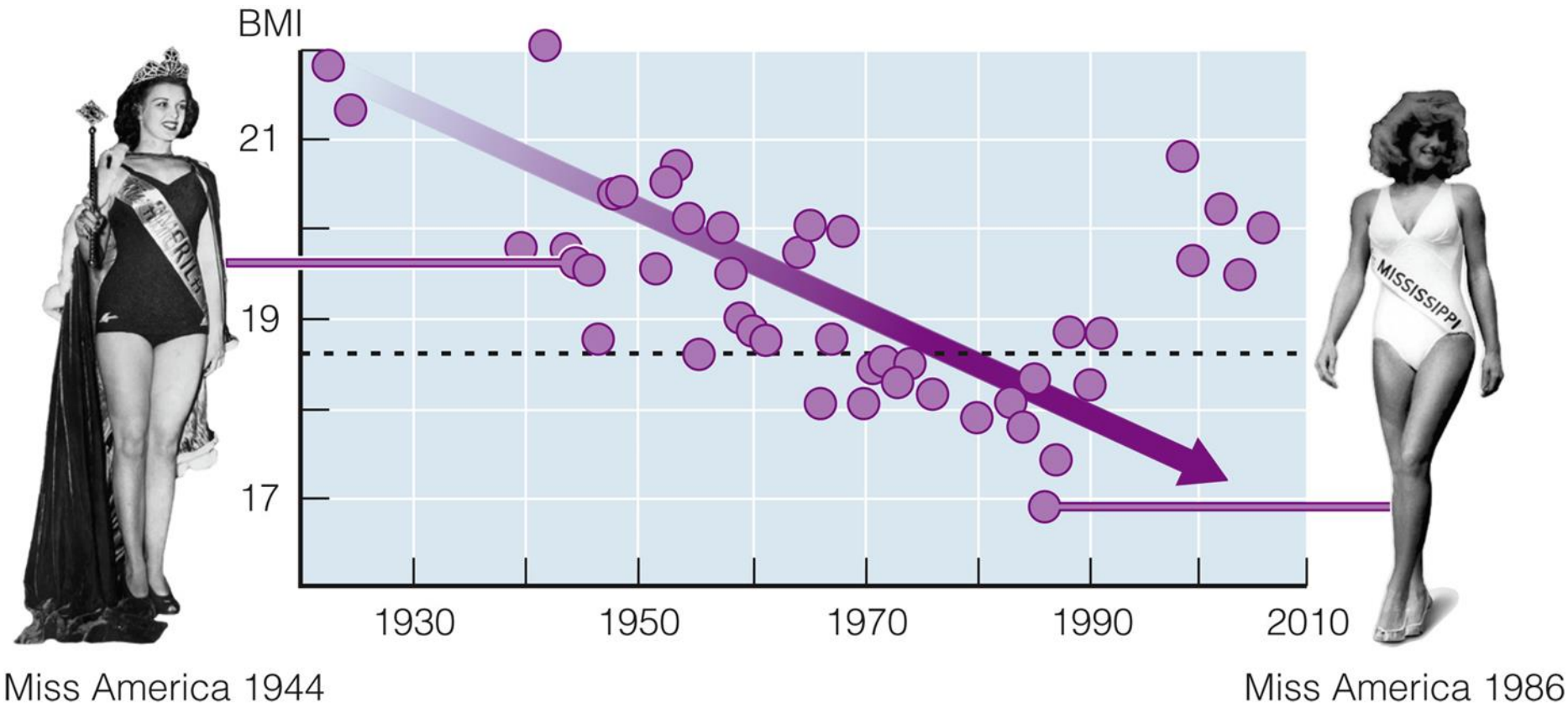
Chart “BMI”

Weight lbs	100	105	110	115	120	125	130	135	140	145	150	155	160	165	170	175	180	185	190	195	200	205	210	215
Weight kgs	45.5	47.7	50.0	52.3	54.5	56.8	59.1	61.4	63.6	65.9	68.2	70.5	72.7	75.0	77.3	79.5	81.8	84.1	86.4	88.6	90.9	93.2	95.5	97.7
Height in/cm	Underweight					Healthy					Overweight					Obese				Extremely obese				
5’0” - 152.4	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42
5’1” - 154.9	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	36	37	38	39	40
5’2” - 157.4	18	19	20	21	22	22	23	24	25	26	27	28	29	30	31	32	33	33	34	35	36	37	38	39
5’3” - 160.0	17	18	19	20	21	22	23	24	24	25	26	27	28	29	30	31	32	32	33	34	35	36	37	38
5’4” - 162.5	17	18	18	19	20	21	22	23	24	24	25	26	27	28	29	30	31	31	32	33	34	35	36	37
5’5” - 165.1	16	17	18	19	20	20	21	22	23	24	25	25	26	27	28	29	30	30	31	32	33	34	35	35
5’6” - 167.6	16	17	17	18	19	20	21	21	22	23	24	25	25	26	27	28	29	29	30	31	32	33	34	34
5’7” - 170.1	15	16	17	18	18	19	20	21	22	22	23	24	25	25	26	27	28	29	29	30	31	32	33	33
5’8” - 172.7	15	16	16	17	18	19	19	20	21	22	22	23	24	25	25	26	27	28	28	29	30	31	32	32
5’9” - 175.2	14	15	16	17	17	18	19	20	20	21	22	22	23	24	25	25	26	27	28	28	29	30	31	31
5’10” - 177.8	14	15	15	16	17	18	18	19	20	20	21	22	23	23	24	25	25	26	27	28	28	29	30	30
5’11” - 180.3	14	14	15	16	16	17	18	18	19	20	21	21	22	23	23	24	25	25	26	27	28	28	29	30
6’0” - 182.8	13	14	14	15	16	17	17	18	19	19	20	21	21	22	23	23	24	25	25	26	27	27	28	29
6’1” - 185.4	13	13	14	15	15	16	17	17	18	19	19	20	21	21	22	23	23	24	25	25	26	27	27	28
6’2” - 187.9	12	13	14	14	15	16	16	17	18	18	19	19	20	21	21	22	23	23	24	25	25	26	27	27
6’3” - 190.5	12	13	13	14	15	15	16	16	17	18	18	19	20	20	21	21	22	23	23	24	25	25	26	26
6’4” - 193.0	12	12	13	14	14	15	15	16	17	17	18	18	19	20	20	21	22	22	23	23	24	25	25	26

Defining a healthy body weight:



BMI during the years:



Calories of the main nutrients:

Carbohydrate	=	4 Kcal/g
Protein	=	4 Kcal/g
Fat	=	9 kcal/g
Alcohol*	=	7 kcal/g

* NOT a Nutrient!

Definition “calorie”:

The amount of energy required to warm
one gram of air-free water
from 14.5 to 15.5 °C at standard atmospheric pressure.

1 kcal = 4.184 kilojoules

Within the European Union, both the kilocalorie ("kcal") and kilojoule ("kJ") appear on nutrition labels.

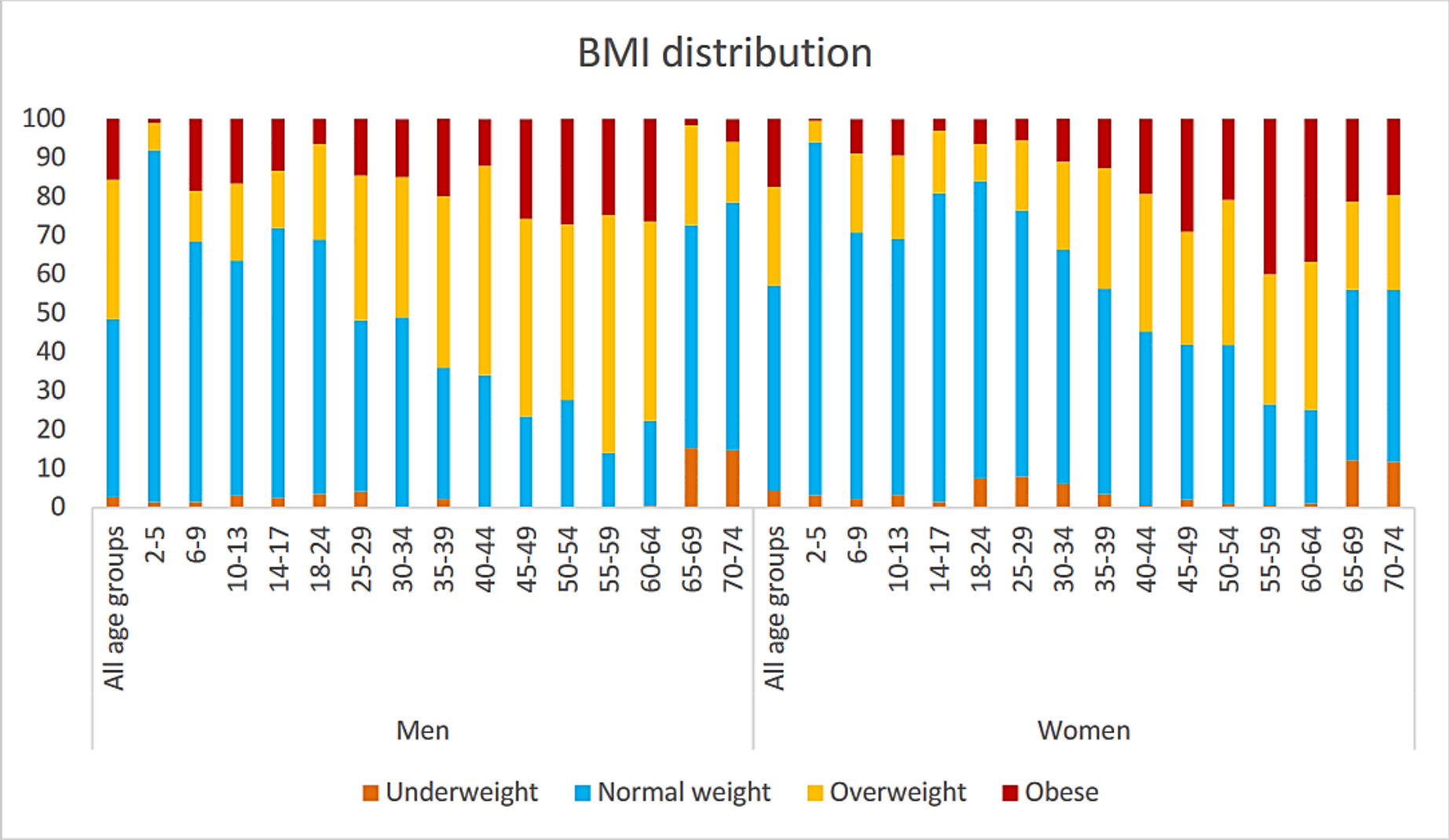
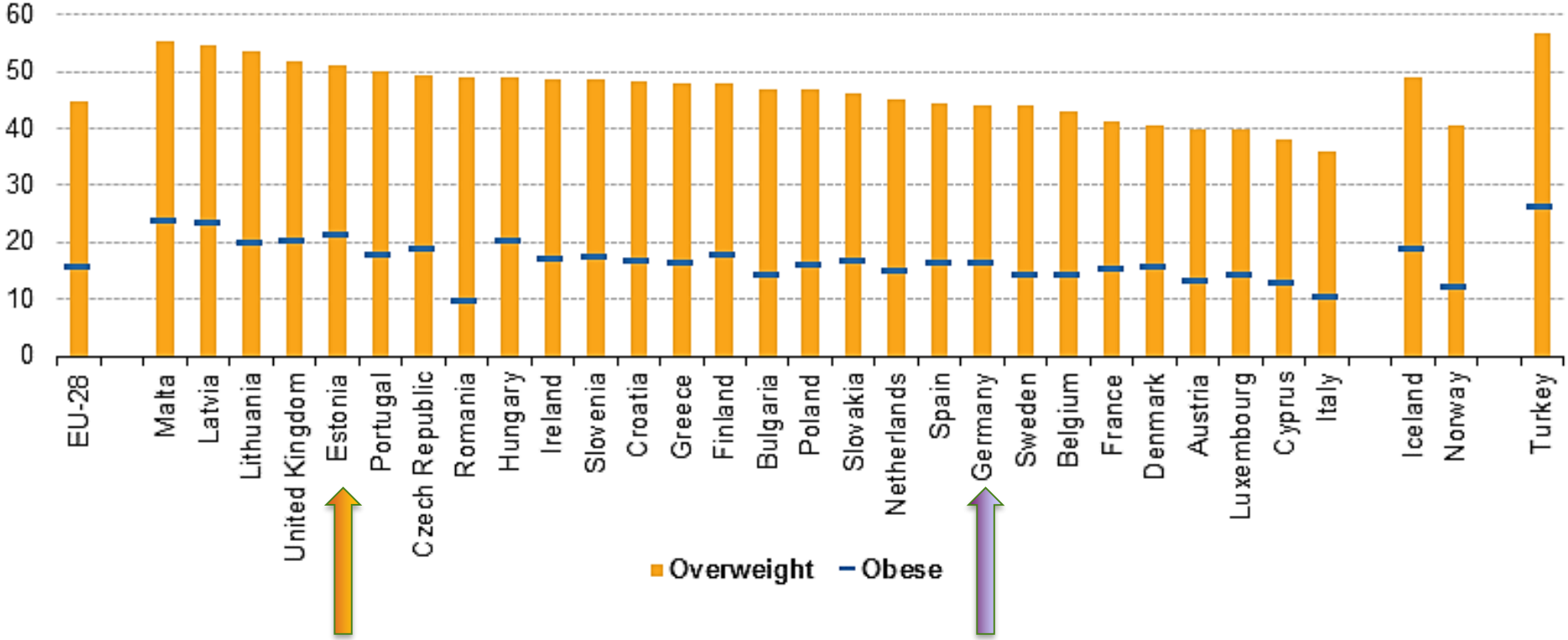


Figure 2: Prevalence of underweight, normal weight, overweight and obesity in Estonia 2014 (Source: The Estonian National Dietary Survey 2014).

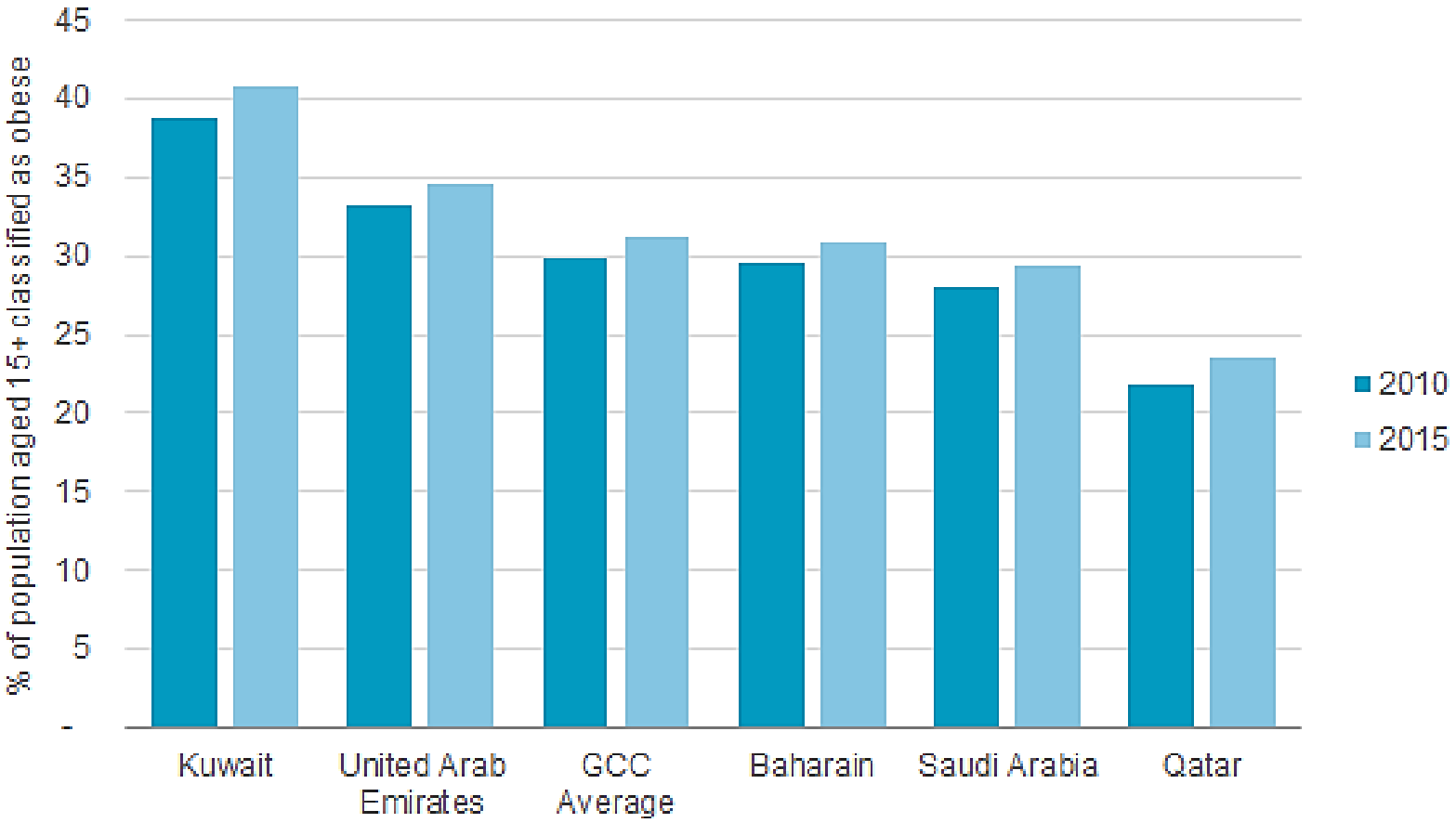
Proportion of overweight and of obese women, 2014



Note: population aged 18 and over.

Source: https://ec.europa.eu/eurostat/statistics-explained/index.php?title=File:Proportion_of_overweight_and_of_obese_women,_2014.png

Gulf states



Source: Euromonitor International
https://blog.euromonitor.com/rising-obesity-rates-gulf-states-create-opportunity-health-positioned-beverages/

Over 50% of people are overweight or obese

In the WHO/European Region

over 50%
of people are
overweight or **obese**

over 20%
of people are
obese

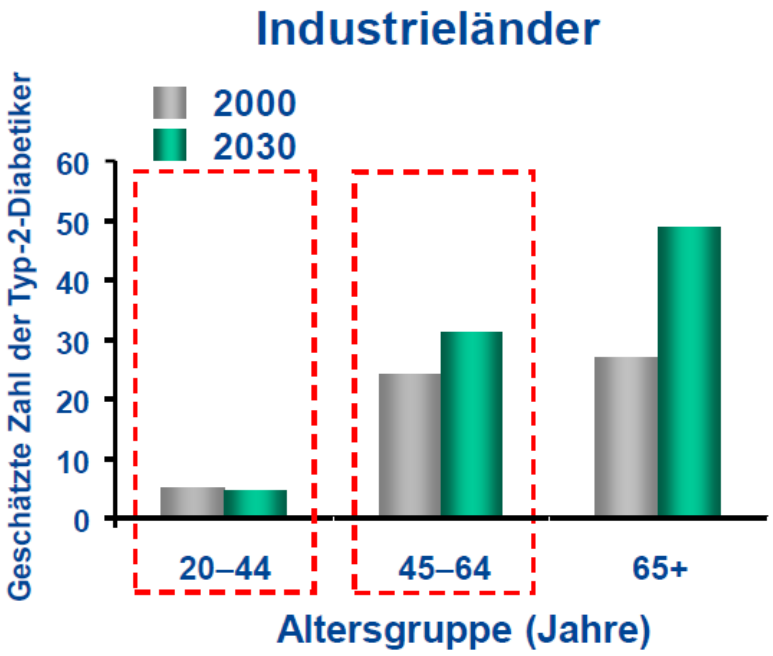
Source:
http://www.euro.who.int/en/health-topics/noncommunicable-diseases/obesity/data-and-statistics/infographic-over-50-of-people-are-overweight-or-obese-download

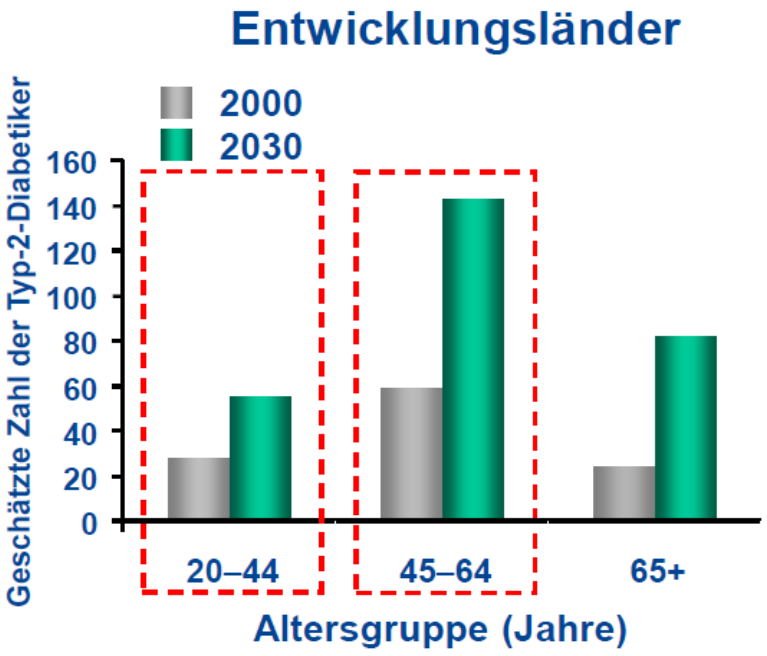
www.euro.who.int/obesity

© WHO 07/2013

World Health Organization
REGIONAL OFFICE FOR Europe

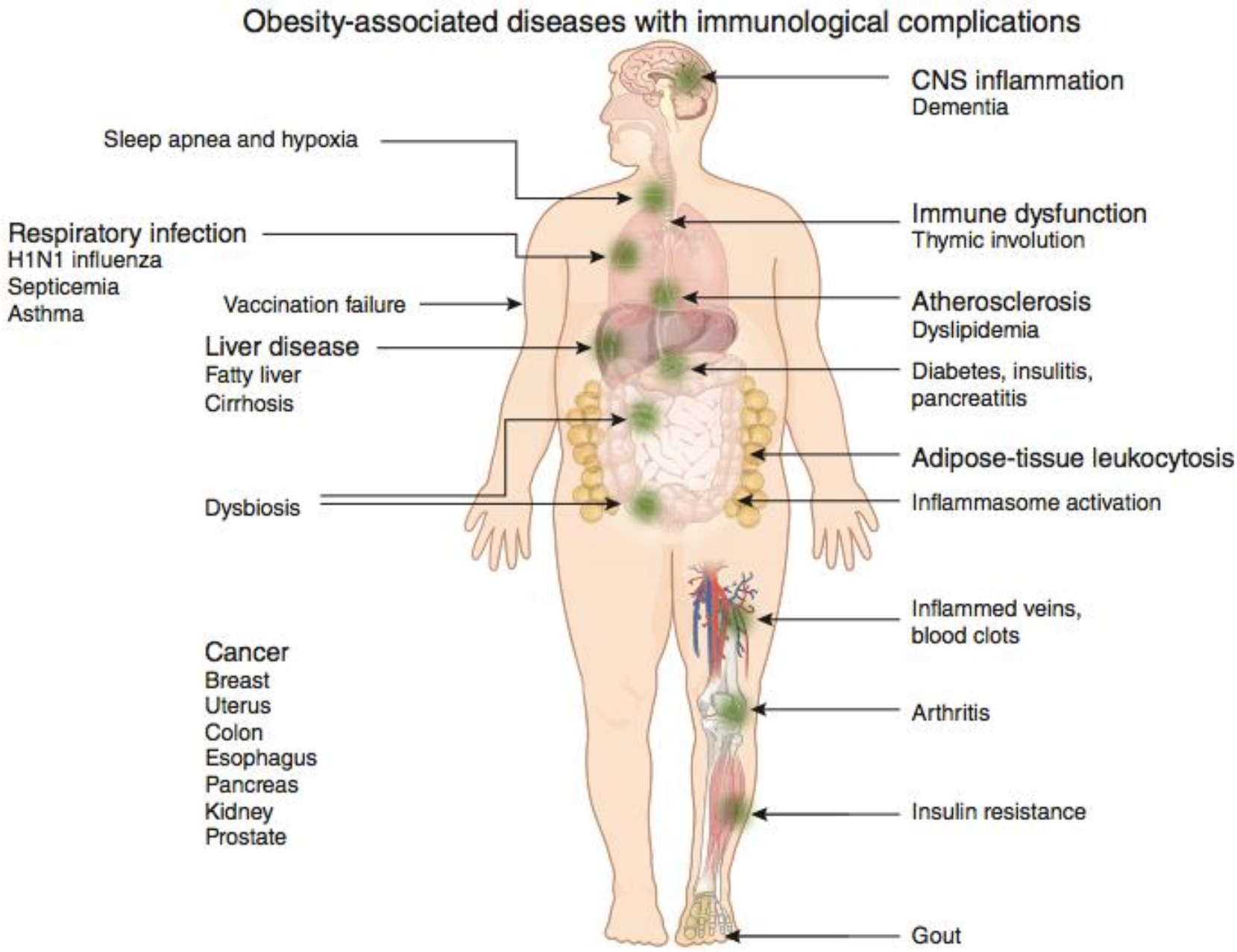
Onset of Diabetes

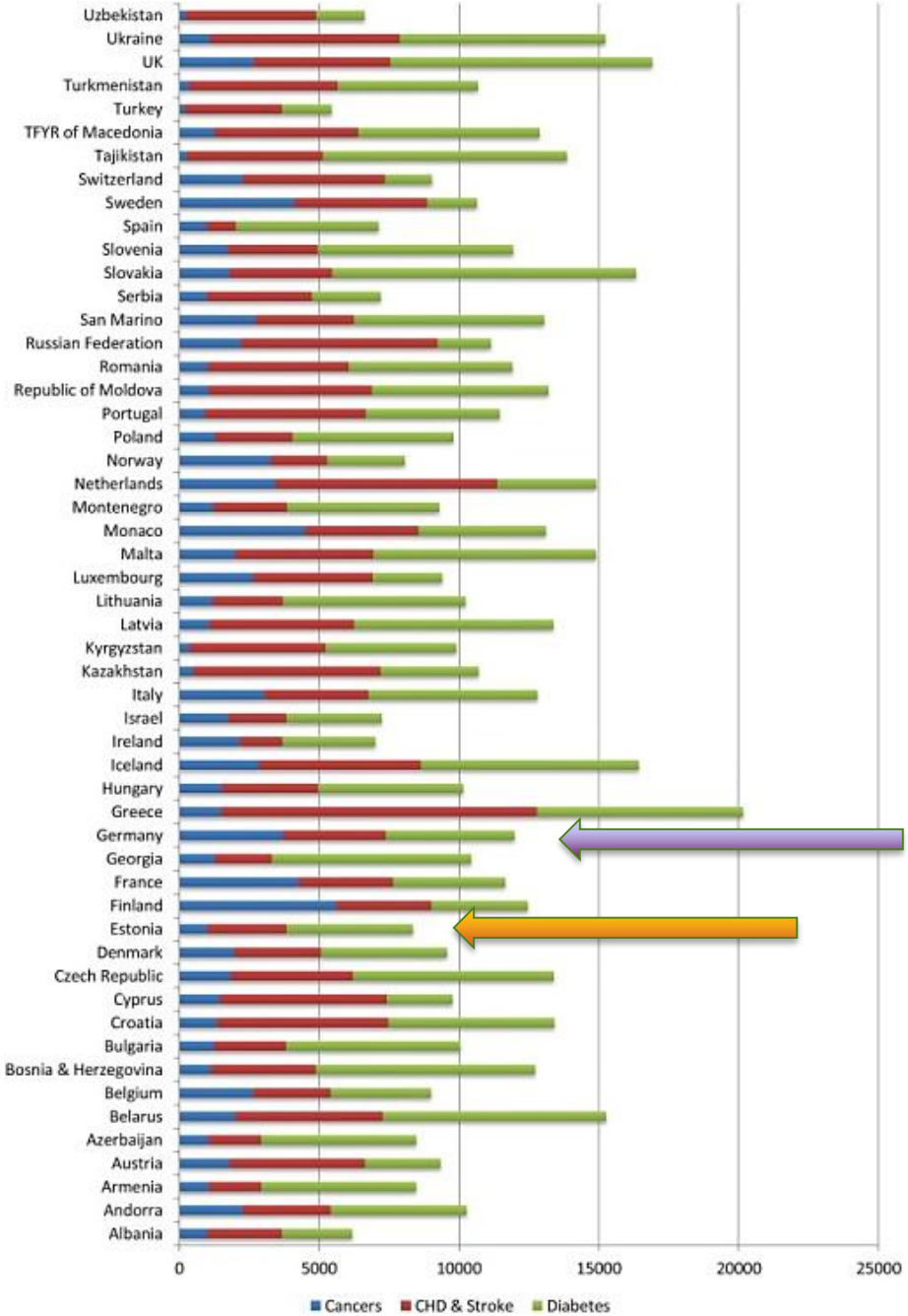




Wild S et al. *Diabetes Care* 2004; 27:1047–53

Source: https://robbwolf.com/2013/11/07/impact-nutrition-autoimmune-disease-part-3/

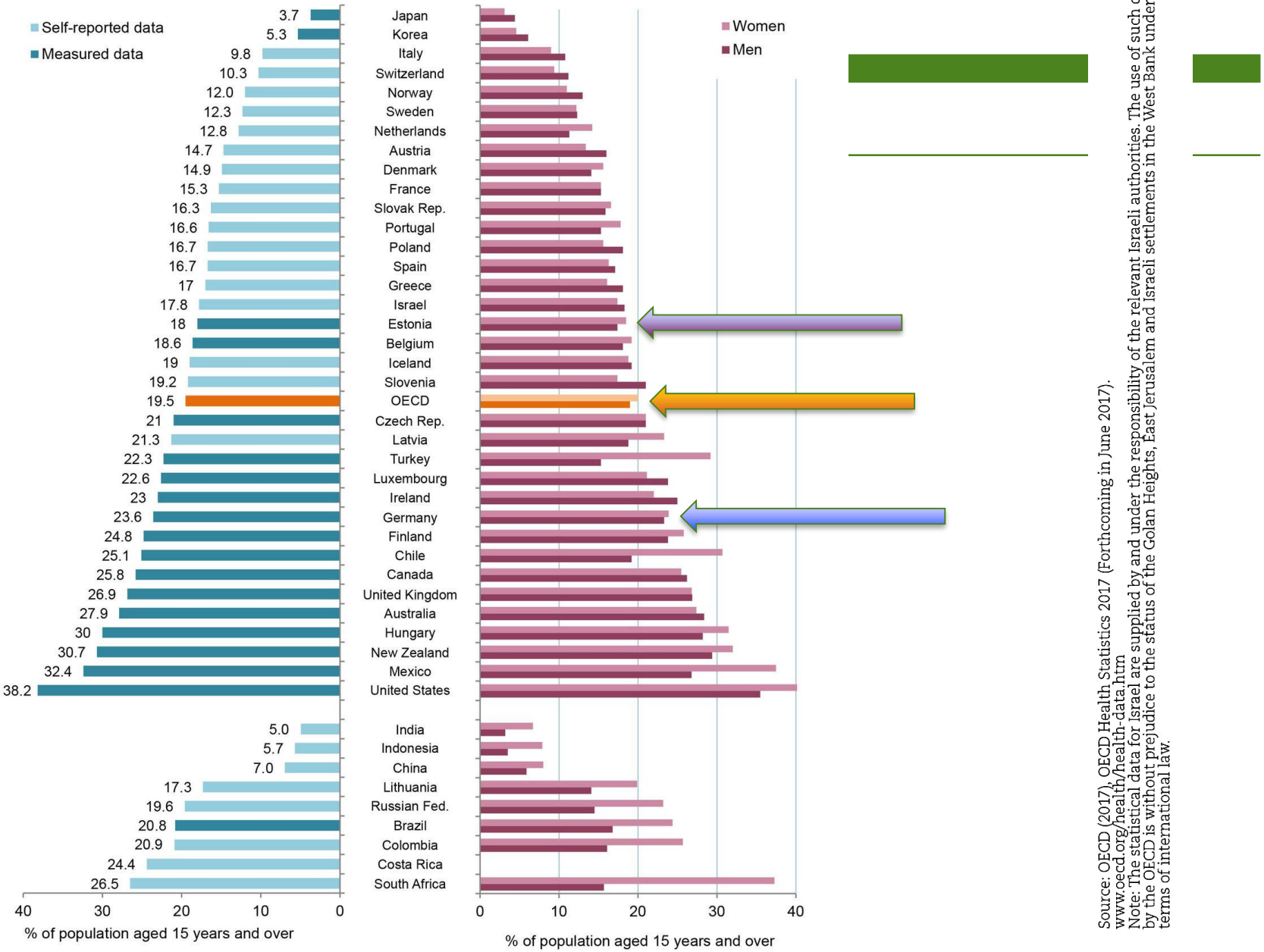




Projected prevalence of **cancers**, **coronary heart disease (CHD) & stroke** **diabetes**
per 100 000 of the population by 2030 by country.

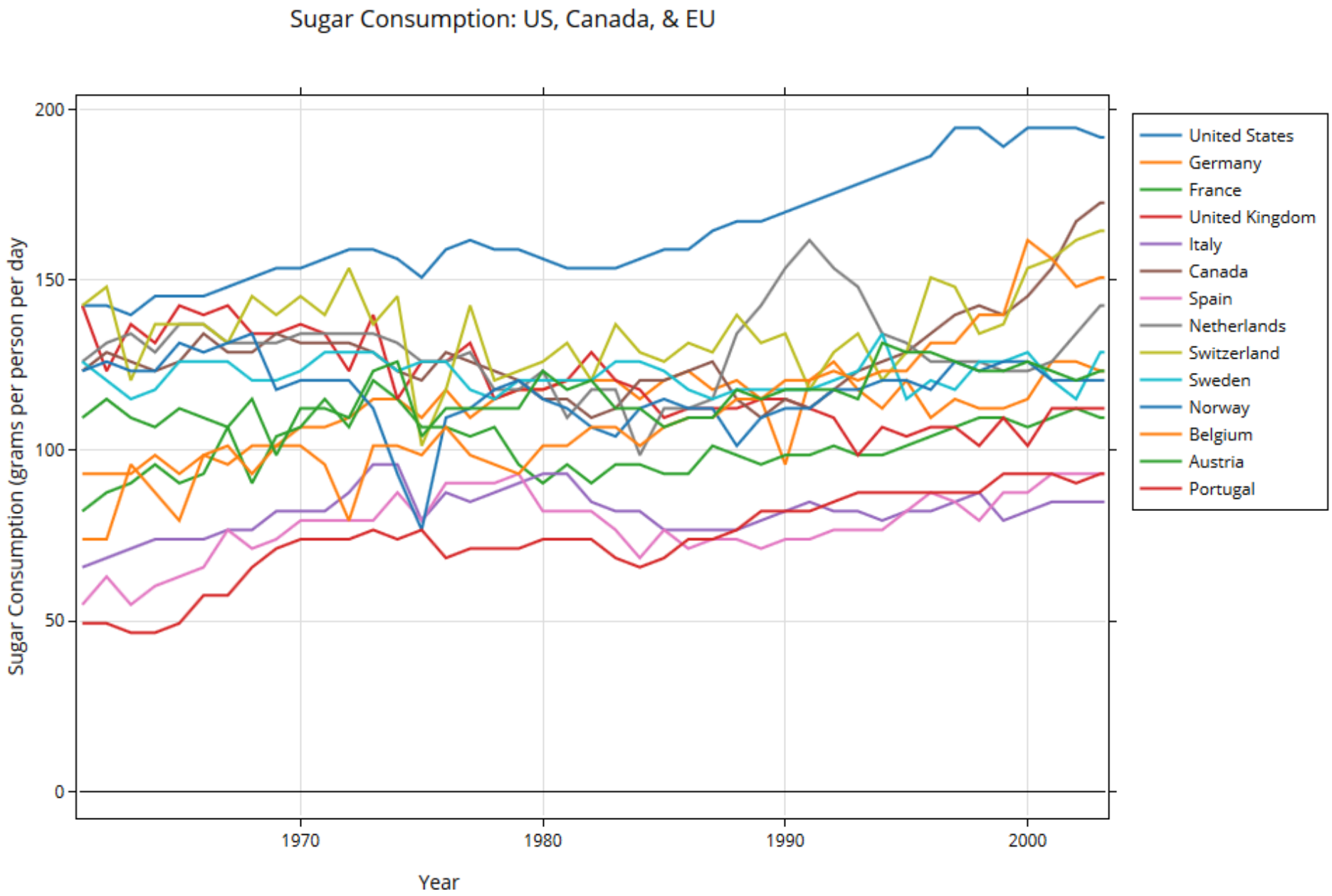
Source:
https://openi.nlm.nih.gov/detailedresult.php?img=PMC4120328_bmjopen2014004787f02&req=4

Figure 1: Obesity among adults, 2015 or nearest year



Source: OECD (2017), OECD Health Statistics 2017 (Forthcoming in June 2017). www.oecd.org/health/health-data.htm
Note: The statistical data for Israel are supplied by and under the responsibility of the relevant Israeli authorities. The use of such data by the OECD is without prejudice to the status of the Golan Heights, East Jerusalem and Israeli settlements in the West Bank under the terms of international law.

Obesity and soft drinks



Source: https://digitalsplashmedia.com/2014/03/data-viz-sugar-consumption-bmi-in-us-canada-eu/

Three Ways to look at Reformulation

- focus on the **ingredients**
  like salz, sugar, fat

- focus on **the food**
  meat or milk products, breakfast cereals, bakery products

- focus on one/several **country**
  Germany, Great Britain, France

Tree Ways to look at Reformulation

focus on **the food**

meat or milk products, breakfast cereals, bakery products

focus on the **ingredients**

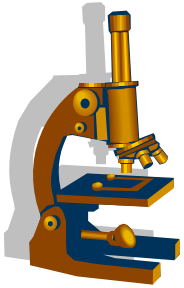
salz, sugar, fat

focus on one/several **country**

Germany, Great Britain, France

Germany

Regulations by law



Research

Food trade

Regulation by law (1)

German Federal Ministry of Food and Agriculture

- **planed** a first report on „reformulation“ by the end of 2016!

Regulation by law (2)

…based on the fact that:

EU-member-states were aksed to come up with national plans about „reformulation“ by end of 2020

EU Frame work was published with a list of „Added Sugars“ containing eleven products like drinks, milk products, cereals, Bakerx products icecream canned food, 2015

Source: www.consilium.europa.eu/de/press/press-releases/2016/06/17-epsco-conclusions-food-product-improvement/).

EU - Activites

2008 : „High Level Group on Nutrition and Physical Activity“ (HLG)

2011EU Framework for National Initiatives on Selected Nutrients

2012 EU Framework for Salt Reduction

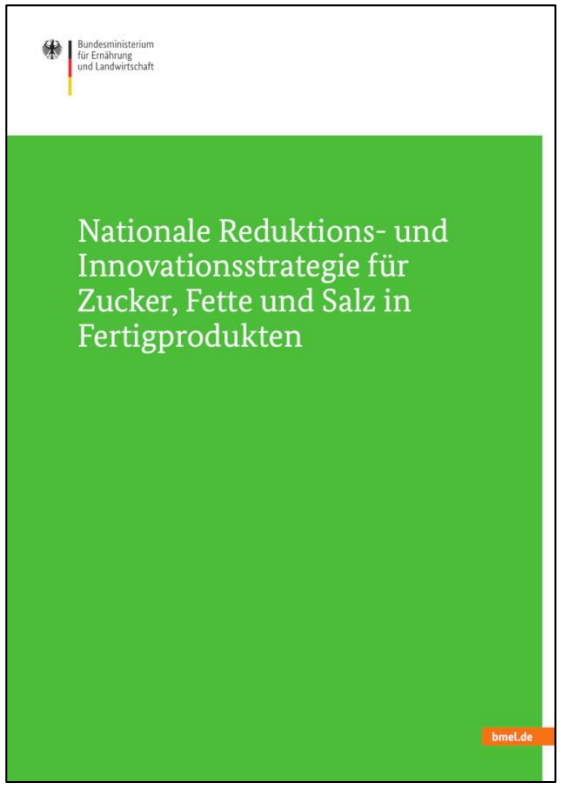
2012 EU Framework for saturated fats

2015 EU Framework for sugar

www.bmel.de 26.11.2018!

National strategy for reduction and innovation of sugar, fat and salt in convenience food

Bundesministerium
für Ernährung
und Landwirtschaft



Time frame 2019-2025

Max Rubner-Institut

Federal Research Institute of Nutrition and Food

Head Office in Karlsruhe

Max Rubner-Institut (MRI)

- focuses on consumer health protection in the nutrition sector,

- advises the Federal Ministry of Food and Agriculture (BMEL) in this area,

- Headquarters in Karlsruhe and three research centers
  - Kiel (milk and fish)
  - Detmold (cereals)
  - Kulmbach (meat)

Max Rubner-Institut (MRI)

…is responsible for the continued development and implementation of

- **National Nutrition Monitoring** and the German Nutrient Database.

…undertakes national tasks in the context of the Agricultural Statistics Act

…and the Precautionary Radiation Protection Act.

Reformulating foods (www.mri.bund.de)

- …in modern societies, **diseases resulting from unhealthy nutrition are a major problem.**
- In many cases, the best remedy **would be** to make changes to our diet.
- But eating habits are deeply ingrained in our lives and many people find it very difficult to make lasting changes.
- One way to eat better without altering your eating behaviour is to change the recipe of processed foods or the way they are prepared.

Aim: foods with lower salt, sugar, fat contents

You have to consider these factors

- safety aspects
- product shelf life
- the nutritional quality
- flavour of these “new” foods!
- new technological applications

Simply “cut out”?

Some examples

- **Salt**: In cheese salt keeps dangerous microorganisms in check,
- **Sugar**: In dairy products, sugar has an impact on the bacteria cultures that are needed to make yogurt,
- **Fat:** important flavour element,
- **Technologies**: have multiple effects on the food products (e.g. impact of using high-pressure technologies on shelf life/taste)

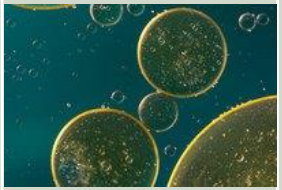
Example: Hard Cheese

- **Aim :** lower sodium content to under 0.4 grams per 100 grams of cheese – without any loss of quality!.

- **Possible ways to the aim**:
  - by special starter
  - by additive cultures with enhanced flavours
  - Salt substitutes - do they also work during the during cheese ripening?

Source: https://www.mri.bund.de/en/topics/reformulation/

SALT	Reduction	Foto	Problems
Salt reduction in fish products	matjes: 5 % → 2 - 3,25 % cold smoked salmon: 3% → 1,5 – 2,25 %		no differences to the standard product in quality and safety
Salt reduction with sliced cheese	Target content of less than 0,4 % sodium chloride (g / 100 g) cheese in partial exchange with potassium chloride		bitter or metallic taste can be covered by a higher salt content
Salt reduction in meat products	Addition of 0,75 % sodium glutamate → Reduction of about 9 % sodium Addition of Calcium diglutamate and potassium glutamate → Reduction of about 11 - percent sodium		exclusive use of NaCl as seasoning no positive overall impression → Only by the addition of moderate amounts of glutamate (0.2%)
Salt reduction in vegetable juices and purees	Application of high pressure process for the reduction of salt in vegetable finished products		The process conditions examined so far do not show the expected effects

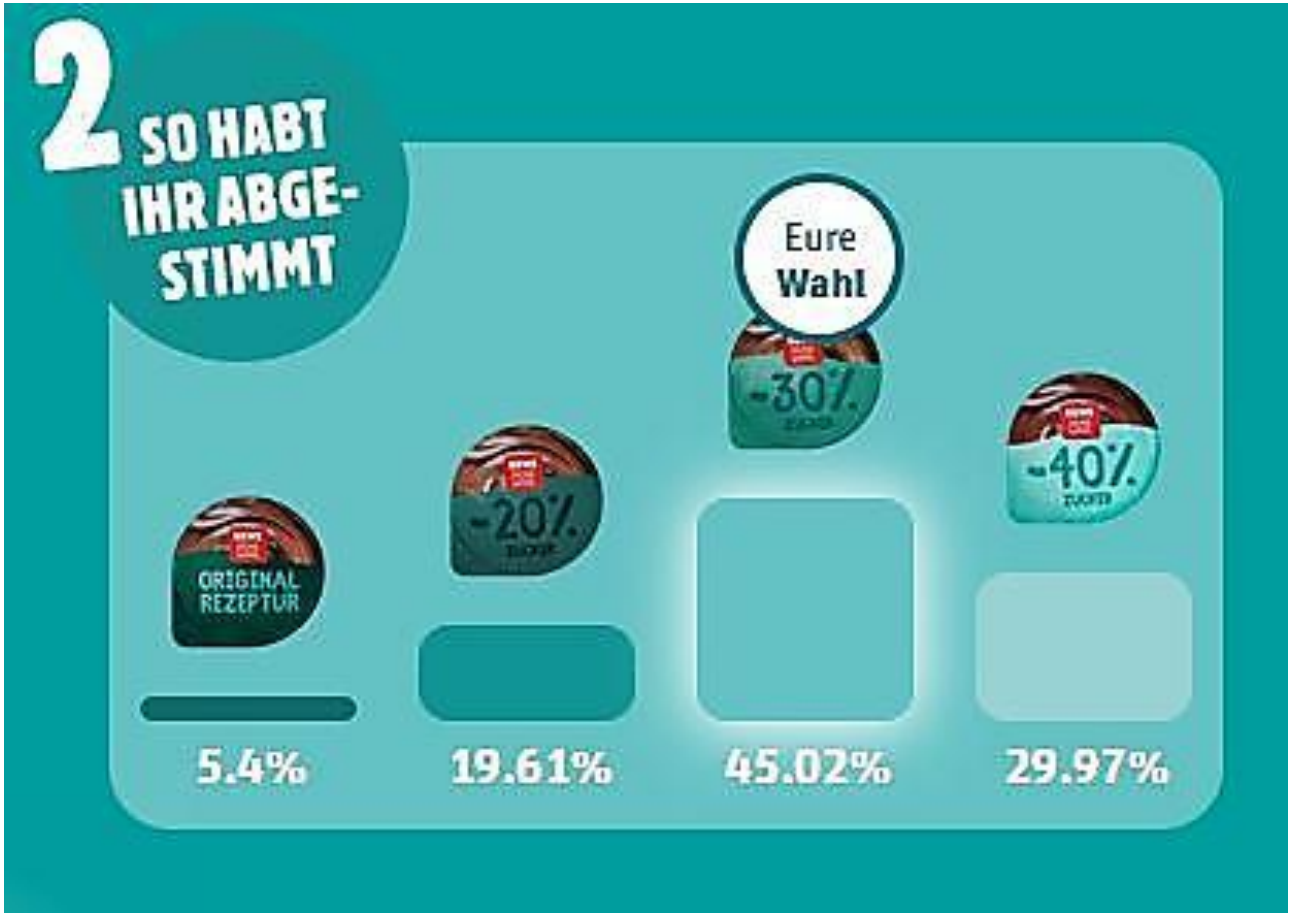
FAT	Reduction	Foto	Problems
Fat reduction in baked biscuits like donuts	The choice of wheat variety had a decisive influence on the total fat content		Results on consumer acceptance are still pending.
Replacemt of lard in raw sausages	soluble and insoluble carbohydrates, proteins, oils and waxes as fat substitutes → Texturing of the substances must be in the form of hydrogels, oleogels or stable emulsions		Bacon content belongs to the traditional appearance, manufacturing technologically necessary is influenced sensory properties such as taste, texture or mouthfeel.
Oleogels instead of trans fats	Oleogels based on rapeseed oil instead of hydrogenated fats → addition of sunflower wax or the already approved food additives ethyl cellulose (E462) and monoglycerides (E471) added		taste no significant impairment
SUGAR	**Reduction**	**Foto**	**Problems**
Sweet lactose saves sugar in milk products	Cleavage of the lactose with the enzyme β-galactosidase and water in monosaccharide glucose and galactose increases the sweetening power and improves the water solubility.		Total sugar content with the same sweetness can be reduced by 10-20 % greater creaminess and more pronounced odor and taste characteristics

Example: REWE, German food chain, summer 2018

REWE Geschmackstest – „Wie viel Zucker brauchst du noch?“

Example REWE, German food chain

REWE Geschmackstest – „Wie viel Zucker brauchst du noch?“



Example „chocolate pudding“ (REWE)

Nutrition information per 100 g:

Calories: 153 kcal

Total Fat: 9,0 g

Total carbohydrates: 14,3 g

Sugars: 9,7 g

Nutrition information per 100 g:

Calories: 163 kcal

Total Fat: 8,5 g

Total carbohydrates: 17,9 g

Sugars: 14 g

Example: SALT (2008-2012)

Source: https://ec.europa.eu/health/sites/health/files/nutrition_physical_activity/docs/salt_report1_en.pdf

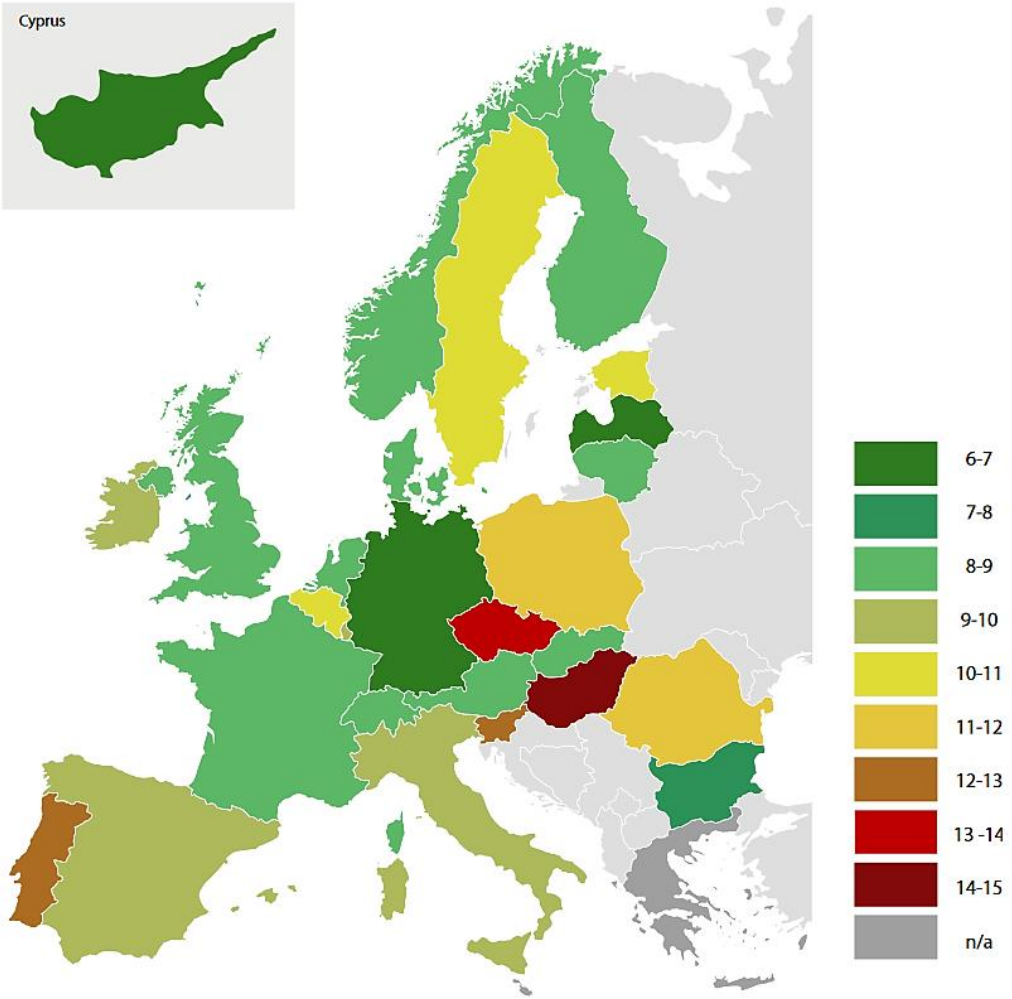
Salt inatake and health issues

…There is a clear link between
high sodium intake and high blood pressure;

likewise there is conclusive scientific evidence showing **that reduction of sodium consumption reduces blood pressure.**

Source:
https://ec.europa.eu/health/sites/health/files/nutrition_physical_activity/docs/salt_report1_en.pdf

Daily salt intakes (in g) of adults in European countries



Source: https://ec.europa.eu/health/sites/health/files/nutrition_physical_activity/docs/salt_report1_en.pdf

Legislative appoches to salt reduction (1)

Country	Year
Belgium	1985
Bulgaria	2009/2011
Finland	From the 1980's ,tightened 2009
Greece	2006 Revision in progress
Hungary ,	2011 TAX on salty snacks 2012
Latvia	2012
Lithuania	2011

Source: https://ec.europa.eu/health/sites/health/files/nutrition_physical_activity/docs/salt_report1_en.pdf

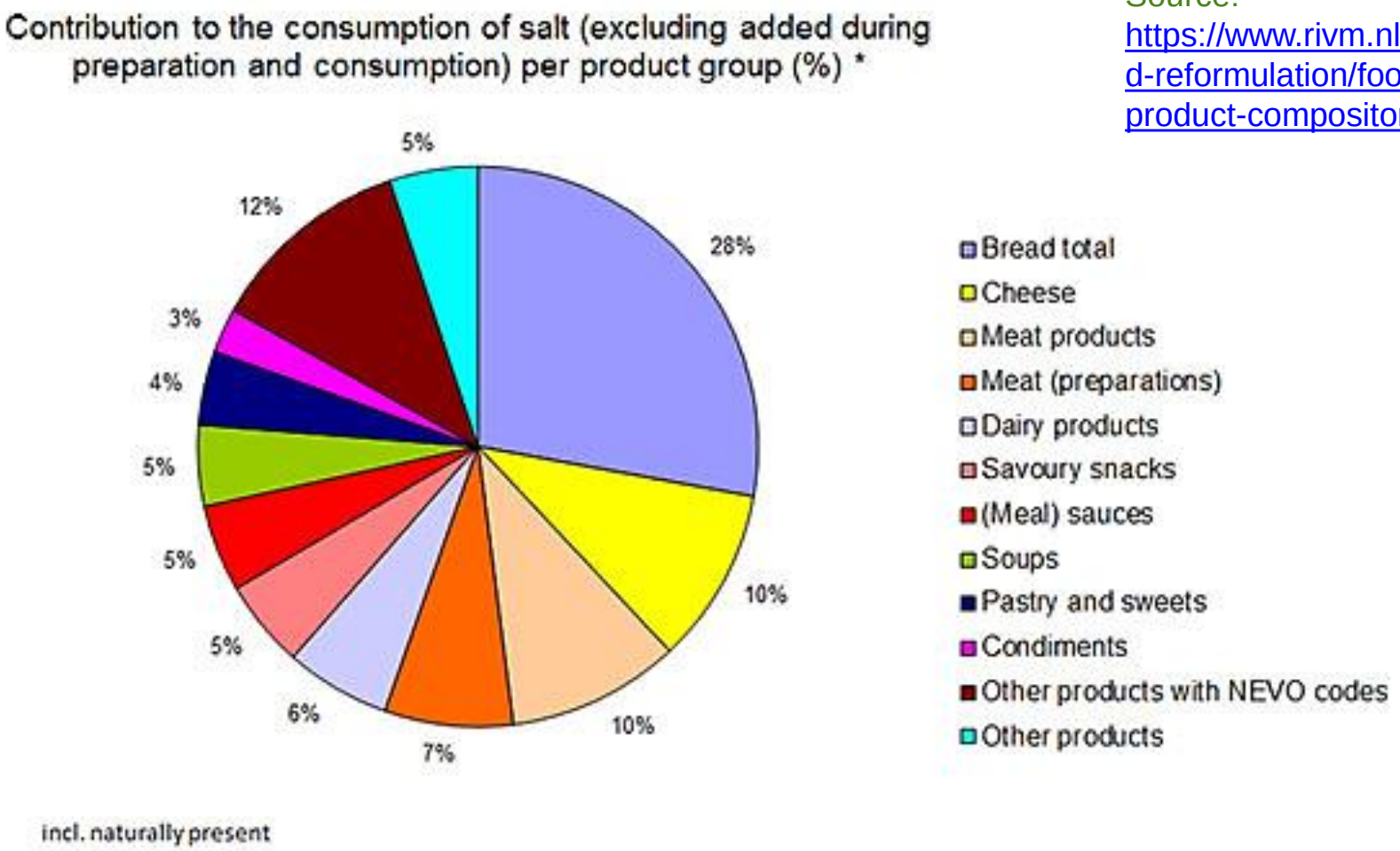
Legislative appoches to salt reduction (2)

Country	Year
Netherlands	Beginning of 20th century / changed in 2009, next change in 2013
Portugal	2009 and **2011 TAX**
Romania	2008
Slovak Republic	1996 / currently preparing an amendment
Slovenia	2010

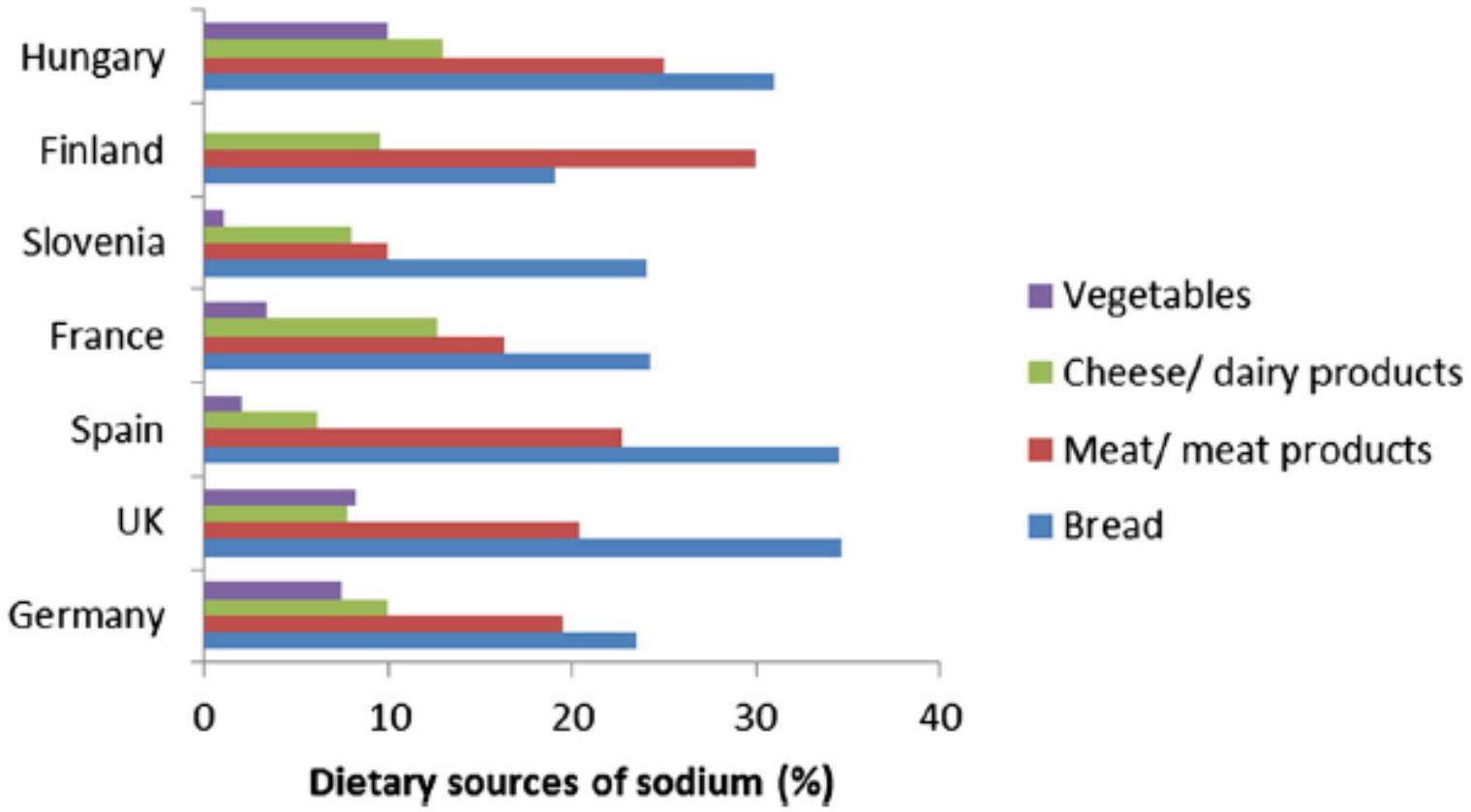
Source: https://ec.europa.eu/health/sites/health/files/nutrition_physical_activity/docs/salt_report1_en.pdf

Major food groups for intake of salt, Netherlands, 2007-10

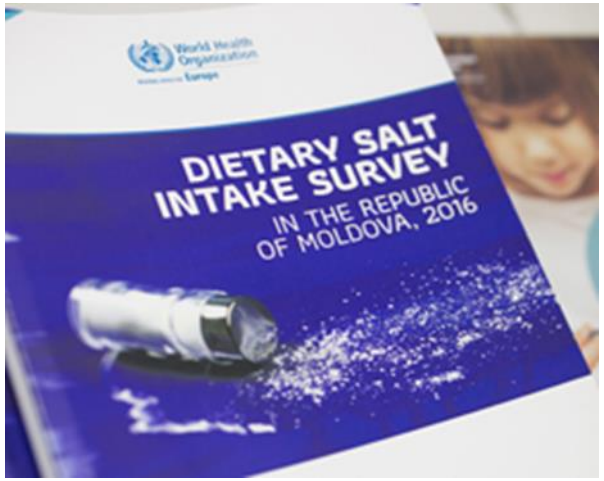
Source: https://www.rivm.nl/en/food-reformulation/food-product-compositon



Dietary sources of sodium



More research is supported by the WHO



Study shows Moldovans consume double the recommended salt intake

22-11-2018

Conclusion 2015

Since the EU framework on National Salt Initiatives was established 2008, sodium consumption in the European Union has decreased in some countries
(UK, Finland, France,and Lithuania)
though others have not observed declines (The Netherlands, Slovak Republik, Sweden and Switzerland .

There are many reasons for the slow progression toward the goals (5 g salt/d,16% sodium reduction within 4 years)
e.g.u nique dietary pattern,food safety

Source: Sodium itake and its reduction by reformulation in the European Union-review, 2015

KErn Kompetenzzentrum für Ernährung

Thank you for your attention!

Kompetenzzentrum für Ernährung – KErn
an der Bayerischen Landesanstalt für Landwirtschaft (LfL)

Bereich Wissenschaft

Dr. Eva-Maria Gokel
Am Gereuth 4
85354 Freising