

# Poll in ZOOM

# Bingo

Regularly reads the Nutrition Facts Label	Has a home-cooked dinner on most nights	Made half their plates fruit and vegetables yesterday	Eat fruit more than three times per day
Has fruit for dessert often	Chooses fat-free or low-fat milk and dairy products	Doesn't drink soda	Chooses whole-grain products when available
Eat breakfast every day	Eat multiple coloured vegetable every day	Drink water more than 1L per day	Avoids salty foods
Eat dietary supplements	Avoids oversized portions	Avoids fast food	Fat off of meat

## 2. Determinants of People Nutrition



# Contents

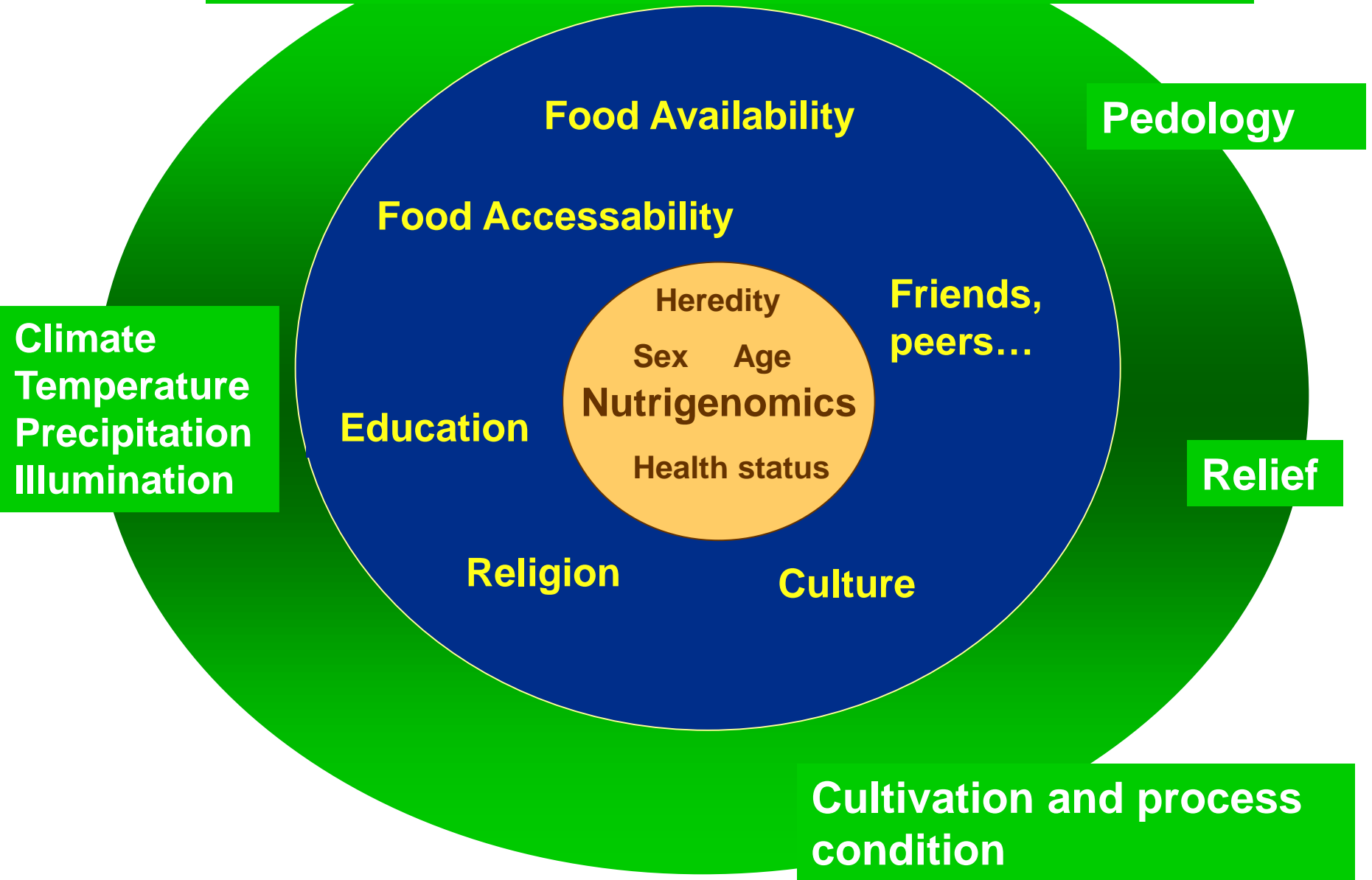
## 1. Nutrition in Time and Space

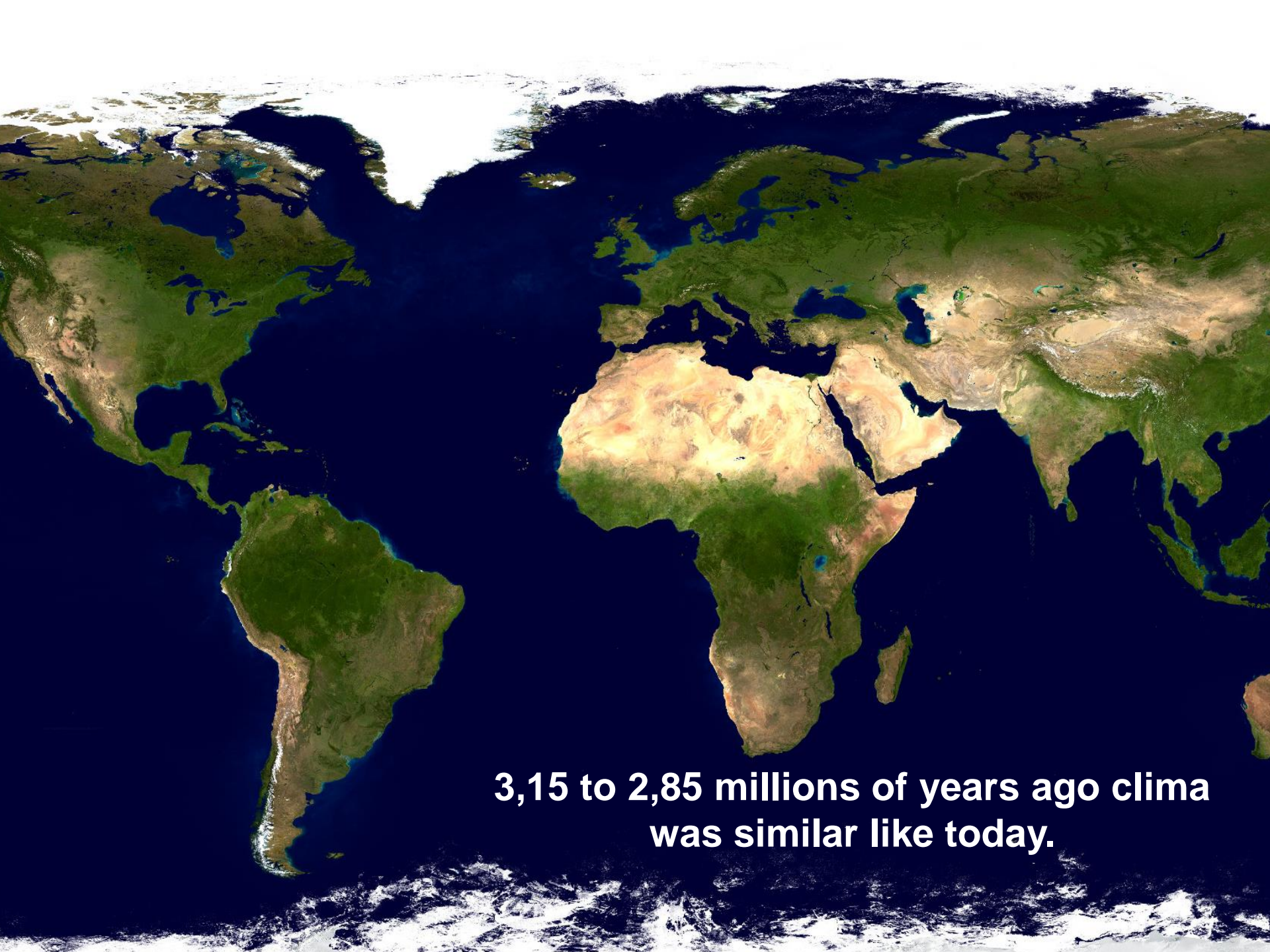
- PALEOLITHIC
- NEOLITHIC
- NUTRITION TODAY

*North and South Europe, Slovenia*



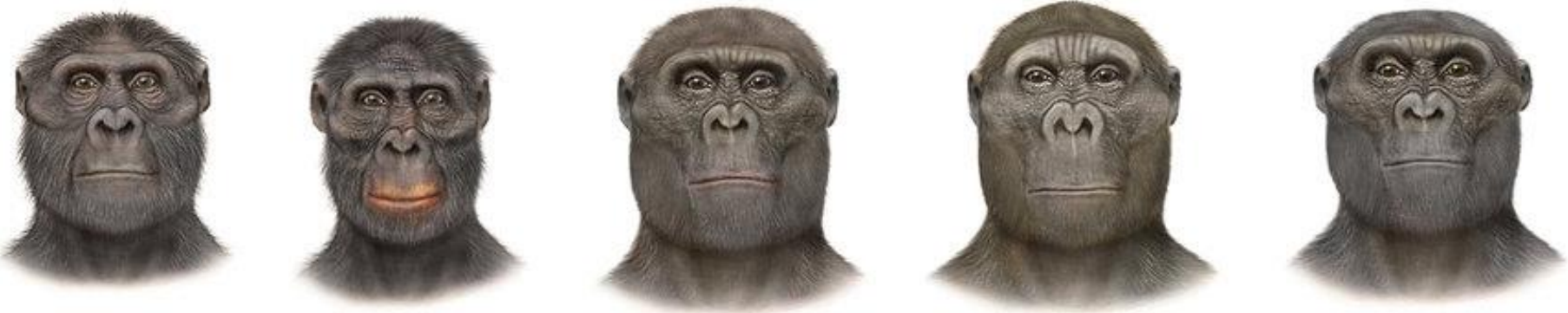
# Space Determinants





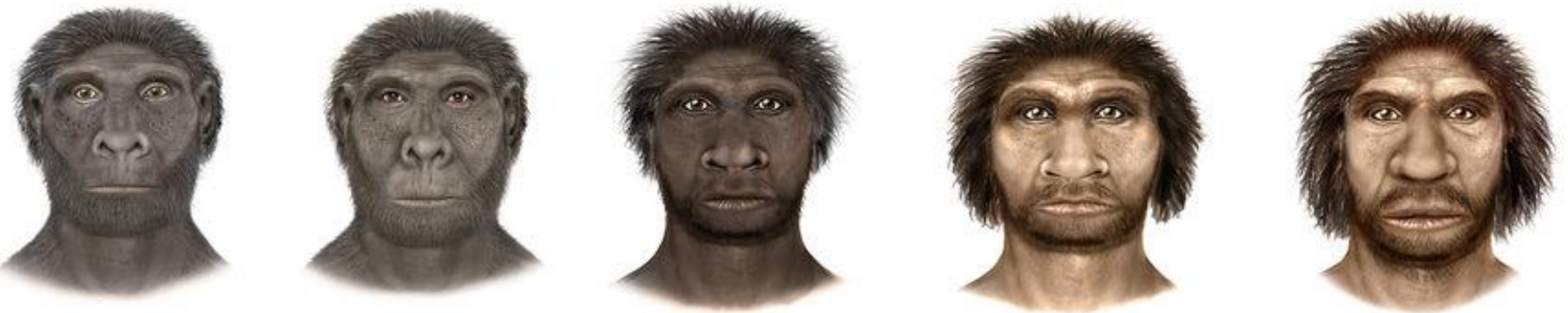
**3,15 to 2,85 millions of years ago clima  
was similar like today.**

3 900 000 years



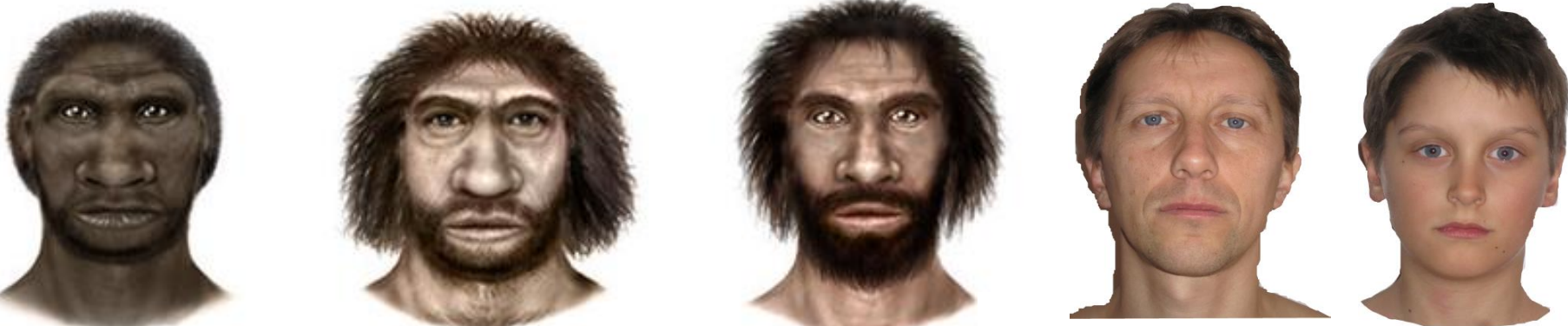
*A. afarensis*

2 500 000 years



*Homo habilis*

*Homo erectus* (1,6 million years)



*H. neandertalensis*

*Homo sapiens*

350 000 to 30 000 years

250 000 years

Year 2018

# Paleolithic

- 1 000 000 to 8 000 BC
- Living place: caves
- Tools of stone, bone and wood
- Using fire, hunting and gatherer





# Nutrition in Paleolithic



- Meat
- Fish, shell, snail, crab
- Insects
- Fruit
- Vegetables
- Nuts



Diabetologia (2007) 50:1795–1807

DOI 10.1007/s00125-007-0716-y

ARTICLE

# **A Palaeolithic diet improves glucose tolerance more than a Mediterranean-like diet in individuals with ischaemic heart disease**

**S. Lindeberg • T. Jönsson • Y. Granfeldt •  
E. Borgstrand • J. Soffman • K. Sjöström • B. Ahrén**

Received: 1 May 2007 / Accepted: 4 May 2007 / Published online: 22 June 2007

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# Neolithic or New Stone age

## 8 000 to 2 000 BC

- Metal tool (cooper, bronze, iron)
- Farming
- Agriculture





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Review/Revue

## Last hunter-gatherers and first farmers of Europe

*Les derniers chasseurs-cueilleurs et les premiers agriculteurs en Europe*

Anne Tresset<sup>\*</sup>, Jean-Denis Vigne

UMR 7209 CNRS, archéozoologie, archéobotanique, Muséum national d'histoire naturelle, 55, rue Buffon, 75005 Paris, France

### ARTICLE INFO

Keywords:

Neolithic

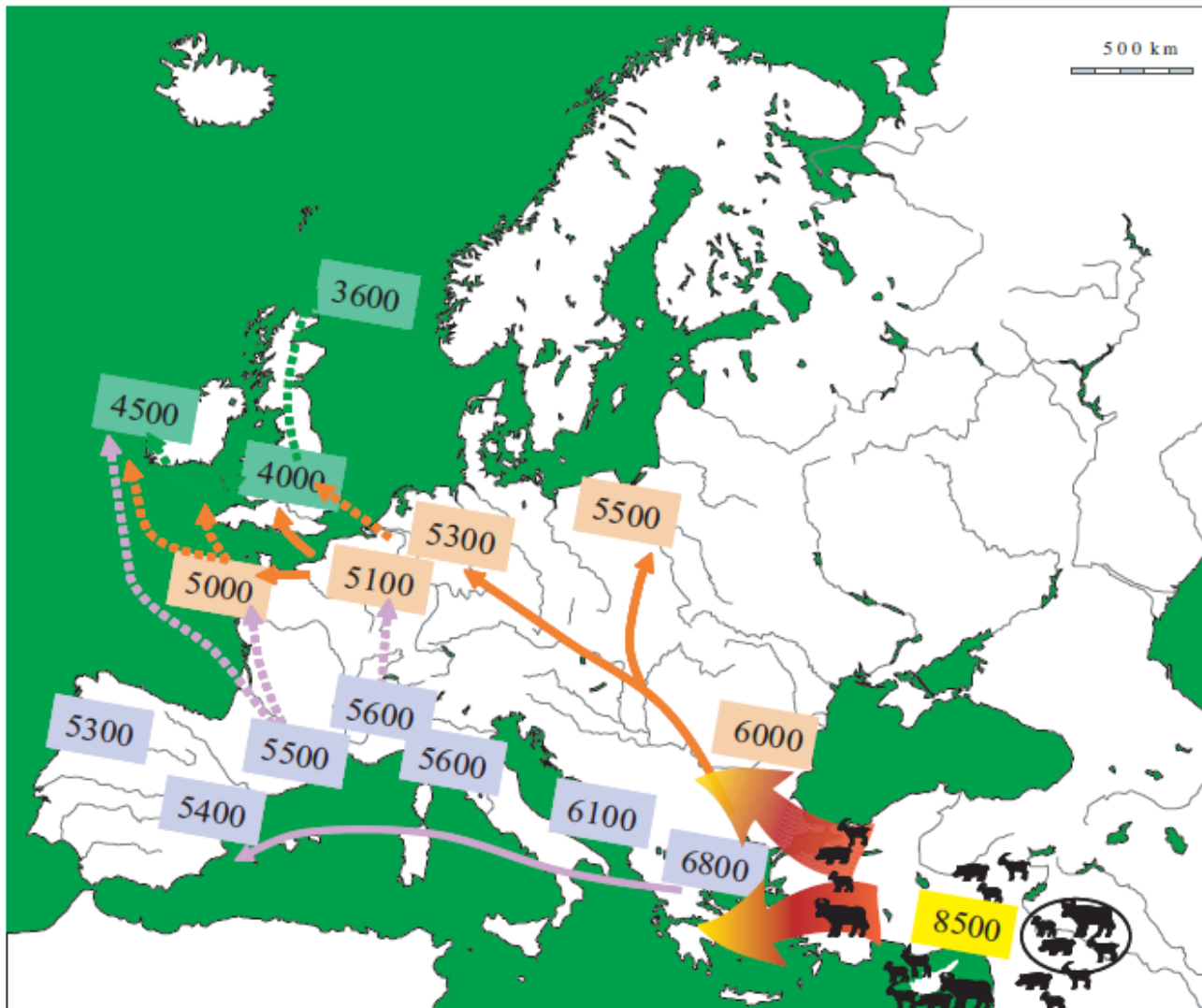
Europe

Domesticates

### ABSTRACT

The Neolithisation of Europe has seen the transformation of hunting-gatherers into farming communities. At least partly exogenous in its origins, this process involved transformations in many aspects of life-styles, such as social structures, land use, and diet. It also involved the arrival of new human populations and gave way to the intentional or unintentional introduction of many non-European animal and plant species. It

# Chronology and main routes of dissemination of domesticates in Europe during the Neolithic



Source: A. Tresset, J.-D. Vigne / *C. R. Biologies* 334 (2011) 182–189



ELSEVIER

Chemical Geology 218 (2005) 103–116

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## Paleodietary reconstruction of a Neolithic population in Slovenia: A stable isotope approach

Nives Ogrinc<sup>a,\*</sup>, Mihael Budja<sup>b</sup>

<sup>a</sup>*“Jozef Stefan” Institute, Dept. Environ. Sci., Jamova 39, 1000 Ljubljana, Slovenia*

<sup>b</sup>*Department of Archaeology, University of Ljubljana, 1000 Ljubljana, Slovenia*

Received 27 February 2004; received in revised form 2 December 2004; accepted 26 January 2005

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### Abstract

The nutritional habits of Neolithic farmers living during the period 6400 to 5300 years cal BP in the interior of Slovenia were determined using stable isotopes of carbon and nitrogen. Human and domesticated and wild animals bone collagen samples found in Ajdovska jama cave, as well as food residuals composed of wheat grains and plants in associated ceramics were isotopically analyzed. The results indicate that the human diet was based on foods of terrestrial origin consisting primarily of cereals and herbivores, most probably the domestic animals raised at that time. The significantly higher  $\delta^{15}\text{N}$  values found in infants and young children indicate “nursing effects”. The pattern of dietary habits rapidly changed in older children accorded similar dietary status as their parents.

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*Keywords:* Paleodiet; Stable carbon; Nitrogen; Collagen; Neolithic population; Slovenia

---



**Human skeletons were discovered**

**29 individuals**

**13 adults**

**(6 males and 7 females) and**

**16 infants**



The diet was based mostly on:



- Cereals (wheat, barley; 39 %)
- Domestic animals (sheep, goat; 44 %)
- Wild animals (17 %)

The significantly higher  $^{15}\text{N}$  values found in infants and young children indicate nursing effects.

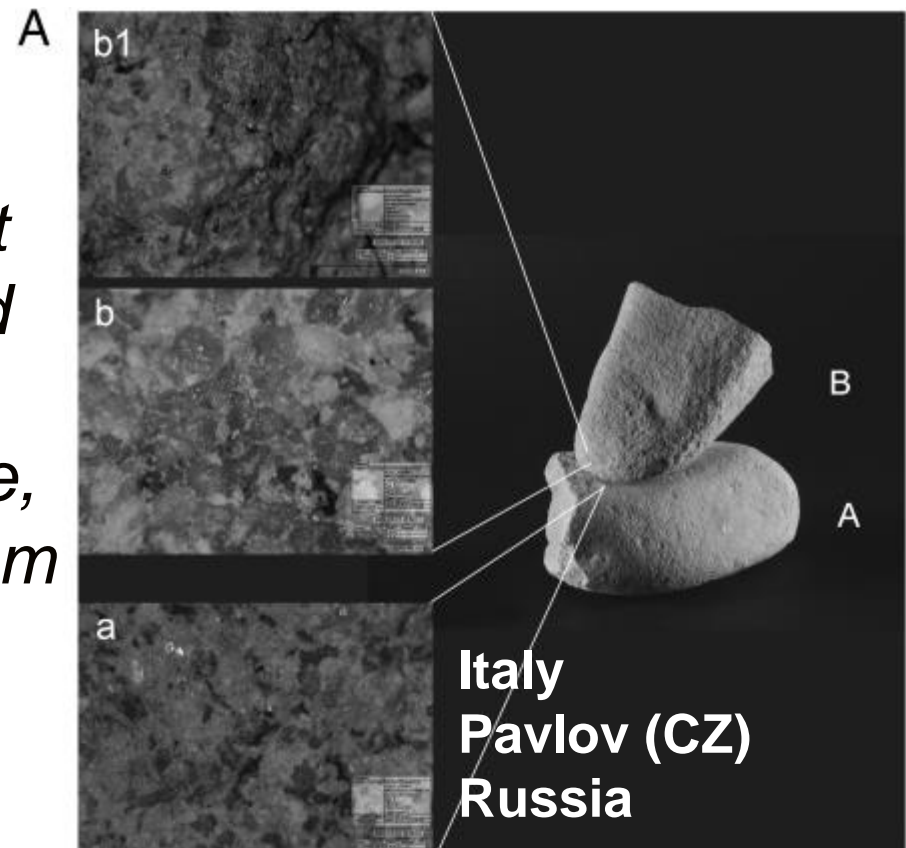


## Thirty thousand-year-old evidence of plant food processing

[Anna Revedin](#),<sup>a,1</sup> [Biancamaria Aranguren](#),<sup>b</sup> [Roberto Becattini](#),<sup>a</sup> [Laura Longo](#),<sup>c</sup> [Emanuele Marconi](#),<sup>d</sup> [Marta Mariotti Lippi](#),<sup>e</sup> [Natalia Skakun](#),<sup>f</sup> [Andrey Sinitsyn](#),<sup>f</sup> [Elena Spiridonova](#),<sup>g</sup> and [Jiří Svoboda](#)<sup>h,i</sup>

[Author information](#) ► [Copyright and License information](#) ►

*“The three sites suggest that vegetal food processing, and possibly the **production of flour**, was a common practice, widespread across Europe from at least ~30,000 y ago.”*



Picture A: Grindstone and pestle grinder

# What we are eating today?

- Milk and dairy products
- Cereal and cereal product
- Oil, margarine
- Salt
- Sugar

... 70 % of all food in North Europe

A balance scale is shown in the background, tilted to the right. A large, thick yellow arrow points downwards from the top of the scale towards the left pan, which is lower than the right pan. The scale is a simple mechanical balance with a central pillar and a horizontal beam.

# What the World Eats

- *The first family visited by photographer Peter Menzel and journalist Faith D'Alusio was the Çelik family from Turkey in January 2000. Since then the pair have interviewed and photographed families from all over the world. The last family to be photographed were the Sturms in Germany in June 2013. Three Norwegian families have been portrayed for the exhibition at the Nobel Peace Center.*

- Source:

<http://www.nobelpeacecenter.org/en/exhibitions/hungry-planet/> (February, 2014)



Germany: 325.81 \$



Japan: 317.25 \$



# Chad: 1.23 \$





Kuwait: 221.45 \$



Mexico: 189.09 \$



China: 155.06 \$





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2.90/LB

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75¢/LB

2.00  
2.00/LB

1.25

Driscoll's

Green Onions  
FRESH VEGETABLES  
CARTRON NOT TO BE REUSED  
VACUUM COOLED  
五和

Green Onions  
MIRAZA PASTA  
MIRAZA PASTA

MIRAZA PASTA  
MIRAZA PASTA



(洗淨) 豬肚  
 Fresh Pork Stomach  
 2.59 磅  
 LB

昌 非 昌

(新鮮) 豬肚  
 Fresh Pork Stomach  
 \$ 1.99





Italy: 260.11 \$





Egypt: 68.53 \$



# Mongolia: 40.02 \$



Ecuador: 31.55 \$



India: 39.27 \$



# Mali: \$26.39



Greenland: 277.12 \$



Turkey: 145.88 \$



Australia: 376.45 \$







KDE  
TOČÍ  
STAROBRNO,  
NÁŠ SVĚT ZACÍNÁ







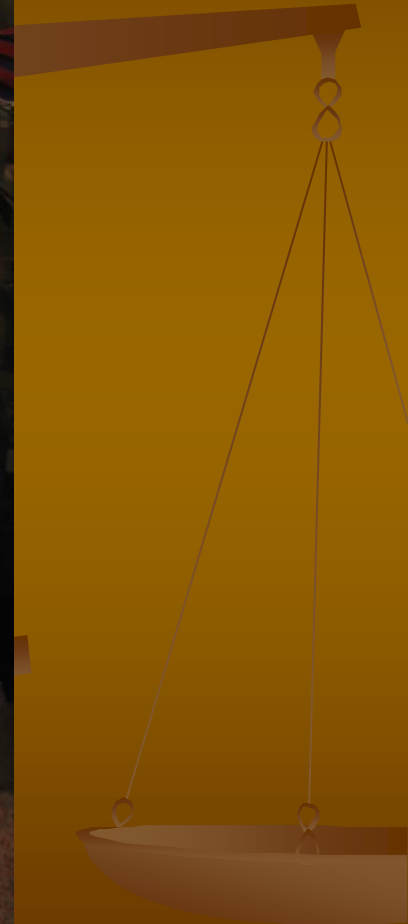
Brno, 2007



Joensuu, 2018

F A O Schweetz

Asst. Twistpops  
**\$2.99**





**I was told to come here and smile**



Why yes, I AM the Red M&M'S' guy



Are all of you here to see me?

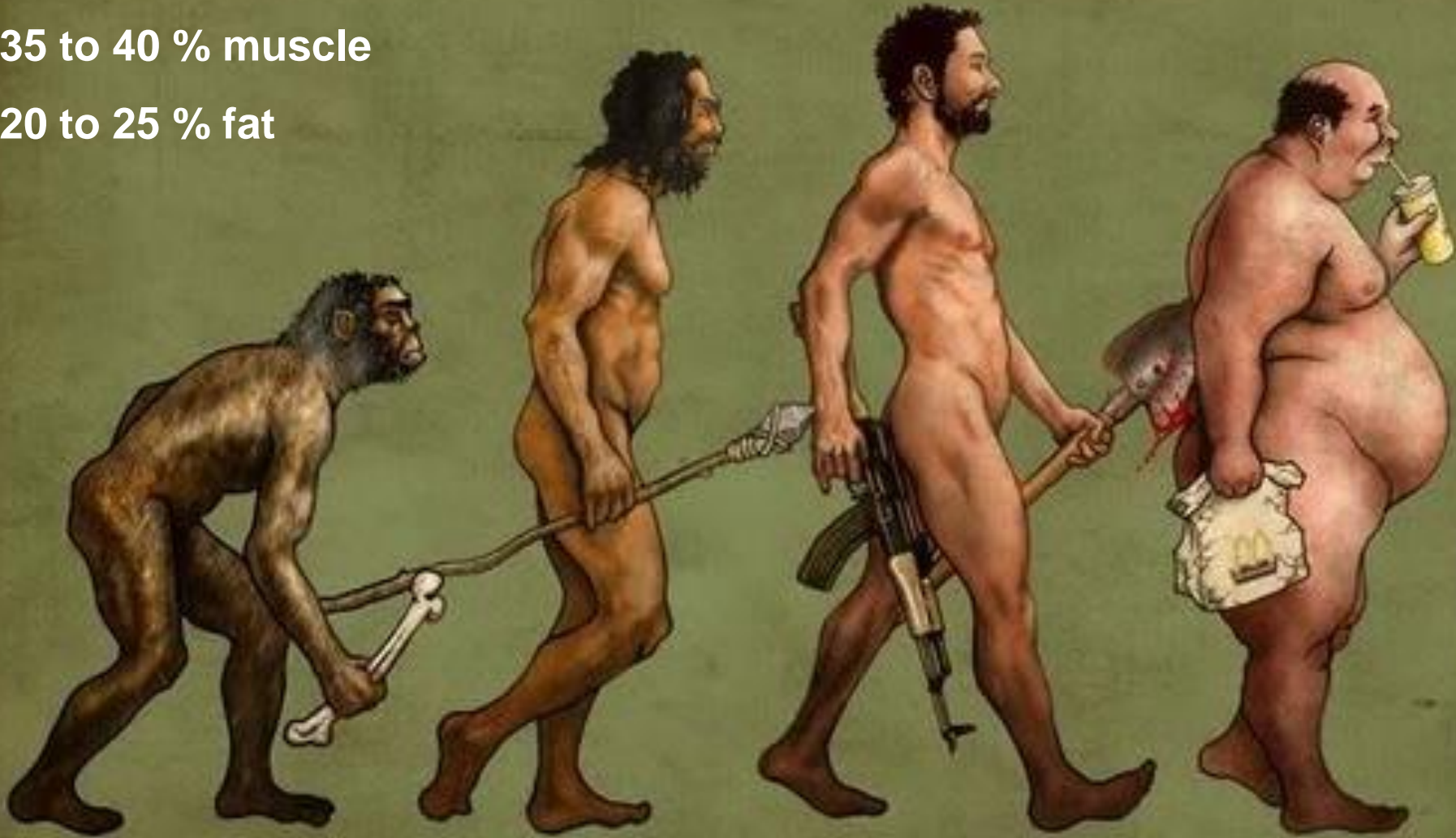


< 35 % muscle

> 25 % (M) and > 35 % (W) muscle

35 to 40 % muscle

20 to 25 % fat



1 000 000 years ago

2018





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## Parents may soon outlive obese children

by JAMES CHAPMAN and TIM UTTON, Daily Mail

Parents could soon begin to outlive their children because of an epidemic of obesity afflicting the younger generation.

Many youngsters are now so grossly overweight they face premature death caused by a heart attack or stroke.

The impending health disaster is blamed on the rise of aggressively-marketed, fat-laden fast food and couch potato lifestyles.



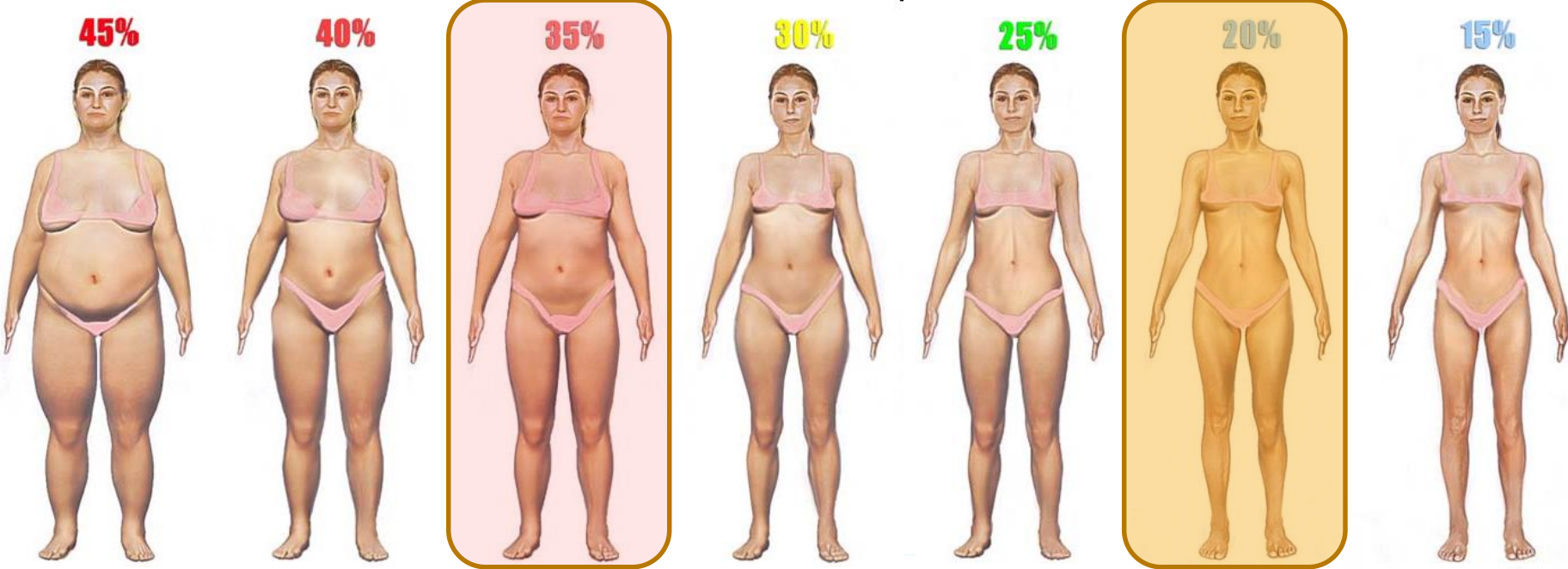
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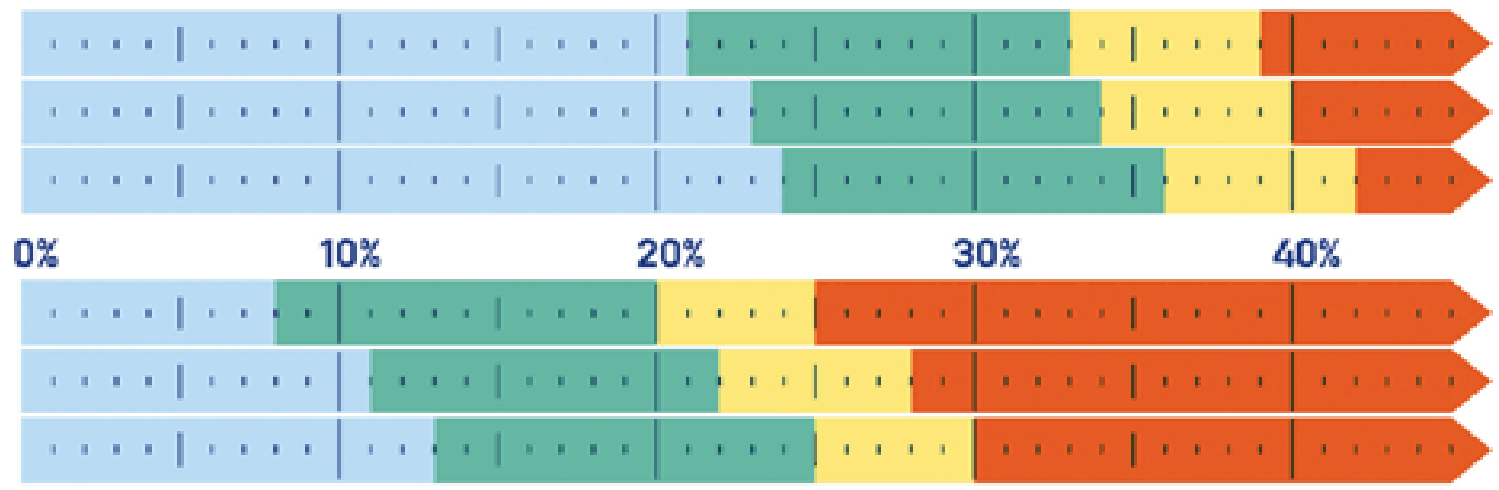
**Underfat**

**Healthy**

**Overfat**

**Obese**

Female 20–39  
 Age 40–59  
 60–79  
 Male 20–39  
 Age 40–59  
 60–79



0% 10% 20% 30% 40%

**Underfat**

**Healthy**

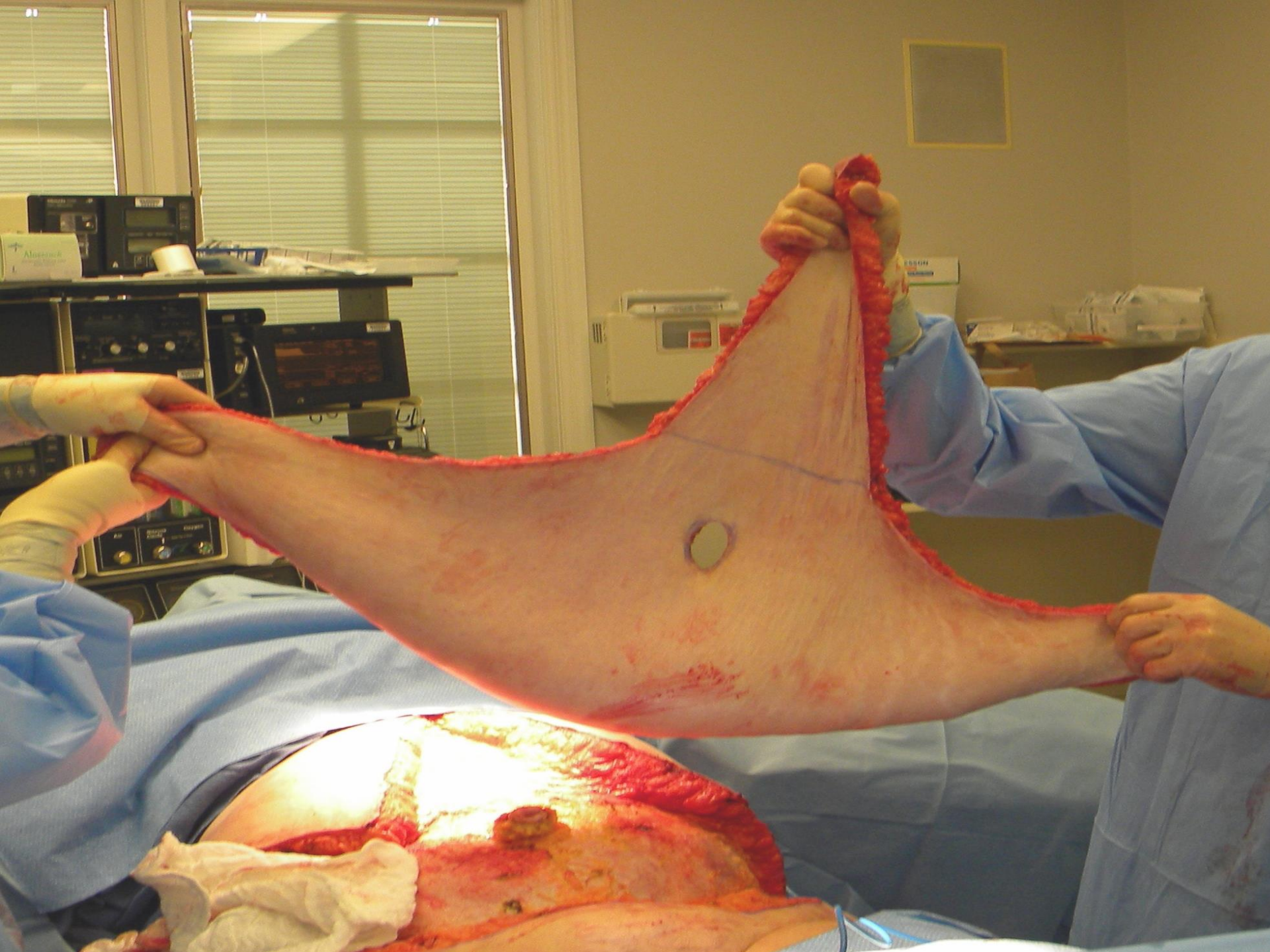
**Overfat**

**Obese**

Healthy body fat percentage for standard adults <sup>1,2</sup>

1. Based on NIH/WHO BMI Guidelines.

2. As reported by Gallagher et al at NY Obesity Research Centre.





# Trends in adult body-mass index in 200 countries from 1975 to 2014: a pooled analysis of 1698 population-based measurement studies with 19·2 million participants

NCD Risk Factor Collaboration (NCD-RisC)\*

## Summary

**Background** Underweight and severe and morbid obesity are associated with highly elevated risks of adverse health outcomes. We estimated trends in mean body-mass index (BMI), which characterises its population distribution, and in the prevalences of a complete set of BMI categories for adults in all countries.

**Methods** We analysed, with use of a consistent protocol, population-based studies that had measured height and weight in adults aged 18 years and older. We applied a Bayesian hierarchical model to these data to estimate trends from 1975 to 2014 in mean BMI and in the prevalences of BMI categories (<18·5 kg/m<sup>2</sup> [underweight], 18·5 kg/m<sup>2</sup> to <20 kg/m<sup>2</sup>, 20 kg/m<sup>2</sup> to <25 kg/m<sup>2</sup>, 25 kg/m<sup>2</sup> to <30 kg/m<sup>2</sup>, 30 kg/m<sup>2</sup> to <35 kg/m<sup>2</sup>, 35 kg/m<sup>2</sup> to <40 kg/m<sup>2</sup>, ≥40 kg/m<sup>2</sup> [morbid obesity]), by sex in 200 countries and territories, organised in 21 regions. We calculated the posterior

Lancet 2016; 387: 1377–96

See Comment page 1349

\*NCD Risk Factor Collaboration members are listed at the end of the paper

Correspondence to:  
Prof Majid Ezzati, School of Public Health, Imperial College London, London W2 1PG, UK  
majid.ezzati@imperial.ac.uk

**Interpretation** If post-2000 trends continue, the probability of meeting the global obesity target is virtually zero. Rather, if these trends continue, by 2025, global obesity prevalence will reach 18% in men and surpass 21% in women; severe obesity will surpass 6% in men and 9% in women. Nonetheless, underweight remains prevalent in the world's poorest regions, especially in south Asia.

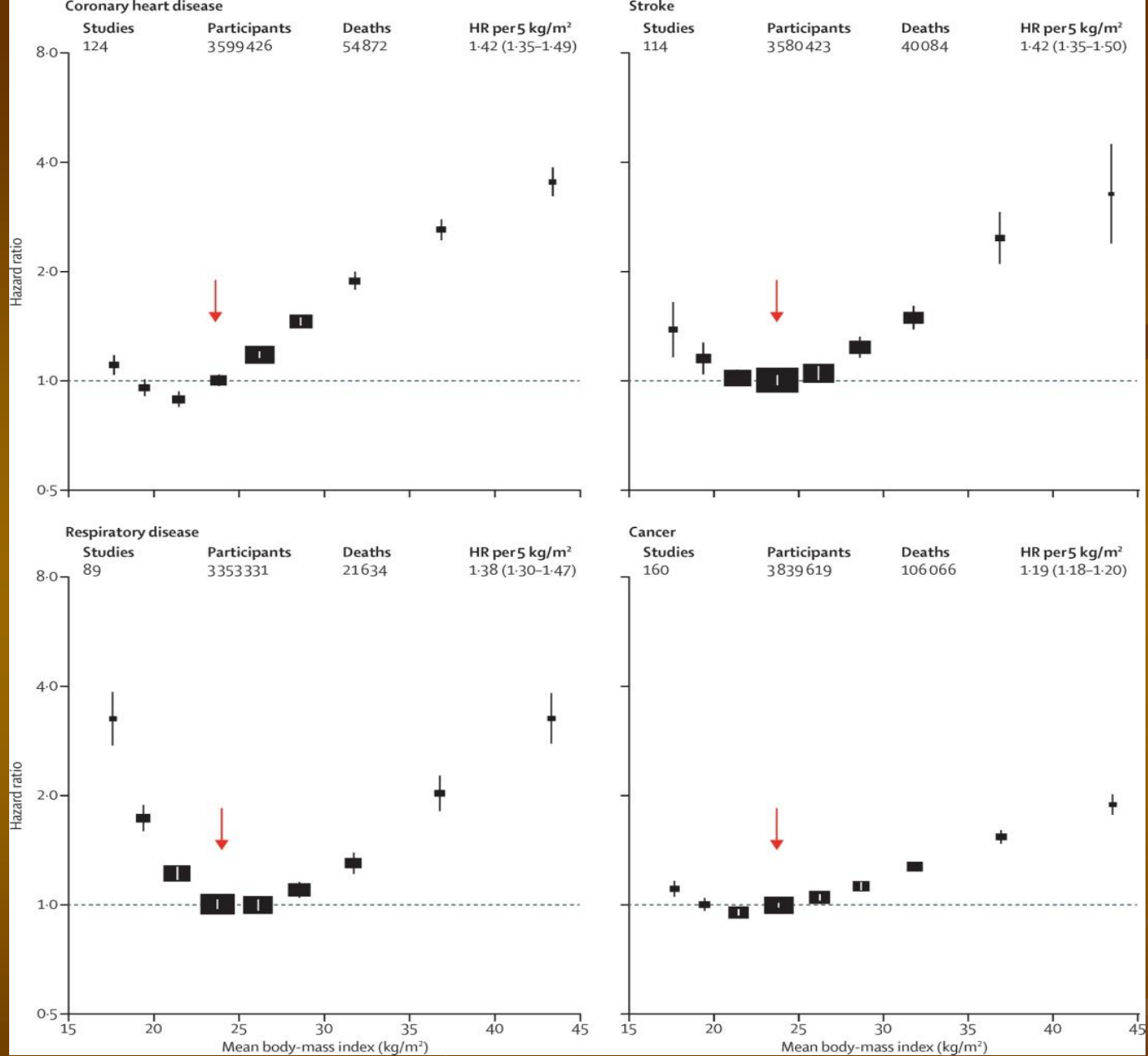
**Interpretation** If post-2000 trends continue, the probability of meeting the global obesity target is virtually zero. Rather, if these trends continue, by 2025, global obesity prevalence will reach 18% in men and surpass 21% in women; severe obesity will surpass 6% in men and 9% in women. Nonetheless, underweight remains prevalent in the world's poorest regions, especially in south Asia.

***Body-mass index and all-cause mortality: individual-participant-data meta-analysis of 239 prospective studies in four continents***

***The Lancet***

**Volume 388, Issue 10046, Pages 776-786 (August 2016)**

**DOI: 10.1016/S0140-6736(16)30175-1**



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The Lancet 2016 388, 776-786 DOI: (10.1016/S0140-6736(16)30175-1)



## DEPTOR Cell-Autonomously Promotes Adipogenesis, and Its Expression Is Associated with Obesity

Mathieu Laplante,<sup>1,2</sup> Simon Horvat,<sup>4,5</sup> William T. Festuccia,<sup>6</sup> Kivanç Birsoy,<sup>1,2</sup> Zala Prevorsek,<sup>4</sup> Alejo Efeyan,<sup>1,2</sup> and David M. Sabatini<sup>1,2,3,\*</sup>

<sup>1</sup>Whitehead Institute for Biomedical Research, Nine Cambridge Center, Cambridge, MA 02142, USA

<sup>2</sup>Howard Hughes Medical Institute, Department of Biology, Massachusetts Institute of Technology, Cambridge, MA 02139, USA

<sup>3</sup>Koch Center for Integrative Cancer Research at MIT, 77 Massachusetts Avenue, Cambridge, MA 02139, USA

<sup>4</sup>Department of Animal Science, Biotechnical Faculty, University of Ljubljana, Groblje 3, 1230, Domzale, Slovenia

<sup>5</sup>National Institute of Chemistry, Hajdrihova 19, SI-1001 Ljubljana, Slovenia

<sup>6</sup>Department of Physiology and Biophysics, Institute of Biomedical Sciences, University of São Paulo, 1524 Avenue Prof. Lineu Prestes, São Paulo 05508-900, Brazil

\*Correspondence: [sabatini@wi.mit.edu](mailto:sabatini@wi.mit.edu)

<http://dx.doi.org/10.1016/j.cmet.2012.07.008>

Source: *Cell Metabolism* 16, 202–212, August 8, 2012



# HHS Public Access

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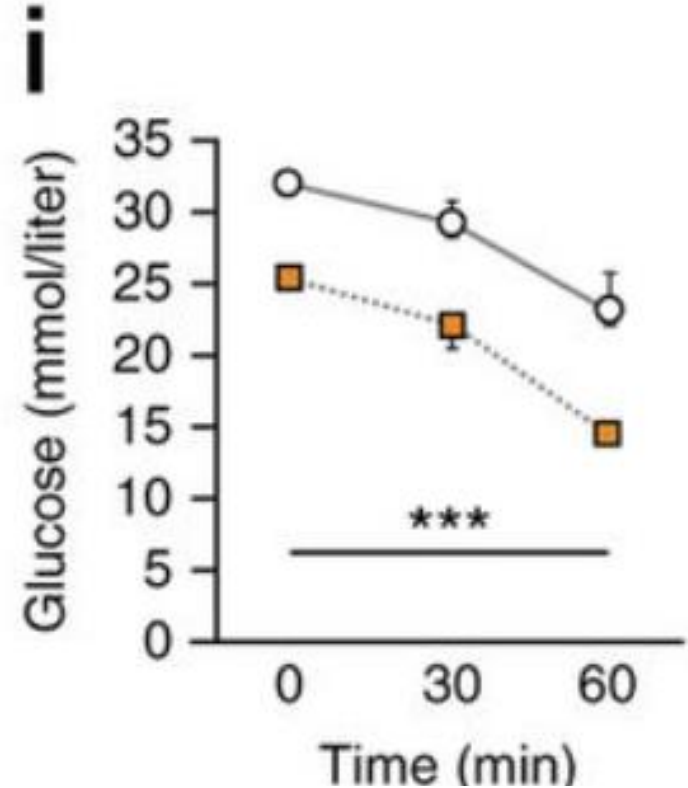
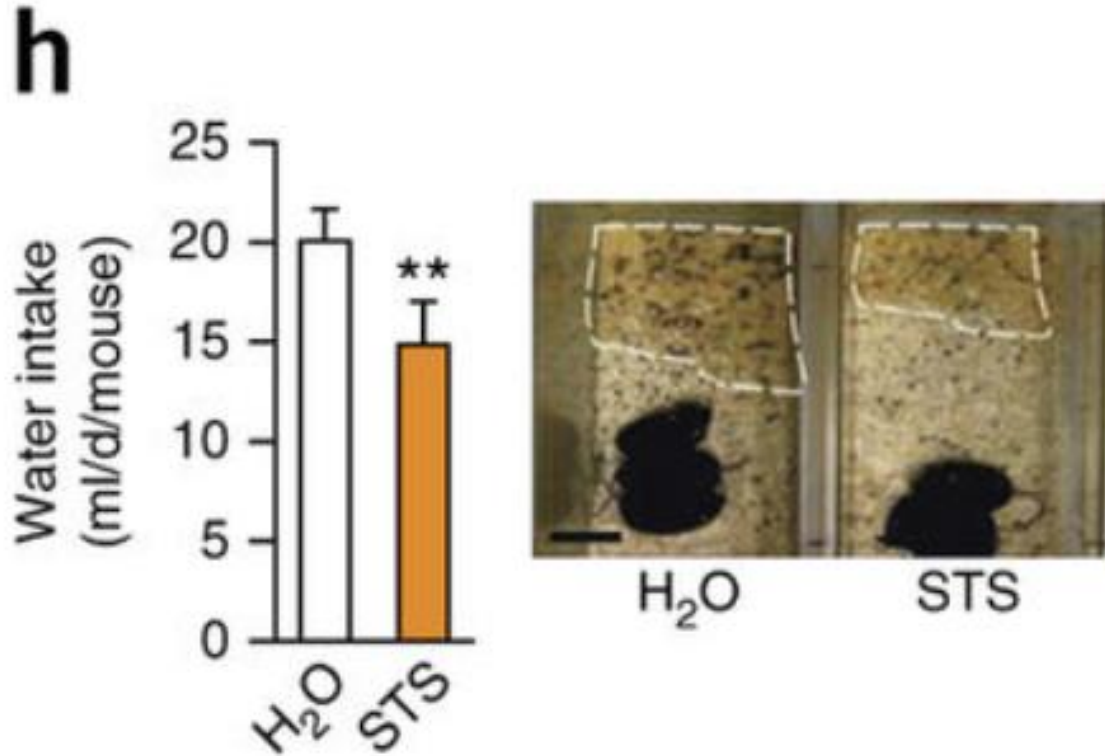
## **Genetic identification of thiosulfate sulfurtransferase as an adipocyte-expressed anti-diabetic target in mice selected for leanness**

Nicholas M. Morton<sup>1,\*</sup>, Jasmina Beltram<sup>2</sup>, Roderick N. Carter<sup>1</sup>, Zoi Michailidou<sup>1</sup>, Gregor Gorjanc<sup>2</sup>, Clare Mc Fadden<sup>1</sup>, Martin E. Barrios-Llerena<sup>1</sup>, Sergio Rodriguez-Cuenca<sup>3</sup>, Matthew T. G. Gibbins<sup>1</sup>, Rhona E. Aird<sup>1</sup>, José Maria Moreno-Navarrete<sup>4,5</sup>, Steven C. Munger<sup>6</sup>, Karen L. Svenson<sup>6</sup>, Annalisa Gastaldello<sup>1</sup>, Lynne Ramage<sup>1</sup>, Gregorio Naredo<sup>1</sup>, Maximilian Zeyda<sup>7</sup>, Zhao V. Wang<sup>8</sup>, Alexander F. Howie<sup>9</sup>, Aila Saari<sup>10</sup>, Petra Sipilä<sup>11</sup>, Thomas M. Stulnig<sup>7</sup>, Vilmundur Gudnason<sup>12</sup>, Christopher J. Kenyon<sup>1</sup>, Jonathan R. Seckl<sup>1</sup>, Brian R. Walker<sup>1</sup>, Scott P. Webster<sup>1</sup>, Donald R. Dunbar<sup>1</sup>, Gary A. Churchill<sup>6</sup>, Antonio Vidal-Puig<sup>3</sup>, José Manuel Fernandez-Real<sup>4,5</sup>, Valur Emilsson<sup>12,13</sup>, and Simon Horvat<sup>2,14</sup>



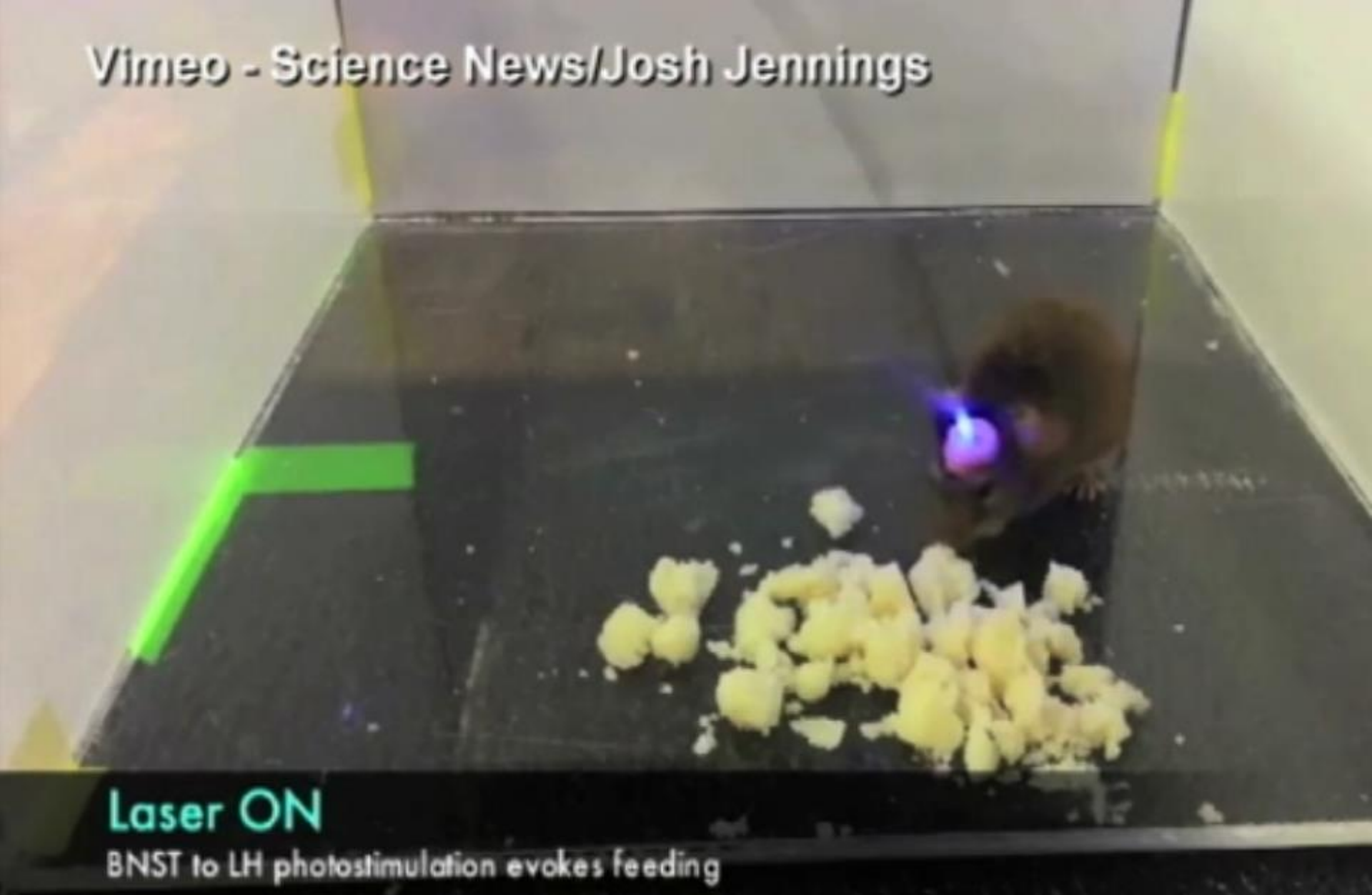
# Genetic identification of thiosulfate sulfurtransferase as an adipocyte-expressed anti-diabetic target in mice selected for leanness

Nat Med. 2016 Jul; 22(7): 771–779



administration ( $n = 6$  mice per group).  $^{\dagger\dagger}P < 0.01$  and  $*P < 0.05$  by two-way ANOVA. (h) Quantification of water intake (left) and illustrative images of urine output in the cages (right) of C57BL/KsJ-*Lepr*<sup>db/db</sup> mice administered water (H<sub>2</sub>O;  $n = 5$ ) or thiosulfate (STS;  $n = 6$ ). Scale bar, 5 cm. (i,j) insulin tolerance (i) and

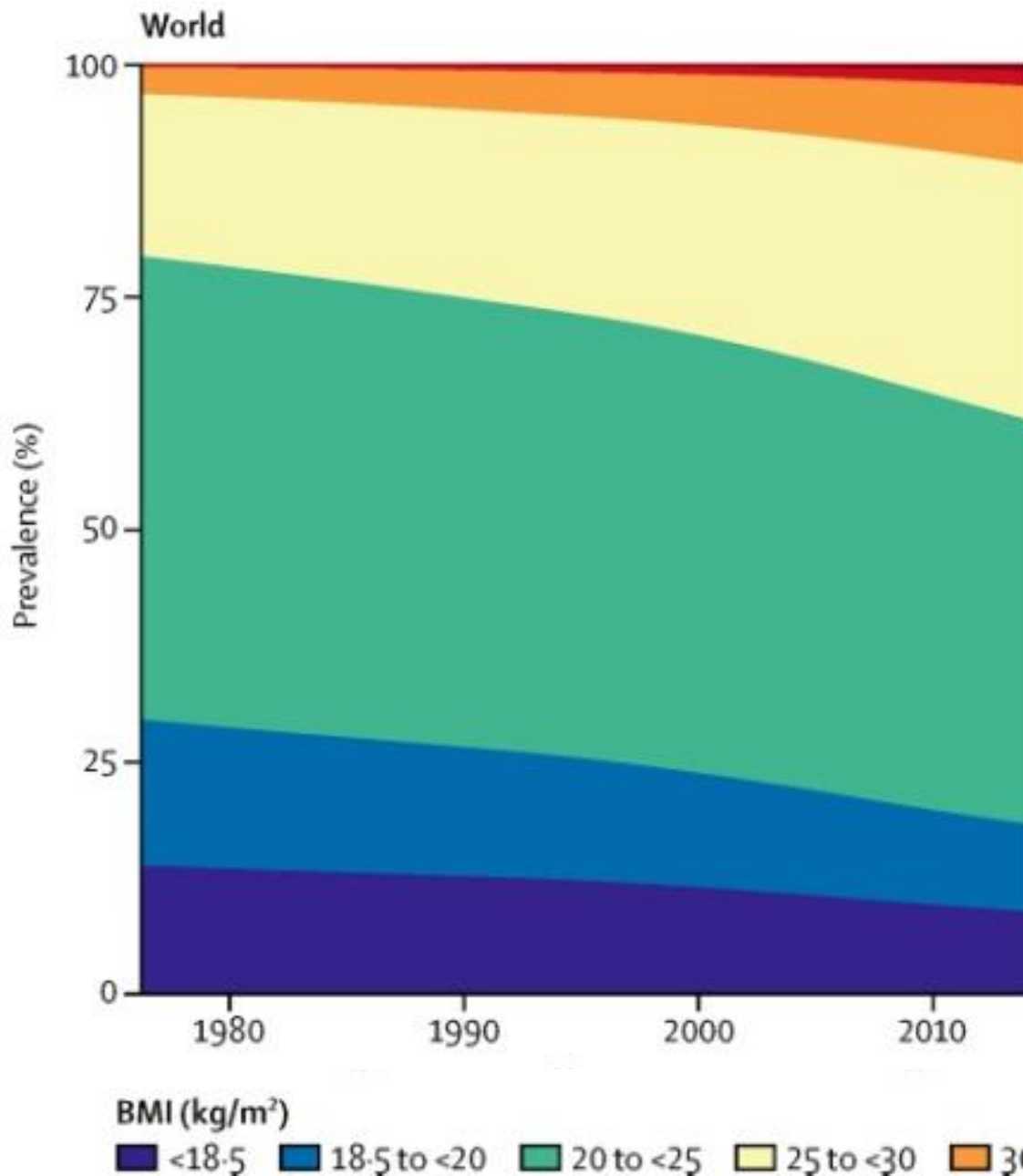
Vimeo - Science News/Josh Jennings



Laser ON

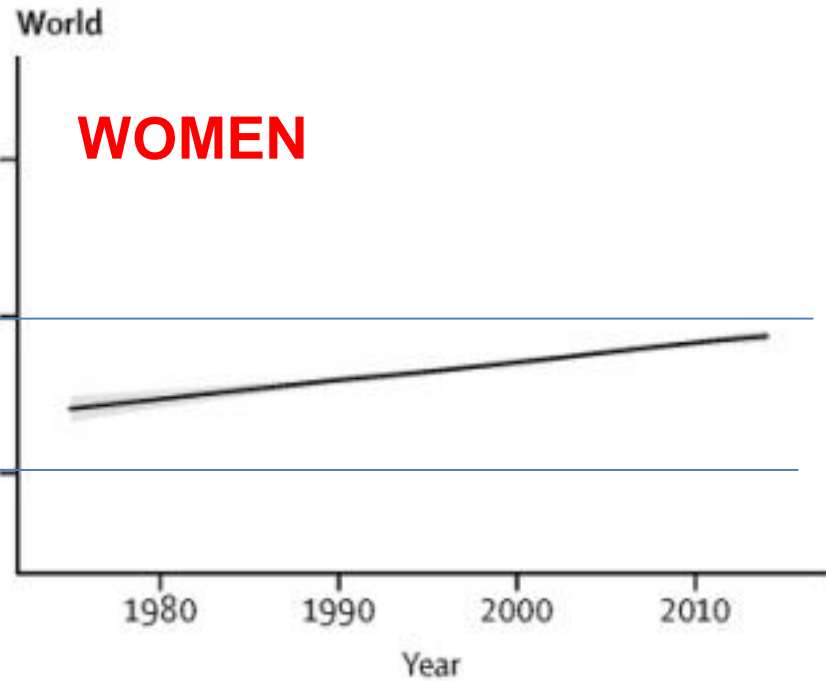
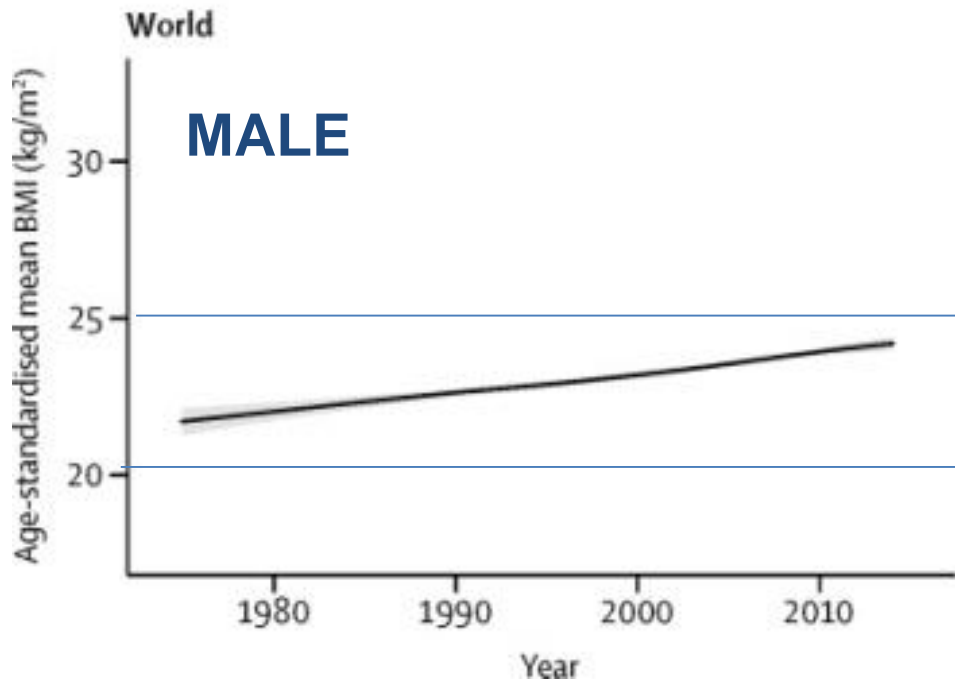
BNST to LH photostimulation evokes feeding

Source: <http://www.dailymail.co.uk/video/sciencetech/video-1042557/Scientists-control-hunger-mice-using-LASERS.html>



***Trends in adult body-mass index in 200 countries from 1975 to 2014: a pooled analysis of 1698 population-based measurement studies with 19.2 million participants***

***The Lancet***  
**Volume 387, Issue**  
**10026, Pages 1377-1396**  
**(April 2016)**



***The Lancet, Volume 387, Issue 10026, Pages 1377-1396 (April 2016)***

# The prevalence of excess weight and obesity in Slovenian children and adolescents from 1991 to 2011

**Marjeta Kova**

University of Ljubljana, marjeta.kovac@fsp.uni-lj.si

**Gregor Jurak**

University of Ljubljana, gregor.jurak@fsp.uni-lj.si

**Bojan Lesko ek**

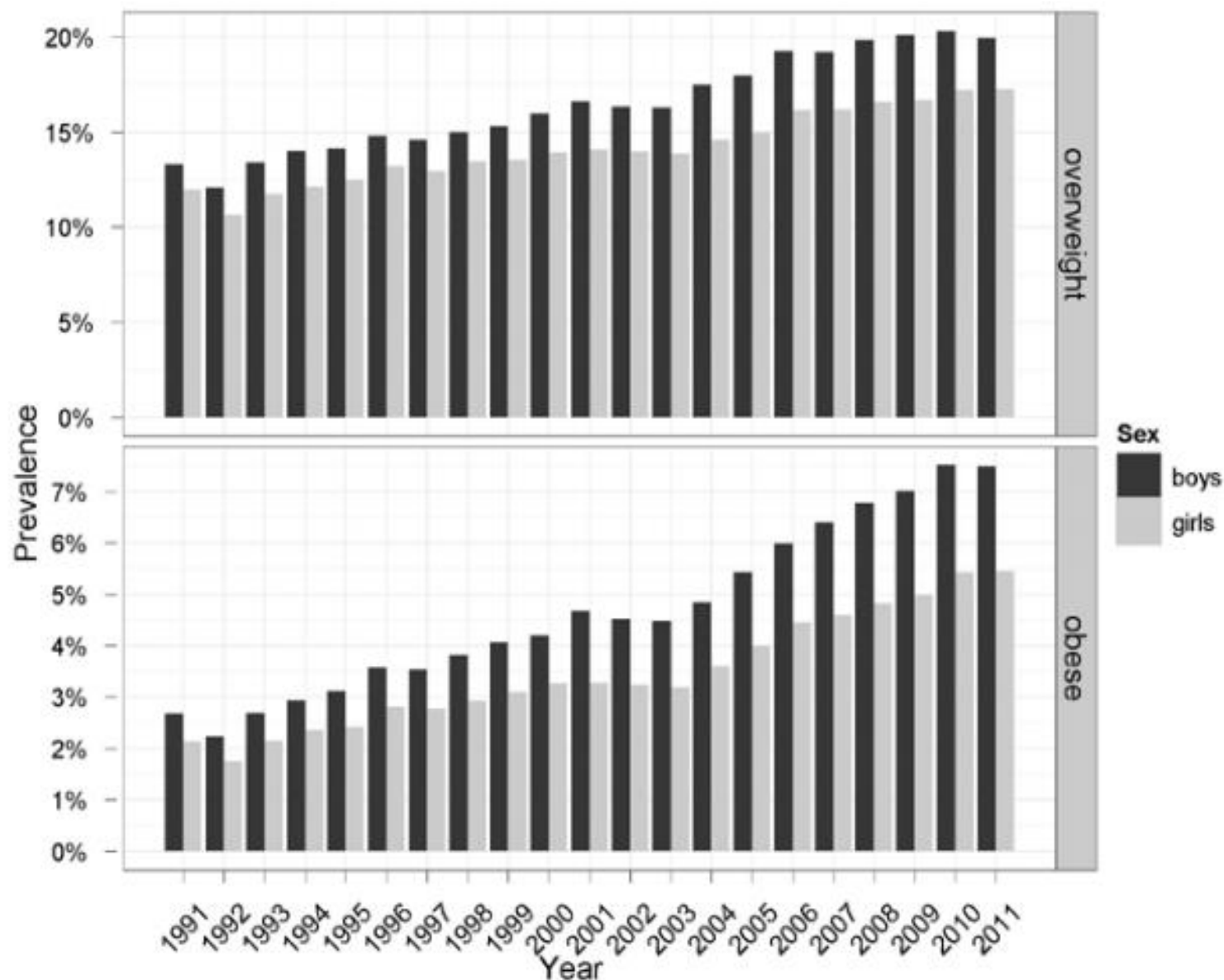
University of Ljubljana, bojan.leskosek@fsp.uni-lj.si

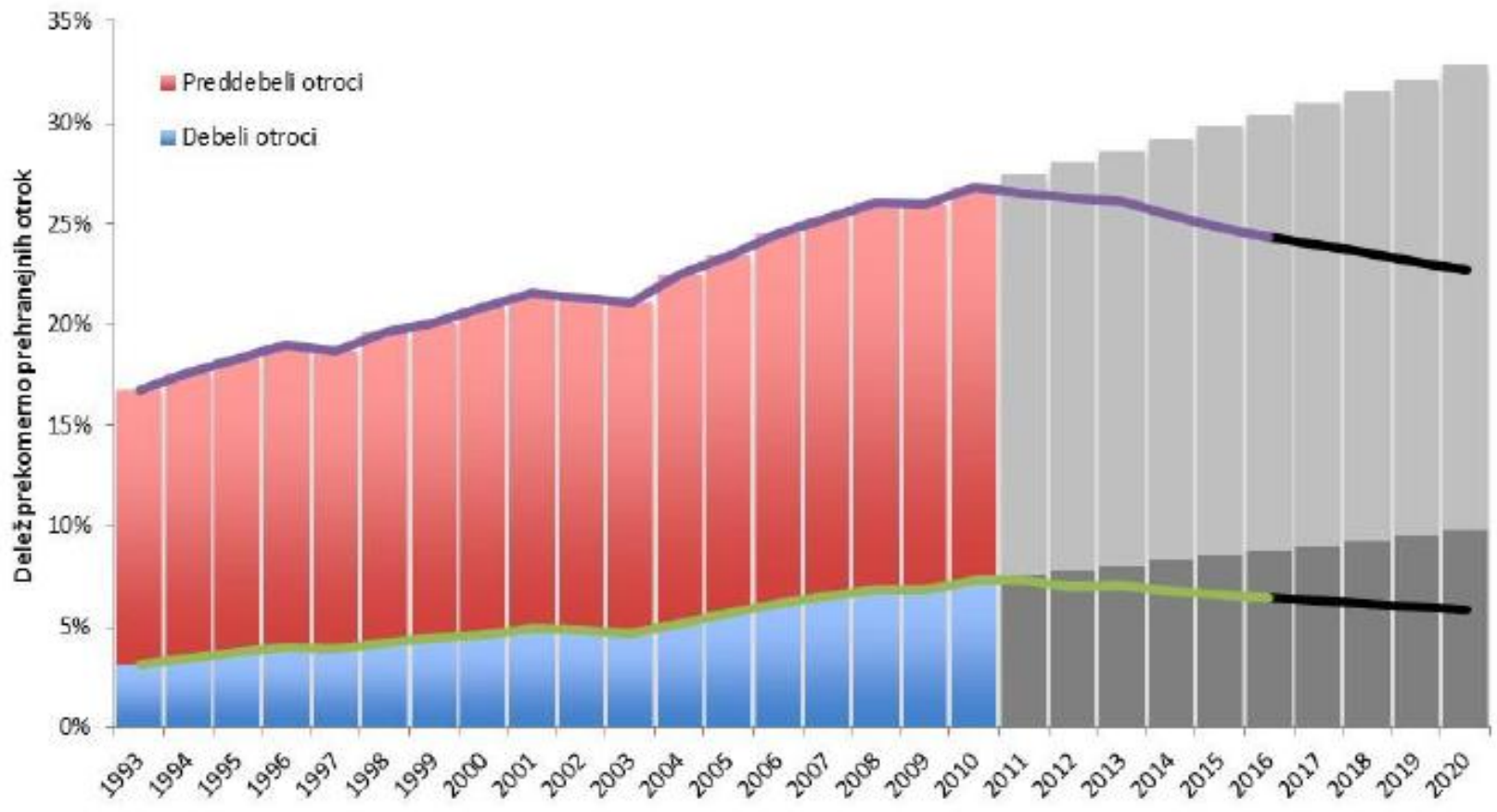
## **Abstract**





The proportion of overweight children and adults has been growing rapidly in recent years in many European and other countries. The survey examined excess weight and obesity in a population of Slovenian boys and girls aged seven through eighteen from 1991 to 2011 with the use of an annually repeated cross-sectional study of data from the SLOFIT fitness evaluation system. The BMI cut-off points of the International Obesity Taskforce were used to identify excess weight and obesity. During 1991–2011 period, excess weight and obesity have become clearly more prevalent in Slovenian children. The proportion of excess weight and obesity is more obvious in boys than in girls, especially among adolescents.

**Source: ANTHROPOLOGICAL NOTEBOOKS, 18 (1): 91–103.  
© Slovene Anthropological Society 2012**

# Prevalence of excess weight and obesity in Slovenia Youth (7 to 18 year old) from 1991 to 2011 by sex





-  dejanske spremembe deleža prekomerno telesno težkih oziroma predebelih otrok med 7. in 14. letom
-  dejanske spremembe deleža debelih otrok med 7. in 14. letom
-  napovedi trendov sprememb deleža predebelih in debelih glede na trend 2010-2015
-  Napovedi trendov, pripravljena leta 2010 na podlagi trendov naraščanja debelosti v obdobju 1993-2010

Slika 5: Napovedi trendov za zmanjšanje prekomerne telesne teže oziroma predebelost in debelosti pri otrocih v Sloveniji, na podlagi podatkov SLOFIT. Vir: Starc G, Kovač M, Jurak G, Strel J (2016). The outcomes of the Healthy Lifestyle intervention on children's physical fitness: A case of Slovenia. Launch Conference of the EU Strategy for the Alpine region. Ljubljana: Fakulteta za šport

# North and South Europe...







**Finland**

**Crete**

# **NORTH EUROPE**

- forests, mountains, humidity**
- meat, animal fats**
- "Barbarian culture"**



# **SOUTH EVROPE**

A vibrant still-life photograph of fresh produce. In the background, a woven basket is overflowing with vegetables, including several red and yellow bell peppers, a cluster of bright red radishes, and green leafy vegetables. In the foreground, a wooden cutting board holds a variety of items: a large green artichoke, a head of purple cabbage, a head of green broccoli, a bunch of green peas, a pile of green beans, a whole cucumber, and a bunch of green onions. The lighting is bright, highlighting the natural colors and textures of the food.

- **sea, Mediterranean climate**
- **vegetables, fruits, fish, olive oil**
- **vegetarian-oriented diet**

## ***Finland 1960***



- Fat in diet
- High level of cholesterol and high blood pressure
- High risk for CVD
- The highest rate of heart disease in the world

## Successful prevention of non-communicable diseases: 25 year experiences with North Karelia Project in Finland

Pekka Puska

### Abstracts

The paper describes the experiences and results of 25 years of noncommunicable disease prevention in Finland in framework of the North Karelia Project: from demonstration project to national activity. The successful experiences emphasize the need for theory based sustained activity, within a national policy framework. The paper discusses, not only the marked changes in target risk factors and reduction in NCD rates in the population, but also the general experiences: constraints and keys for success. Some general recommendations and conclusions are drawn.

### Keywords

noncommunicable diseases, coronary heart disease, lifestyle, community based prevention, national activity.

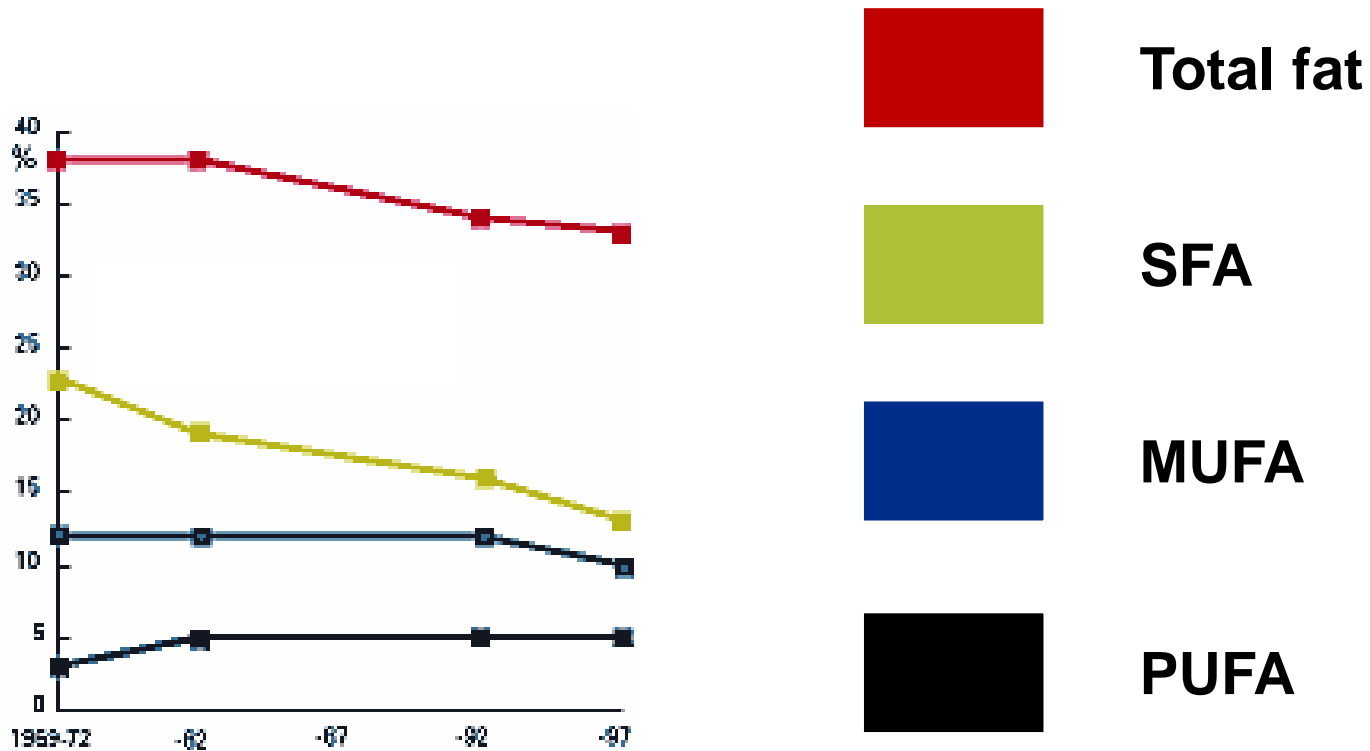


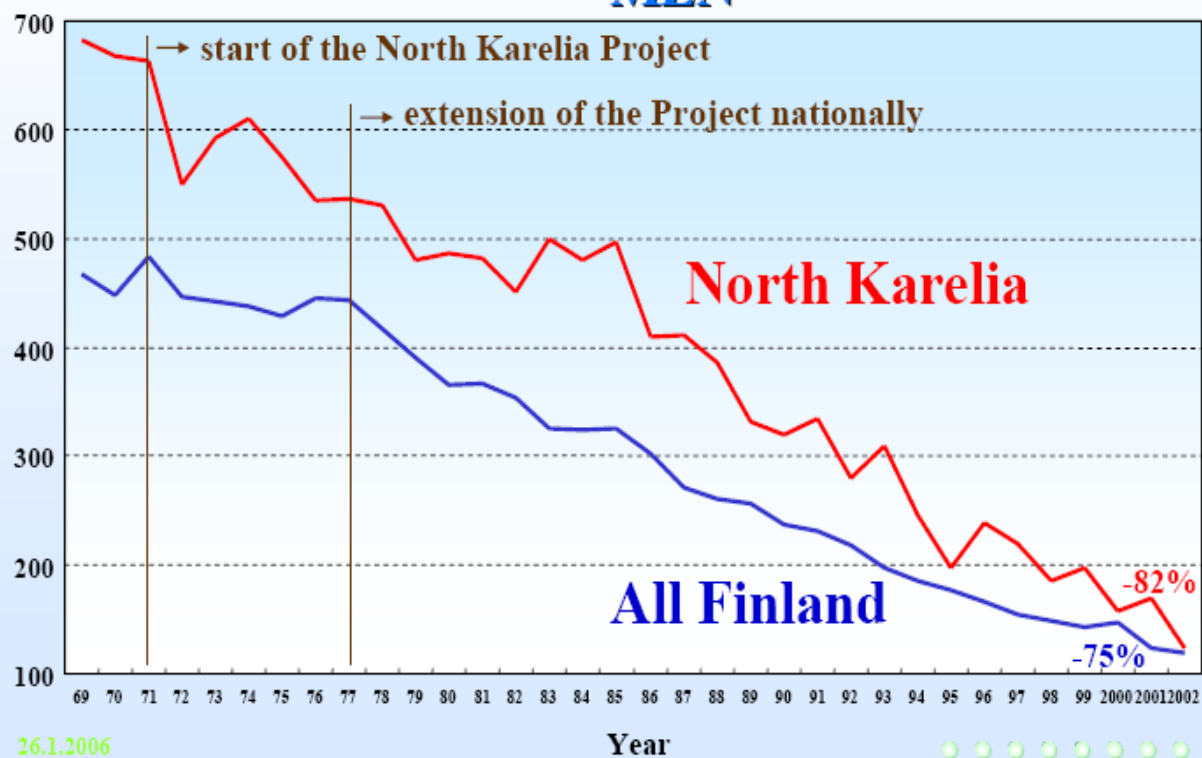
Figure 6: Intake of total fat, and saturated (SFA), monounsaturated (MUFA) and polyunsaturated (PUFA) fatty acids. Source: National Public Health Institute and Social Insurance Institution

Source: \_

[http://www.ktl.fi/portal/english/public\\_health\\_monitoring\\_promotion/monitoring\\_interventions/nutrition\\_in\\_finland/nutrition](http://www.ktl.fi/portal/english/public_health_monitoring_promotion/monitoring_interventions/nutrition_in_finland/nutrition)



## CHD MORTALITY IN ALL FINLAND AND IN NORTH KARELIA 35-64 YEAR OLD MEN



## Healthy Aspects of the Nordic Diet Are Related to Lower Total Mortality<sup>1,2</sup>

Anja Olsen,<sup>3\*</sup> Rikke Egeberg,<sup>3</sup> Jytte Halkjær,<sup>3</sup> Jane Christensen,<sup>3</sup> Kim Overvad,<sup>4,5</sup> and Anne Tjønneland<sup>3</sup>

<sup>3</sup>Institute of Cancer Epidemiology, Danish Cancer Society, Copenhagen 2100, Denmark; <sup>4</sup>Department of Epidemiology, School of Public Health, Aarhus University, Aarhus 8000, Denmark; and <sup>5</sup>Department of Cardiology, Aalborg Hospital, Aarhus University Hospital, Aalborg 9000, Denmark

... fish, cabbages, rye bread, oatmeal, apples, pears, root vegetables.

### Abstract

Health-promoting effects of traditional Nordic food items have been related to existing healthy dietary habits and health-promoting effects in different cultures. The aim of the study was to develop a food index based on traditional Nordic food items with expected health-promoting effects and relate this to all-cause mortality in a cohort of Danes. Detailed information about diet, lifestyle, and anthropometry was provided by 57,053 Danes aged 50–64 y. During 12 y of follow-up, 4126 of the cohort participants died. A healthy Nordic food index, consisting of traditional Nordic food items with expected health-promoting effects (fish, cabbages, rye bread, oatmeal, apples and pears, and root vegetables), was extracted and associated with mortality by Cox proportional hazard models. Mortality rate ratios (MRR) with 95% CI were used to associate the index to mortality. In an adjusted model, a 1-point higher index score was associated with a significantly lower MRR for both men [0.96 (0.92–0.99)] and women [0.96 (0.92–1.00)] ( $P = 0.03$ ). When the index components were evaluated separately, whole grain rye bread intake was the factor most consistently associated with lower mortality in men. In conclusion, an index based on traditional healthy Nordic foods was found to be related to lower mortality among middle-aged Danes, in particular among men. This study indicates that traditional, healthy food items should be considered before public recommendations for major dietary changes are made. *J. Nutr.* 141: 639–644, 2011.



# ***Crete 1960***



- **40 % of fat in diet, olive oil!**
- **High monounsaturated fatty acids (25 %), low saturated fatty acids**
- **Omega-3 fatty acids (1 % energy)**
- **Low prevalence of CVD**
- **High life expectancy**



**- PLANT FOOD!**

**- Green vegetables (360g/day; 2-3 cups/day)**

**- Legumes (30 g/day)**

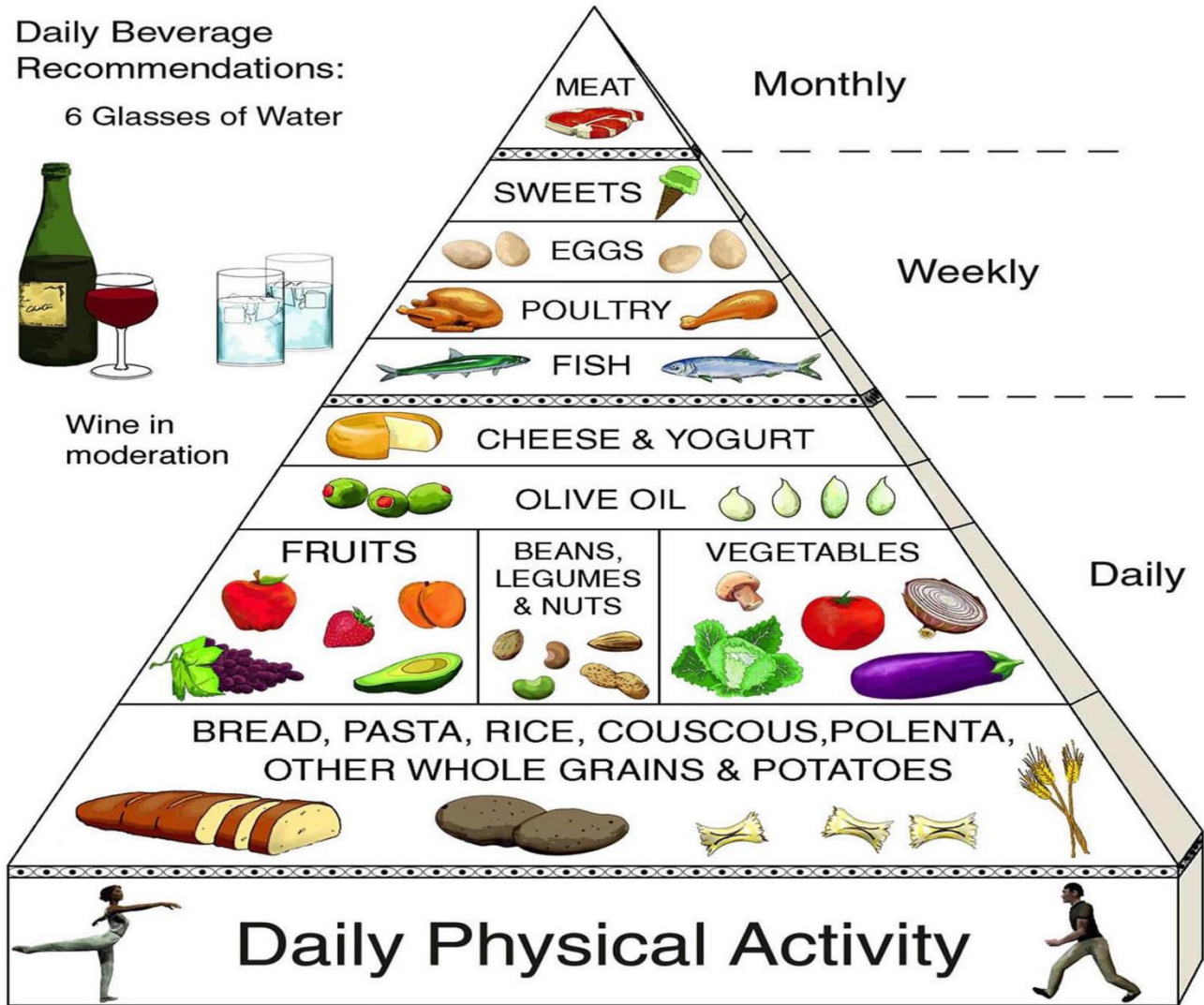
**- Nut (30 g/day)**

**- Fruit (460 g/day)**

**- Whole wheat (450 g/day)**

**- Low animal fat and saturated fatty acids**

# The Traditional Healthy Mediterranean Diet Pyramid



Am J Clin Nutr. 1997 Jun;65(6):1882-6.

## **Heart disease risk-factor status and dietary changes in the Cretan population over the past 30 y: the Seven Countries Study.**

Kafatos A, Diacatou A, Voukiklaris G, Nikolakakis N, Vlachonikolis J, Kounali D, Mamalakis G, Dontas AS.

Department of Social Medicine, University of Crete School of Medicine, Iraklion, Greece. Kafatos@med.ucl.ac.uk

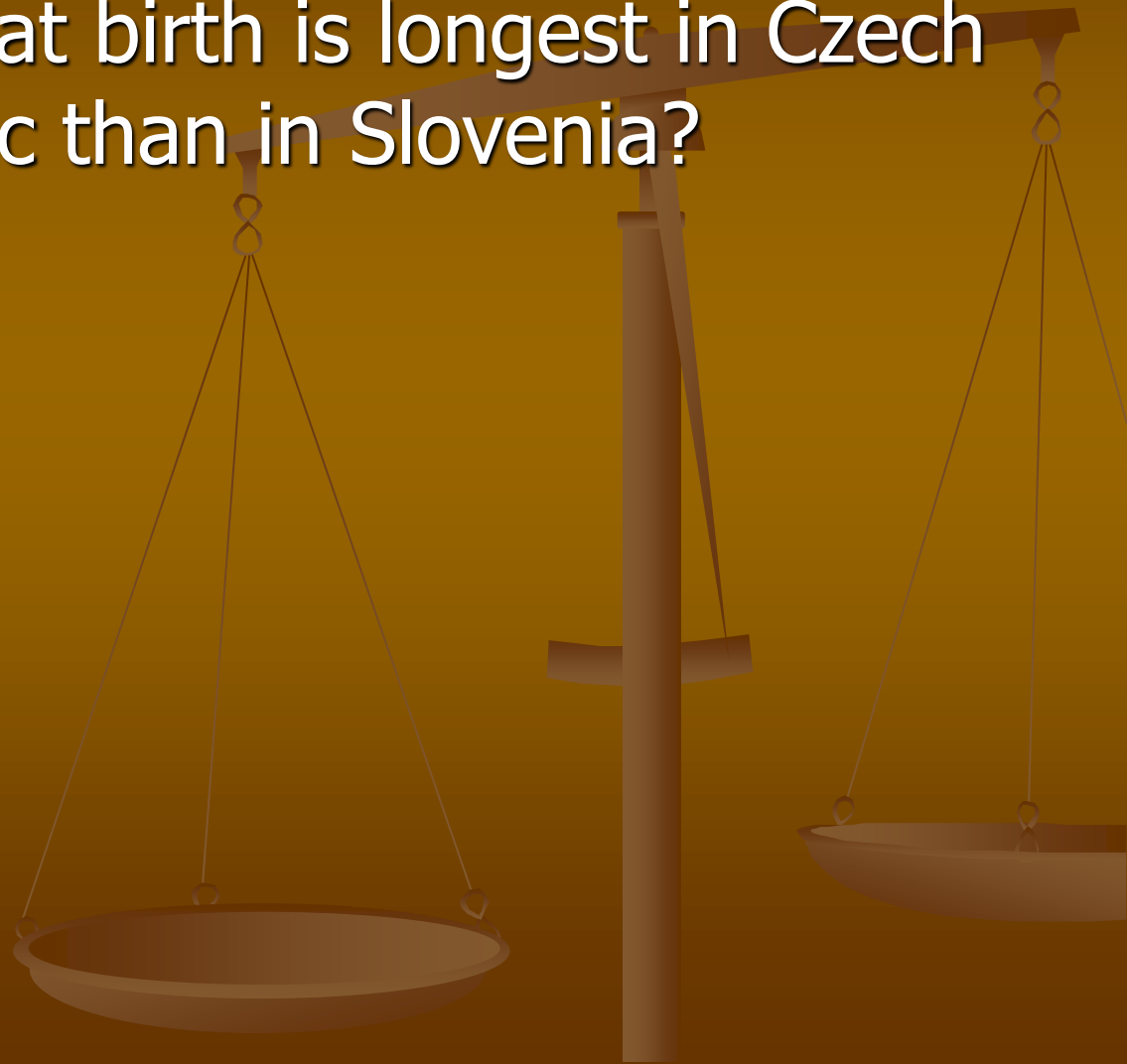
### **Abstract**

A follow-up study was conducted to identify the heart disease risk-factor status and dietary changes of surviving elderly subjects in Crete who took part in the Seven Countries Study in 1960. In 1991, data were obtained from 245 of the 686 original male participants (169 of the original 40-49-y age group and 76 men 50-59 y age group). In 1991, the men were 70-79 and 80-89 y old. There was a significant (11.5%) increase in serum total cholesterol concentrations between 1960 and 1991. Body mass index and systolic and diastolic blood pressures also increased significantly, and all age groups were characterized by central obesity. A representative subsample of 21 men took part in a 3-d weighed food record study. Dietary data indicated increases in the intake of saturated fat and decreases in monounsaturated fat over the 30-y period. Comparison with a 1962 representative Cretan sample indicated a significantly increased concentration of adipose palmitic acid (16:0) in our surviving sample. The observed changes occurred during a period when many developed countries were observing a decline in most heart disease risk factors.

Life expectancy at birth is longest in Czech Republic than in Slovenia?

A. YES

B. NO



# Country comparison

## Slovenia ↔ Czech Republic

	<b>Slovenia</b> 	<b>Czech Republic</b> 
<b>Life expectancy 2018 (year)</b>	<b>80.92</b> <b>World Rank: 27</b>	<b>79.17</b> <b>World Rank: 31</b>

Japan

84.17

World Rank: 1

Saudi Arabia

74.75

World Rank: 84

Central Africa

53.04

World Rank: 182

# Death Rate Per 100 000 (2018)

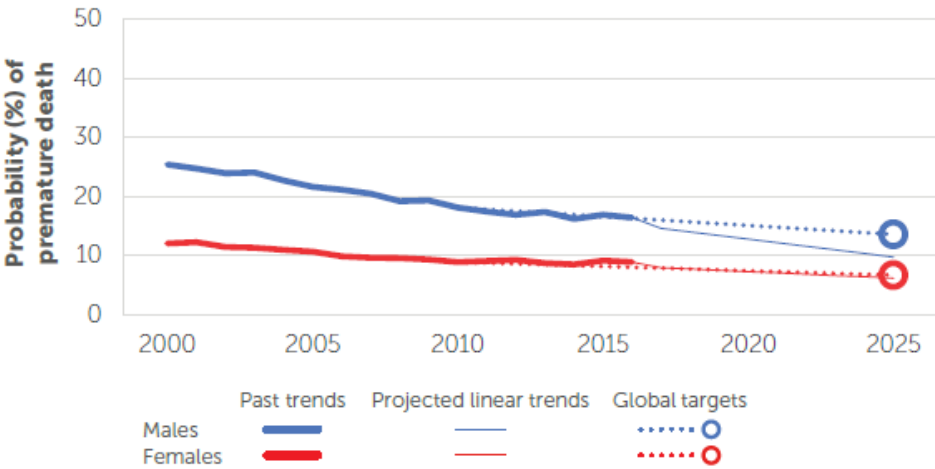
	All Cancers	Coronary Heart Disease	Diabetes Mellitus
<b>SI</b>	150.61	85.67	7.34
<b>CZ</b>	134.31	152.37	17.14

Source: [www.worldlifeexpectancy.com](http://www.worldlifeexpectancy.com)

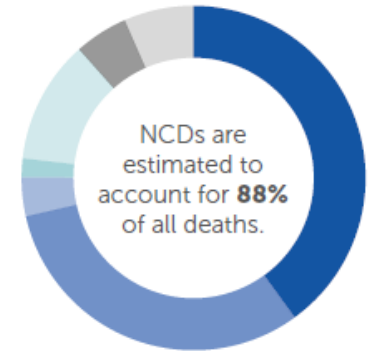
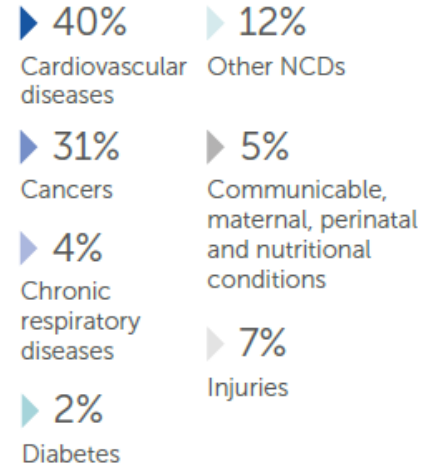
# SLOVENIA

2016 TOTAL POPULATION: 2 078 000  
2016 TOTAL DEATHS: 20 000

## RISK OF PREMATURE DEATH DUE TO NCDs (%)



## PROPORTIONAL MORTALITY



300 LIVES CAN BE SAVED BY 2025 BY IMPLEMENTING ALL OF THE WHO "BEST BUYS"

[Link](#)





# Food and population

# Holodomor in Ukraine

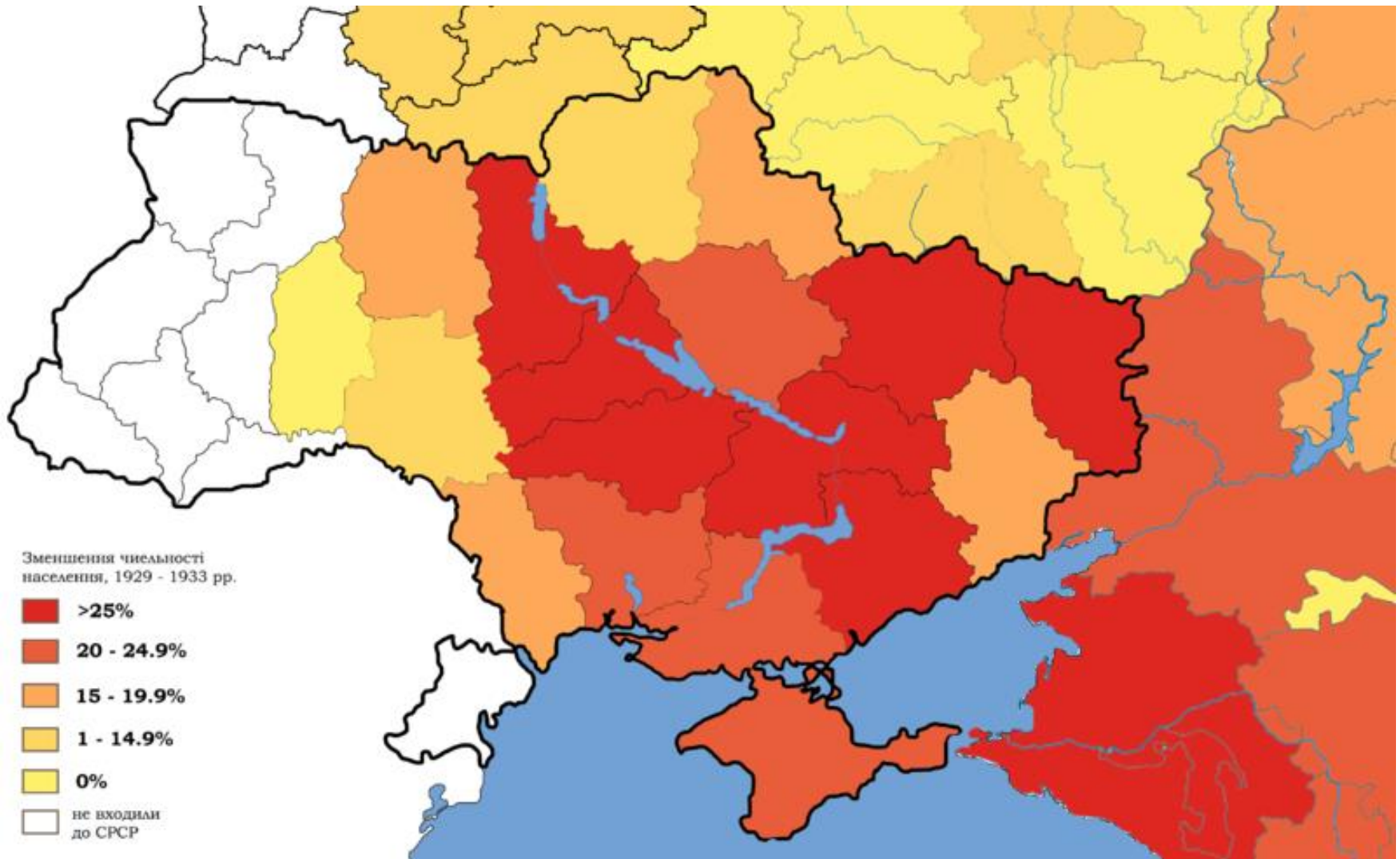
- морити голодом, "to kill by starvation" (1932-1933)
- killed about three million people (?)



**In Harkov 1933**

Source: <https://en.wikipedia.org/wiki/Holodomor>

# Map of depopulation of Ukraine and southern Russia, 1929–33.



Source: <https://en.wikipedia.org/wiki/Holodomor>

# SIX MILLION PERISH IN SOVIET FAMINE

## Peasants' Crops Seized, They and Their Animals Starve



Like hundreds last, the peasant women gather here for crops seized by armies. They must do this to keep alive in a land of ghosts—the Ukraine.



Body's beautiful, drought-stricken horse, leaves the world and is used for the agricultural machine. The animal was needed on every farm, and dying all by the millions of millions.

The million died in a few years. They had been in three weeks in two weeks. Peasants began to die when their livestock was driven off by armed soldiers.

### Reporter Risks Life to Get Photographs Showing Starvation

SEPARATION walks through the Ukraine section of the Soviet Union, bearing a ghastly trail of death and agony. The Ukraine is the most fertile grain-producing district in Russia.

The facts presented in the notes of articles, of which this is the first, were obtained by Thomas Walker, an American correspondent, now residing in London, at the peril of his life.

Walker crossed Russia last Spring to investigate the famine. He was accompanied by three soldiers who offered under the most adverse and dangerous possible circumstances, the evidence they possess in many grim and graphic photographs.

**By THOMAS WALKER,**  
Special Journalist and Traveler and Reporter of Reuters, London, Who has Crossed Death Row Through the Gates of Soviet Russia.

I HAVE accompanied the Ukraine section of Soviet Russia in the past eighteen months, since the Russian revolution, and under the most adverse and dangerous possible circumstances, the evidence they possess in many grim and graphic photographs.

London, on the 21st of January, 1933, the day that the famine in the Ukraine was at its height, the day that the famine in the Ukraine was at its height, the day that the famine in the Ukraine was at its height.

### Massive Immigrants (See Map Page)

London, on the 21st of January, 1933, the day that the famine in the Ukraine was at its height, the day that the famine in the Ukraine was at its height, the day that the famine in the Ukraine was at its height.



In the article describing the earliest famine in the Ukraine, Thomas Walker tells of finding this little Russian peasant woman lying dead in a ditch during the famine. The father had been shot for attempting to flee to the border. The mother was left to starve with her children.



Search for grain in a Soviet farm. Walker took the photograph in the Ukraine. He was accompanied by three soldiers who offered under the most adverse and dangerous possible circumstances, the evidence they possess in many grim and graphic photographs.

### Peasants, Horses Starve

London, on the 21st of January, 1933, the day that the famine in the Ukraine was at its height, the day that the famine in the Ukraine was at its height, the day that the famine in the Ukraine was at its height.

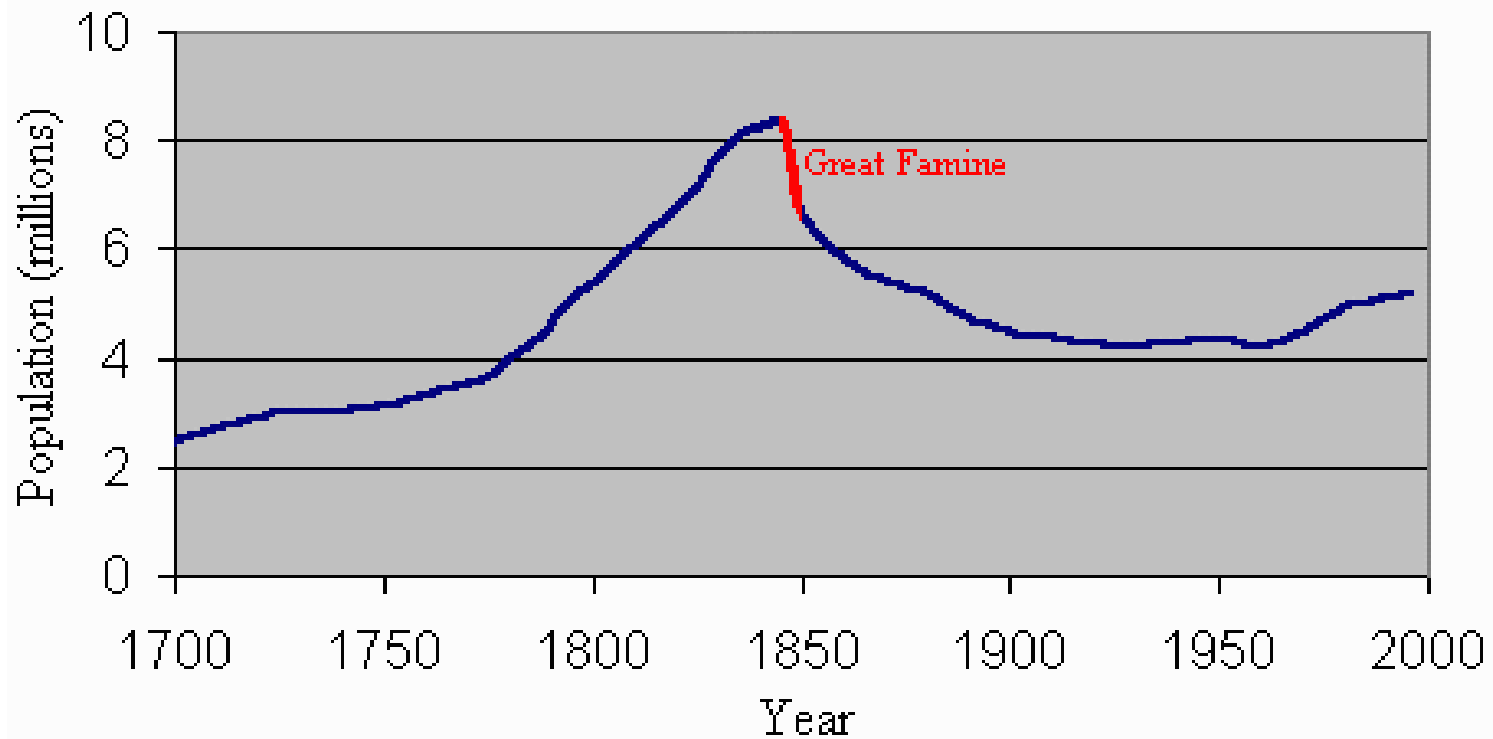
### Food Hoarder Short

London, on the 21st of January, 1933, the day that the famine in the Ukraine was at its height, the day that the famine in the Ukraine was at its height, the day that the famine in the Ukraine was at its height.

# Great Famine - Ireland (1845)



## Population of Ireland 1700 to 2000



*Unlike the rest of this site, this chart is declared to be in the public domain.*

## The Irish Famine

**2 million**

Number of people who emigrated  
between 1845 and 1850

**8.2 million**

Irish population in 1841

**6.6 million**

Irish population in 1851

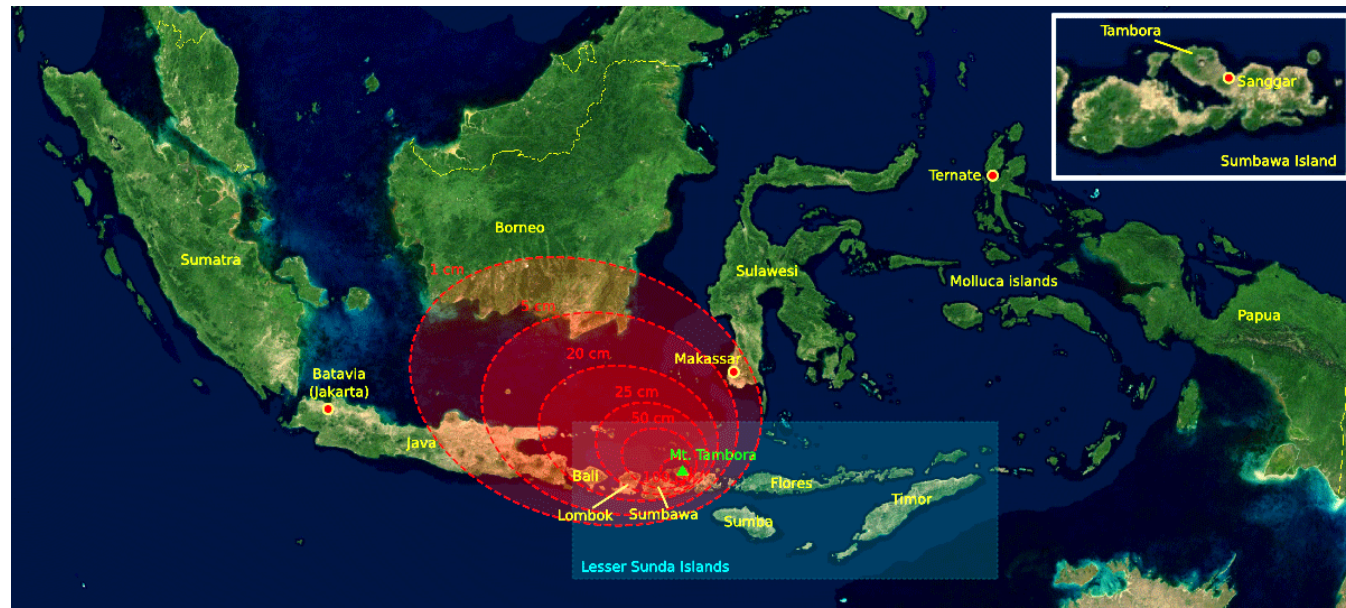
Figures: Public Record Office of Northern Ireland



Vir: <http://www.bbc.com/news/uk-northern-ireland-34369080>

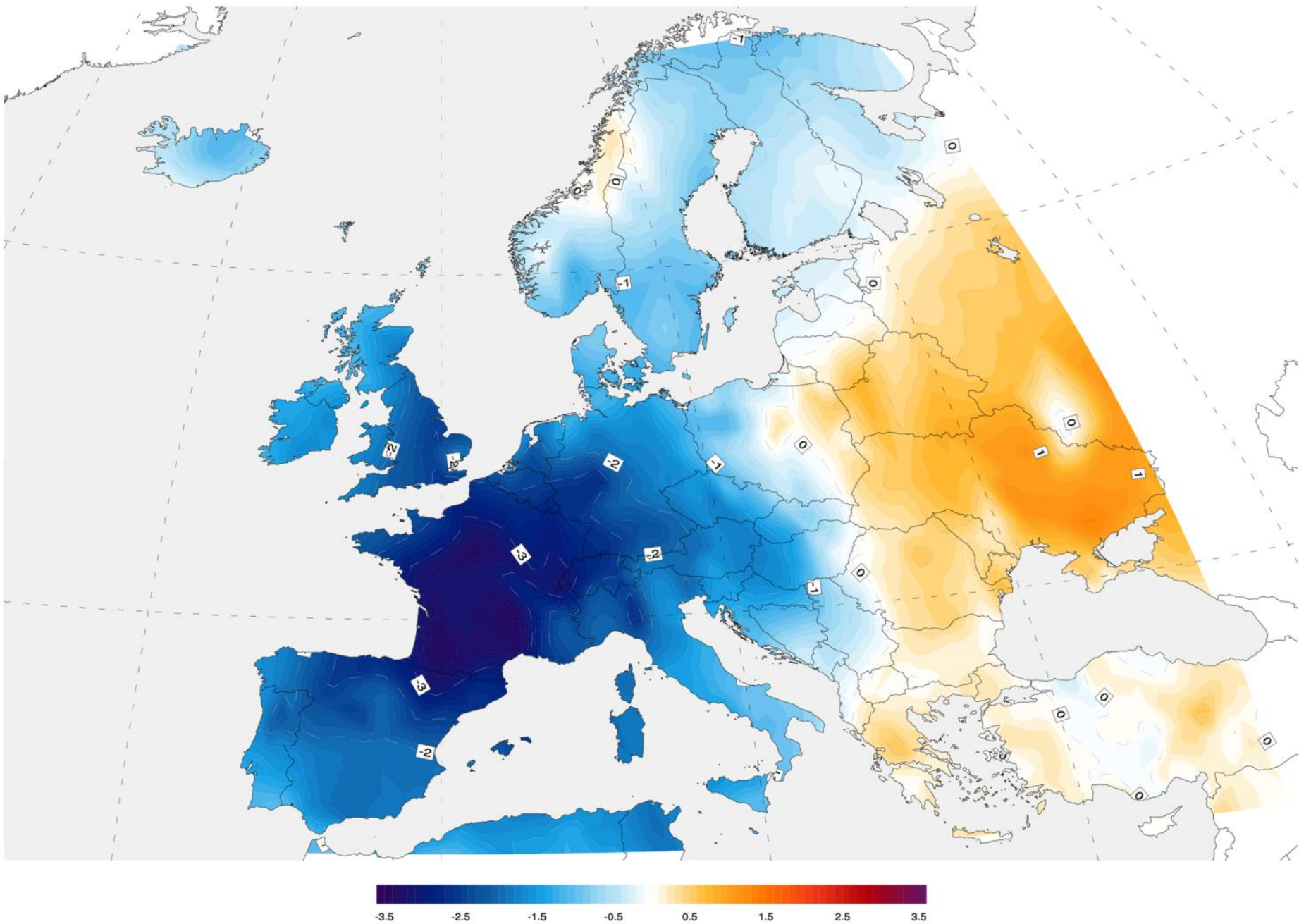
# Year Without a Summer (1816)

- The massive eruption of Mount Tambora in the Dutch East Indies (Indonezija), April 1815
- Temperatures fell worldwide because
- less sunlight passed through the stratosphere.
- In the Earth's average land temperature of about  $1^{\circ}\text{C}$ .





# 1816 Summer Temperature Anomaly



Vir: [https://commons.wikimedia.org/wiki/File:1816\\_summer.png](https://commons.wikimedia.org/wiki/File:1816_summer.png)

Research Article

**Iberia in 1816, the year without a summer**Ricardo M. Trigo ✉, José M. Vaquero, Maria-João Alcoforado, Mariano Barriendos,  
João Taborda, Ricardo García-Herrera, Juerg LuterbacherFirst published: 15 April 2008 [Full publication history](#)

**“The decade from 1811 to 1820 was marked by serious socioeconomic impacts resulting from this poor agricultural production, with malnutrition and the increase of epidemics in Europe and Mediterranean countries. Low temperatures, freezing temperatures in Spring and heavy precipitation between 1816 and 1817 affected the growth of many crops very badly.”**

**The Year Without a Summer.**

In the year 1816 there was a sharp frost in every month. It was known as the “year without a summer.” The farmers used to refer to it as “eighteen hundred and starve to death.” In May ice formed half an inch thick, buds and flowers were frozen and corn killed. Frost, ice and snow were common in June. Almost every green thing was killed, and the fruit was nearly all destroyed. Snow fell to the depth of three inches in New York and Massachusetts, and ten inches in Maine. July was accompanied with frost and ice. On the fifth ice was formed of the thickness of window glass in New York, New England and Pennsylvania, and corn was nearly all destroyed in certain sections. In August ice formed half an inch thick. A cold northern wind prevailed nearly all summer. Corn was so frozen that a great deal was cut down and dried for fodder. Very little ripened in New England, and scarcely any even in the Middle States. Farmers were obliged to pay four or five dollars a bushel for corn of 1815, for seed for the next spring’s planting.

Vir: <http://oldnews.aadl.org/node/169151>