FOODS AND SUPPLEMENTS IS THE FOCUS ON PREVENTION OR TREATMENT?

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„Let food be thy medicine, and medicine be thy food." *Hippocrates*

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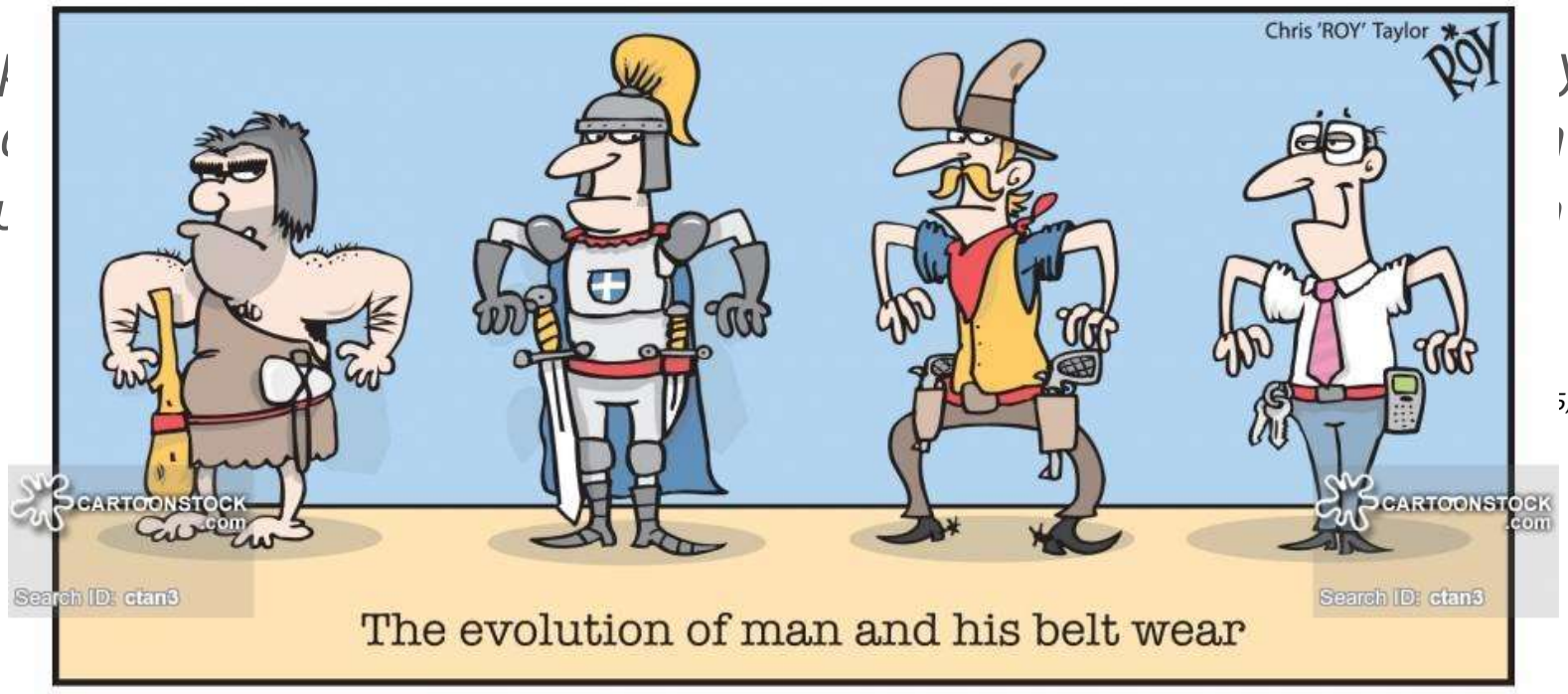
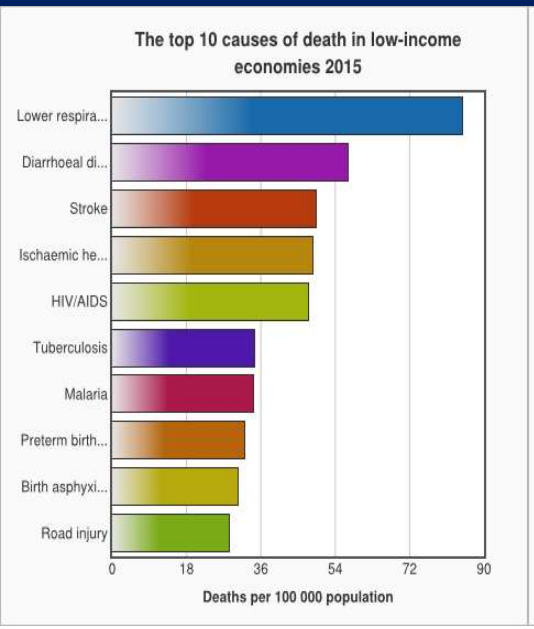
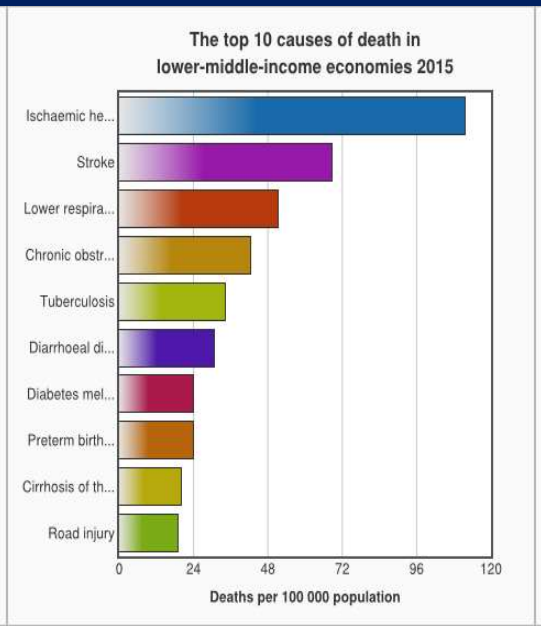
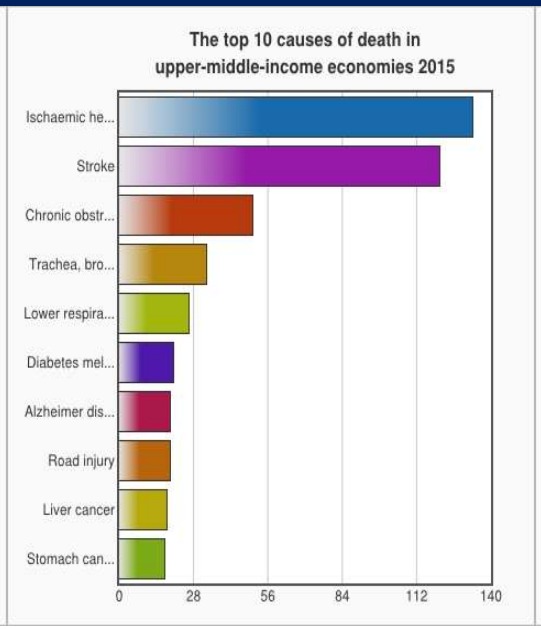


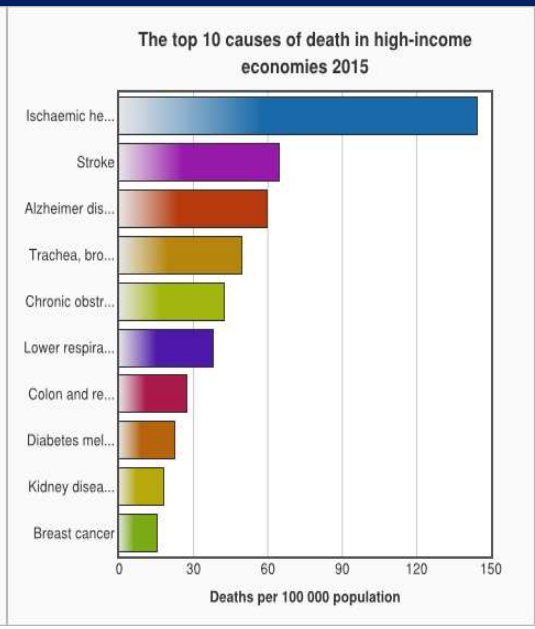
;81:341-54.

Global Mortality Perspective









Mortality attributable to cardiovascular diseases and carcinoma increased by striking **47%** in the global mortality, in comparison to the early 20th century

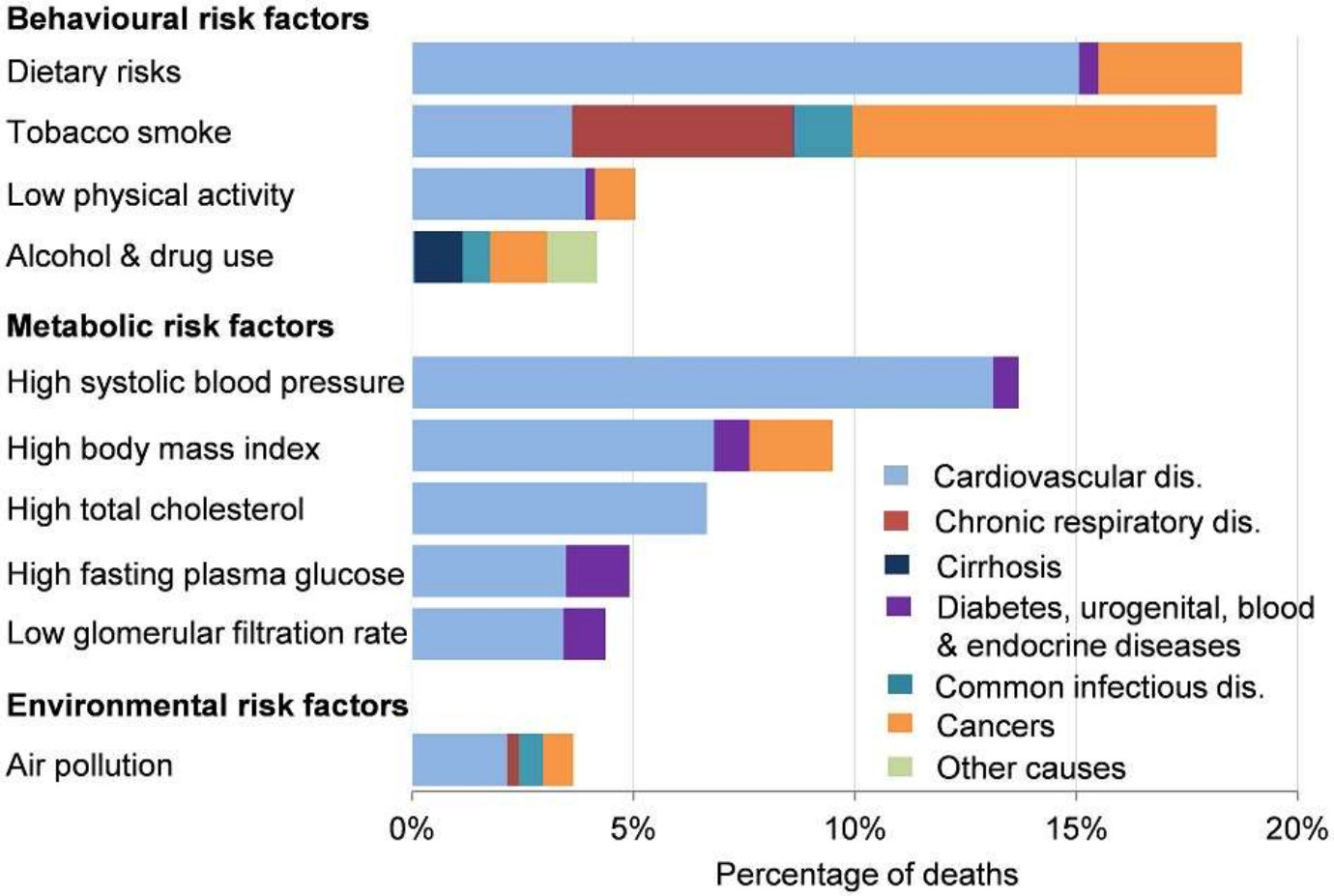
World Health Organization. The top 10 causes of death. January 2017.

Gender Perspective

	Males (% of all male deaths)		Females (% of all female deaths)	
1	Heart disease	14.2%	Dementia and Alzheimer's disease	15.3%
2	Dementia and Alzheimer's disease	8.0%	Heart disease	8.8%
3	Lung cancer	6.5%	Stroke	7.5%
4	Chronic lower respiratory diseases	6.2%	Influenza and pneumonia	6.0%
5	Stroke	5.6%	Chronic lower respiratory diseases	6.0%
6	Influenza and pneumonia	5.1%	Lung cancer	5.1%
7	Prostate cancer	4.2%	Breast cancer	3.7%
8	Colorectal cancer	3.0%	Colorectal cancer	2.4%
9	Leukaemia and lymphomas	2.6%	Kidney disease and other diseases of the urinary system	1.9%
10	Cirrhosis and other liver disease	1.9%	Leukaemia and lymphomas	1.9%

- for males, heart disease was the cause of **1.8 times** as many deaths as the second leading cause of death
- for males and females, *4 of the 10 leading causes of death were cancers*
- if deaths from all forms of cancer were grouped together, cancer deaths would account for **24.8%** of all deaths in females and **30.0%** of all deaths in males

Risk Factors



Dietary risk factors and tobacco smoke account for almost 20% of all deaths

Hannah Ritchie and Max Roser (2018) - "Causes of Death". Published online at OurWorldInData.org. Retrieved from: https://ourworldindata.org/causes-of-death The Global Burden of Disease, 2015

The Evolution of Our Diet

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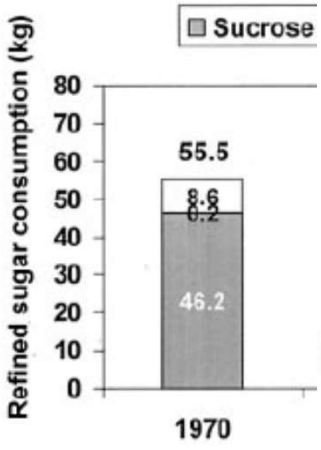
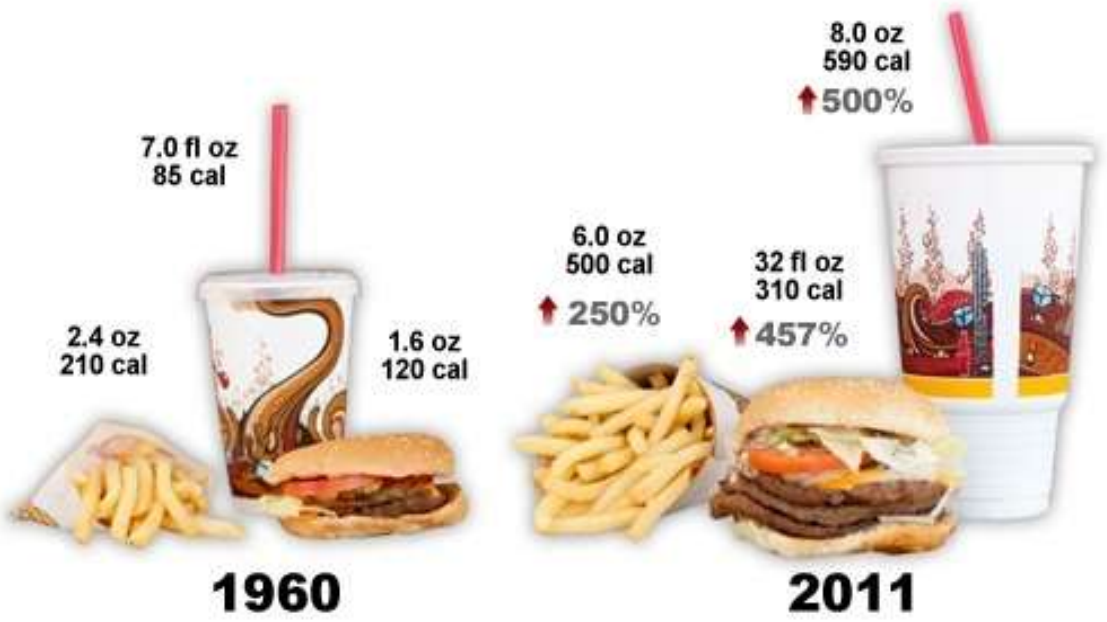


Consumption of r

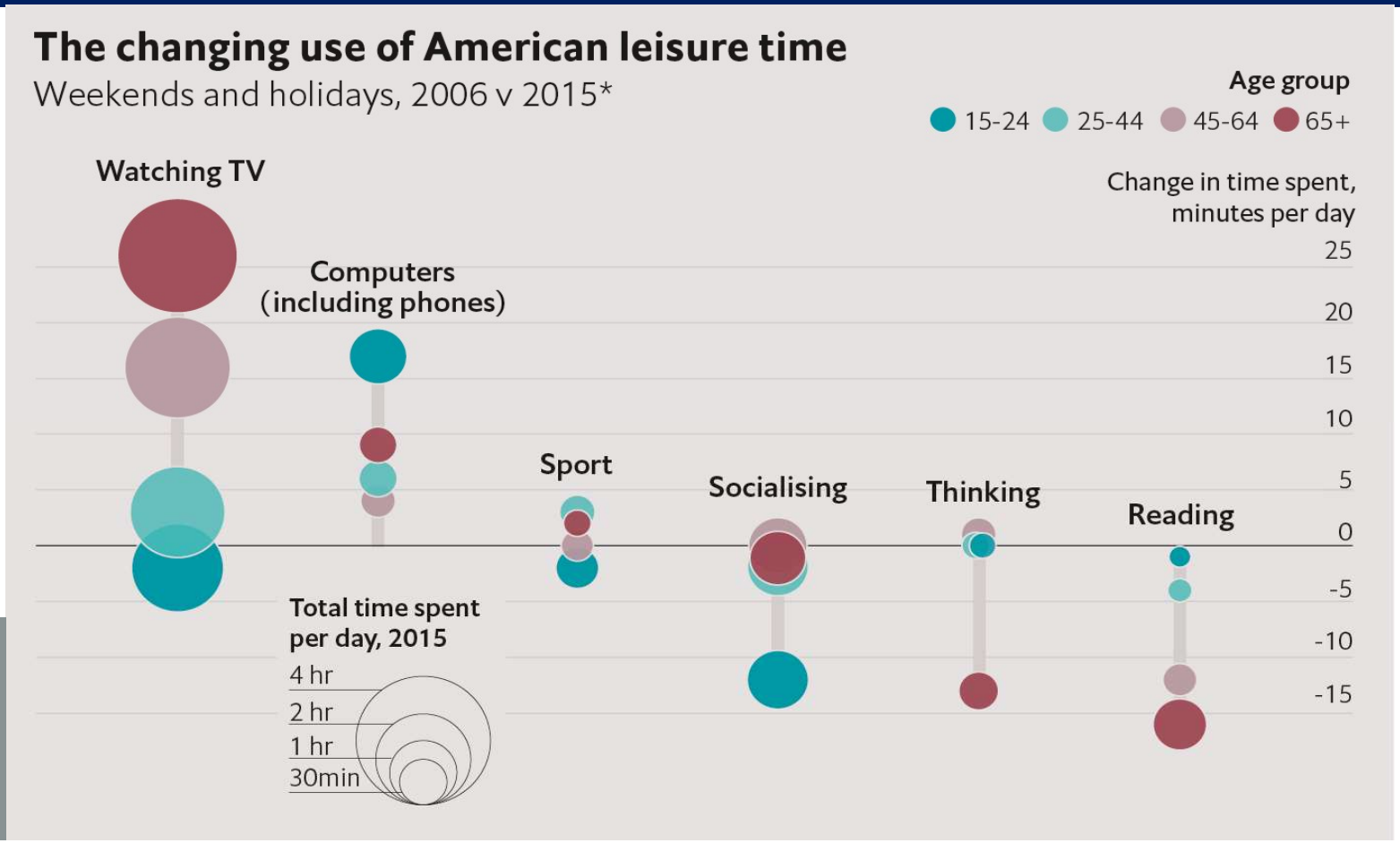
Portion distortion



Food or food group	Value
	% of energy[2]
	1.6
	2.1
	3.2
	1.1
	2.6
	10.6
	3.5
	20.4
	23.9
	8.0
n syrup	7.8
	2.6
	0.1
	0.1
	18.6
ils	
ls	8.8
	6.6
	2.2
	17.6
	1.4
	72.1
m chloride	9.6[3]

Cordain L et al. Am J Clin Nutr 2005;81:341-54.

And What About Activity?



The Economist 1843

What Kids Eat Around the World *by Gregg Segal, photographer*

TIME

How Determined are People to Change Their Diet?

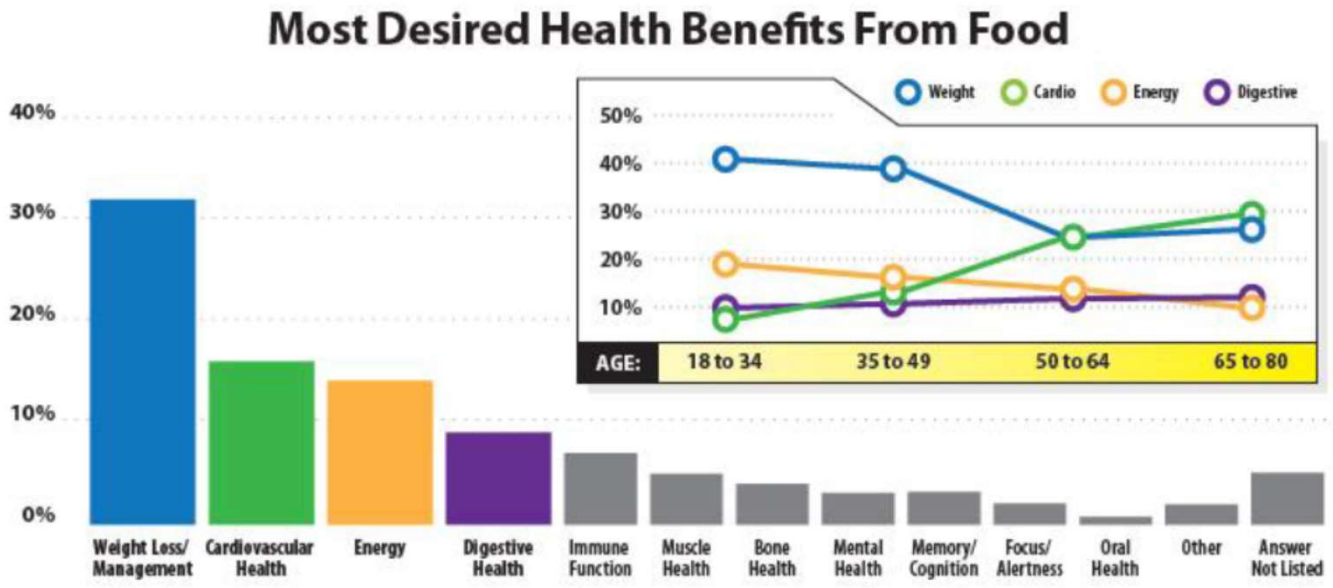
Prepared according to Jamison DT et al. Disease Control Priorities in Developing Countries. 2nd edition. Washington:The International Bank for Reconstruction and Development/The World Bank; 2006., Zhang X et al. PLoS One. 2017;12(5):e0176436., and World Cancer Research Fund International, 2018.

Studies consistently show that anywhere up to **60%** of people fail to change their lifestyle even after a major medical event (based on attrition rates in various intervention studies, rates can go up to 90% especially in long-term interventions).

Zhang X et al. PLoS One. 2017;12(5):e0176436.
European Comission Report on the EU-funded Research and Innovation in the field of ICT for Health, Wellbeing and Ageing. September, 2017.

However…

INTERNATIONAL FOOD INFORMATION COUNCIL FOUNDATION

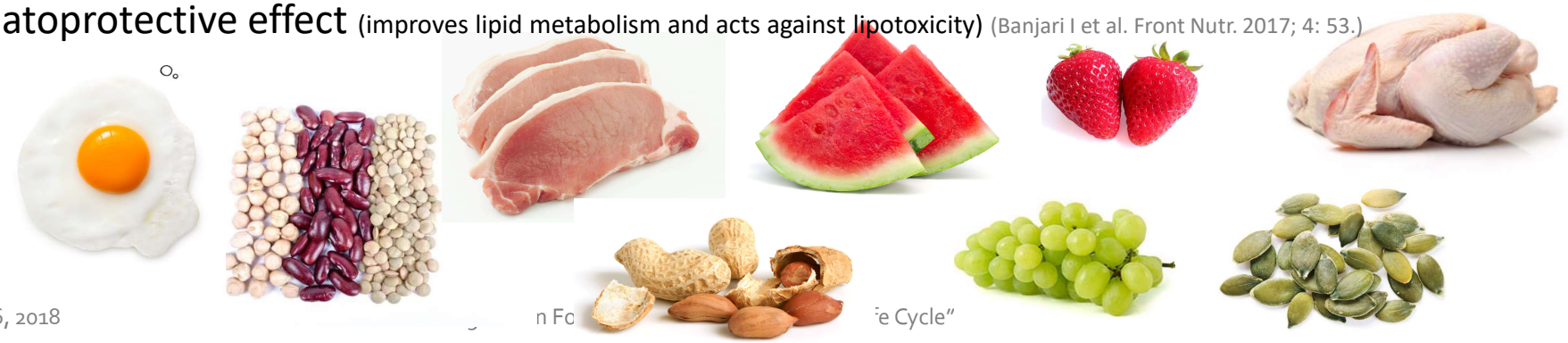


Omega-3 Fatty Acids

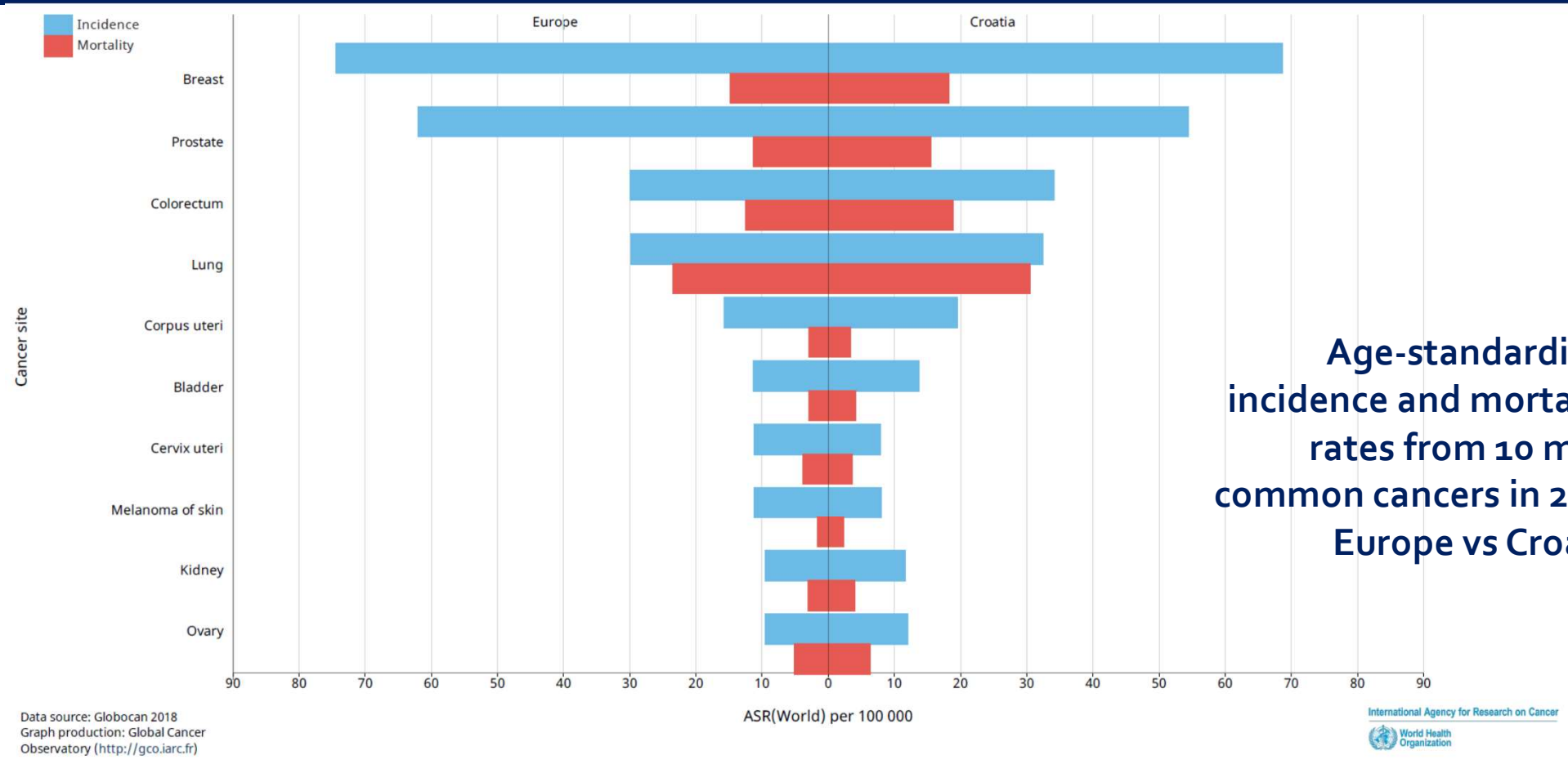
- oxidative stress damages phospholipids in cell membranes → changed neuronal activity
- the most important is the ratio between *omega-6 and omega-3 FA* (e.g. for the secondary prevention of CVDs ratio 4/1 is related to **70% lower risk** of all-cause mortality Simopoulos AP. Biomed Pharmacother. 2002;56(8):365-79.)
- *dietary omega-3 FA sources*: fatty fish, salmon, cod, sardines, mackerel, olive oil
- supplementation with omega-3 FA (2 ml/kg) has *anti-inflammatory effect, lowers brain edema and neuronal apoptosis, and improves neurologic functions* after a traumatic brain injury (TBI) (Chen X et al. J Neuroinflammation. 2017;14(1):143.)
- intake of omega-3 FA, especially DHA (*EPA is more important for the heart*) on a cellular level reduces negative effects of free radicals and inflammation, has key role in the maintenance of cell membranes, interneuronal communication and cognition (Swanson D et al. Adv Nutr 2012;3(1):1–7.), and *can diminish the negative effects of a diet rich in simple CHO* (Agrawal R, Gomez-Pinilla F. J Physiol. 2012;590(10):2485-99.) → *high consumption of simple CHO lowers cognitive abilities, deregulates signaling activity of insulin via molecules involved in the energy metabolism and synaptic plasticity, while presence of DHA establishes metabolic homeostasis*
- *omega-3 FA deficiency reduces recovery after a TBI* compared to adequate omega-3 FA status → slower recovery from motor impairments, higher anxiety and cognitive deficiency

Vascular Function

- Insulin acts as a vasodilatator! High consumption of simple CHO (especially Fru) in combination with omega-3 FA deficiency negatively affects cognitive functions (learning and memory impairments; observable changes in the ratio between omega-6/omega-3 FA in cell membranes) ⟶ lower cerebral vascular flow, i.e. negative neuroplasticity (Agrawal R, Gomez-Pinilla F. J Physiol. 2012;590(10):2485-99.)
- vasoprotective effect of **foods rich in nitrates** – healthy subjects who consumed 500 mL of beetroot juice had lower blood pressure; prevention of endothelial dysfunction and lower thrombocyte activity after acute ischaemic insult (Webb AJ et al. Hypertension 2008;51(3):784-90.)
- improved cerebral perfusion (especially in the frontal lobe) was achieved in people ≥70 yr old after introducing nitrate-rich foods (Presley TD et al. Nitric Oxide. 2011;24(1):34-42.)
- biosynthesis of Nitric Oxide from **L-Arginine**
- **black chokeberry** juice/extracts also has vasoprotective effect (used to treat hypertension) but also glucose lowering, hepatoprotective effect (improves lipid metabolism and acts against lipotoxicity) (Banjari I et al. Front Nutr. 2017; 4: 53.)



Race for Life



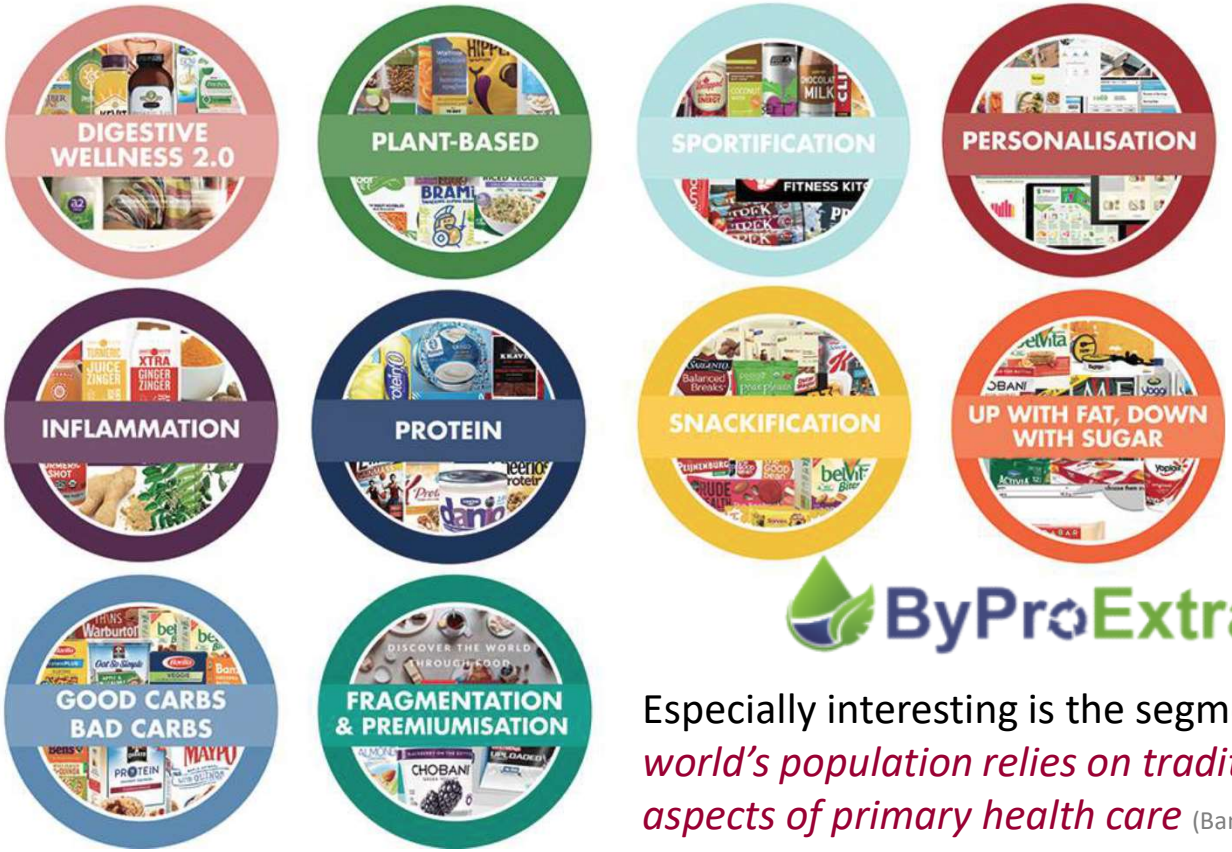
Age-standardized incidence and mortality rates from 10 most common cancers in 2018 Europe vs Croatia

Supplements in the Primary Prevention

- nutrients concentrated in variety of supplements **were not show to be effective** in the primary prevention of CVDs, various cancers or all-cause mortality
- in the prevention of CRC a variety of supplements are often recommended, from omega-3 FA, vitamin D, folic acid to vitamin B_6 → so far the only clear strong positive effect was found for Ca supplementation (**22% lower risk**, especially for distal CC and at Ca intake of >700 mg/day)
- the VITAL research (Vitamin D and Omega-3 Trial) conducted in the U.S. with median 5.3 yr follow-up on 25.871 adult males and females (80% response rate) analysed the effect of supplementation with vitamin D (2000 IU) and omega-3 FA (1 g/day) in comparison to placebo on the primary prevention of invasive cancers and CVDs → **no proof**
- vitamin D didn't show to be effective even in people with low serum levels of 25(OH)D (<20 ng/ml at baseline); however, *post hoc* analysis might reveal new findings for some specific groups (e.g. women)

Teixeria MC et al. *World J Gastroenterol* 2014;20(41):15060–9./ Guallar E et al. *Ann Intern Med* 2013;159(12):850-1.
Fortmann SP et al. *Ann Intern Med* 2013;159(12):824-34./ Banjari I. *Med Pregl* 2014;67(5-6):261-3.
Manson JE et al. The VITAL Research Group. *NEJM* November 10, 2018

The Biggest Trends in Food, Nutrition and Health



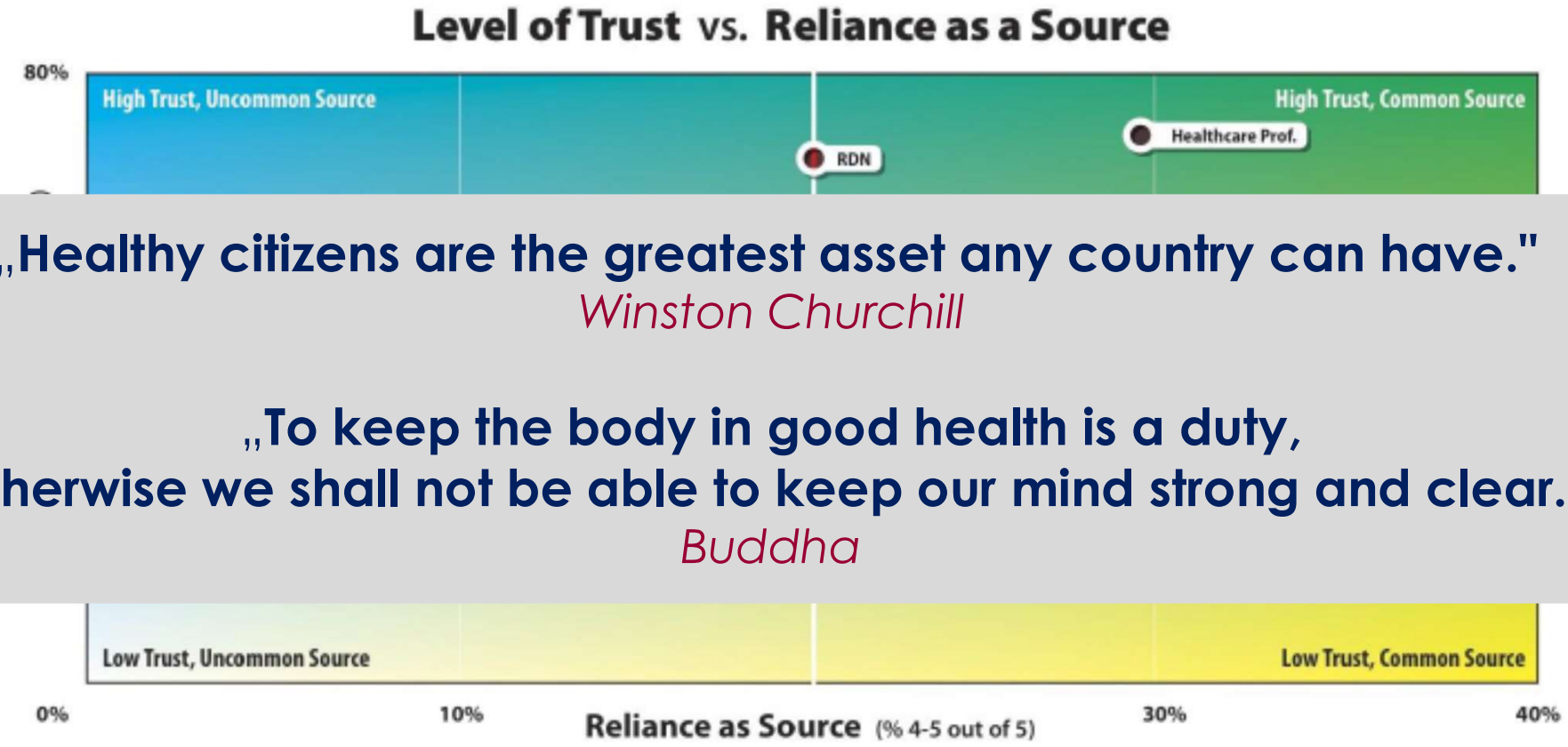
Evidence Based Science will continue to shape the Future of Food and Nutrition Sector

It's all about the *consumers*, but don't forget about *the media influence*; social media is leading the way and we should ensure that the information provided by reporters is accurate and reliable.

ByProExtract

Especially interesting is the segment focused on plants: *nearly 25% of the world's population relies on traditional medicinal systems for different aspects of primary health care* (Banjari I et al. ATHM 2018; In press)

The Responsibility



„Healthy citizens are the greatest asset any country can have."
Winston Churchill

„To keep the body in good health is a duty,
otherwise we shall not be able to keep our mind strong and clear."
Buddha

"Looks like he died of natural causes."

THANK YOU FOR YOUR ATTENTION!

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