



• Healthy Lifestyles

• Drivers of EU Agricultural Outlook

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Healthy Lifestyles



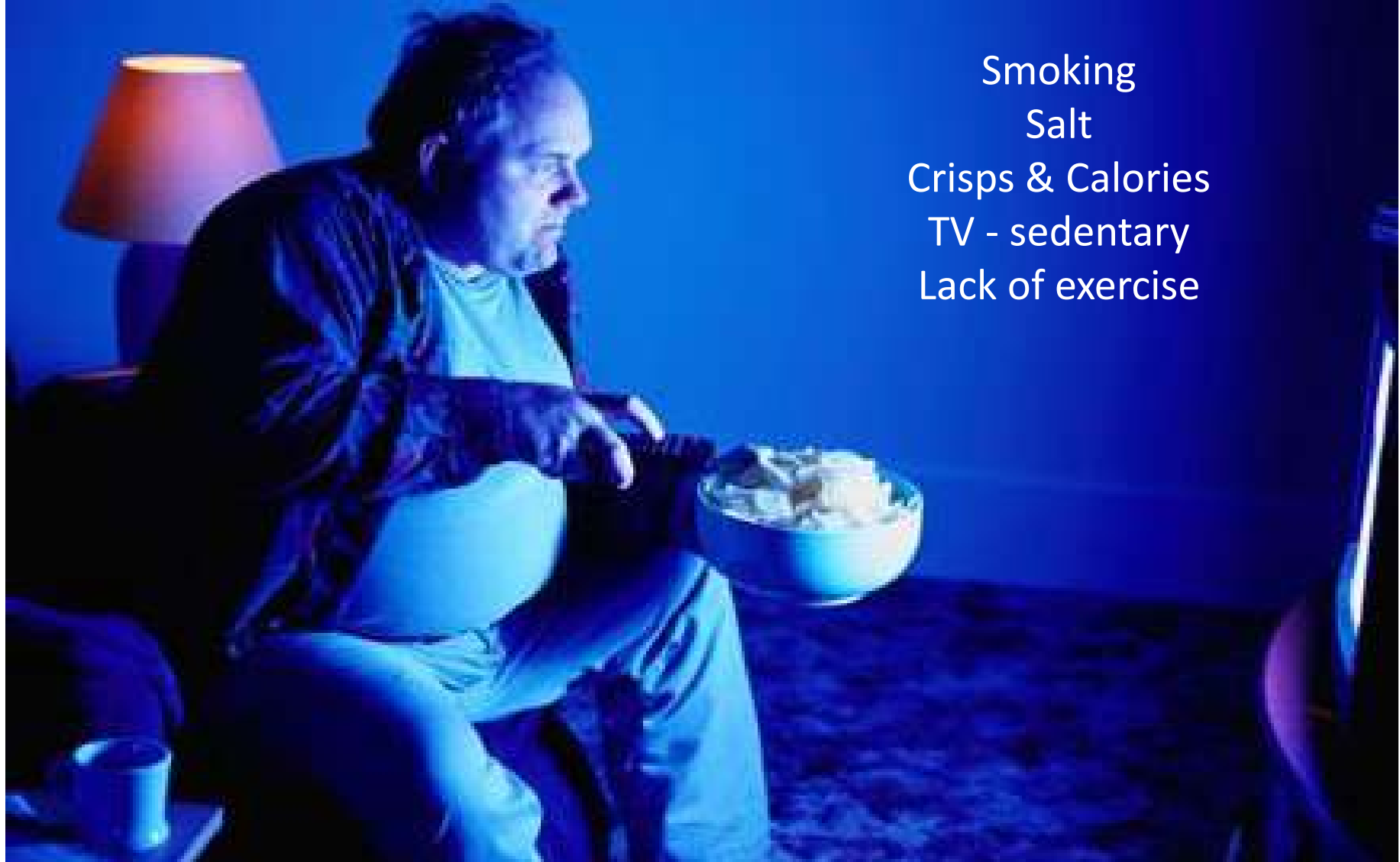
Regular Exercise

Never Smoke



Alcohol in Moderation

**There's no such thing as a sudden heart attack;
it requires years of preparation**



Smoking
Salt
Crisps & Calories
TV - sedentary
Lack of exercise

Prevention is Always Better than Cure

November 2016: “Around 50 million people in the EU suffer from chronic diseases. More than half a million people of working age die prematurely from them every year, representing a cost of some EUR 115 billion in lost productivity. Those deaths are avoidable.”

November 2017: “Spending only 3% of our health budgets on prevention, compared with 80% on the treatment of diseases, is simply not enough”

EU Commissioner for Health, Vytenis Andriukaitis

November 2018: “People are spending too many years in poor health - much ill health could be prevented.”

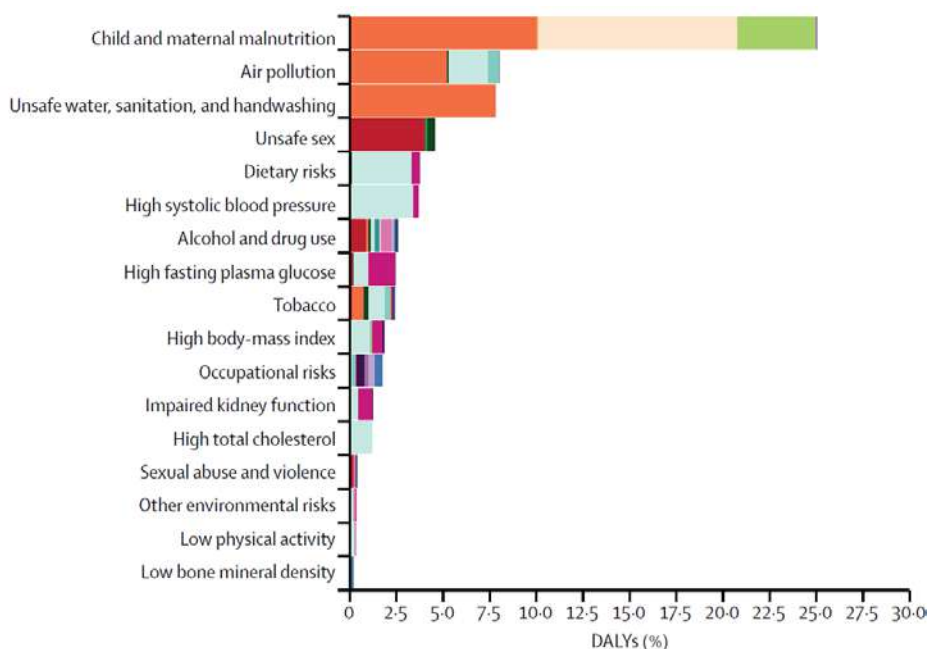
“Prevention can help to meet the UK’s Aging Society Grand Challenge - to ensure that people can enjoy at least 5 extra healthy, independent years of life by 2035”

Rt Hon Matt Hancock Secretary of State for Health & Social Care UK

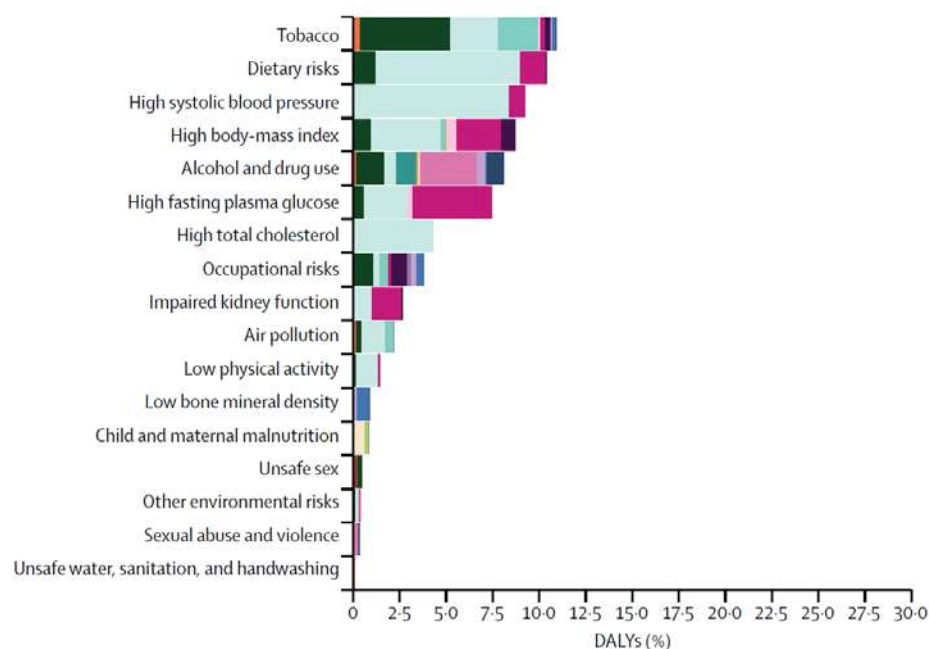
In the Developed World, the Traditional Public Health Challenges of Undernutrition, Unsafe Food and Water Have Been Largely Replaced by Risks of Poor Diet – Overconsumption of Foods High in Fat, Sugar and Salt, and not Enough Fruit, Vegetables, Fibre and Oily Fish

Top Risk Factors for Disease Burden as Measured by Attributable Disability-Adjusted Life-Years (DALYs)

Lowest Quintile Socio-Demographic Index Countries



Highest Quintile Socio-Demographic Index Countries



- HIV/AIDS and tuberculosis
 ■ Diarrhoea, lower respiratory infections, and other common infectious diseases
■ Maternal disorders
■ Neonatal disorders
- Nutritional deficiencies
 ■ Other communicable, maternal, neonatal, and nutritional diseases
■ Neoplasms
■ Cardiovascular diseases
- Chronic respiratory diseases
 ■ Cirrhosis and other chronic liver diseases
■ Digestive diseases
■ Neurological disorders
- Mental and substance use disorders
 ■ Diabetes, urogenital, blood, and endocrine diseases
■ Musculoskeletal disorders
■ Other non-communicable diseases
- Transport injuries
 ■ Unintentional injuries
■ Self-harm and interpersonal violence



Leading 30 Risk Factors by Attributable DALYs Globally in 2016

Nutritional Risk Factor

Consequence of Poor Nutrition

Rank	Males	Females
1	Smoking	High blood pressure
2	High blood pressure	High body-mass index
3	Low birth weight & short gestation	High fasting plasma glucose
4	Alcohol use	Low birth weight & short gestation
5	High fasting plasma glucose	Child growth failure
6	High body-mass index	Ambient particulate matter
7	Ambient particulate matter	High total cholesterol
8	High total cholesterol	Household air pollution
9	Child growth failure	Smoking
10	Household air pollution	Unsafe sex
11	Low fruit	Impaired kidney function
12	Low whole grains	Low whole grains
13	Impaired kidney function	Unsafe water
14	Low nuts and seeds	Iron deficiency
15	high sodium	Low fruit
16	unsafe water	Unsafe sanitation
17	unsafe sex	Low nuts and seeds
18	Drug use	High sodium
19	low vegetables	Alcohol use
20	Low omega 3	No access to handwashing facility
21	Unsafe sanitation	Second-hand smoke
22	Occupational injury	Low vegetables
23	No access to handwashing facility	Low omega 3
24	Occupational carcinogens	Low physical activity
25	Low physical activity	Drug use
26	Iron deficiency	Low fibre
27	Low fibre	Occupational ergonomic
28	Lead	Suboptimal breastfeeding
29	Low legumes	Occupational carcinogens
30	Second-hand smoke	Low bone mineral density

Prevalence of Nutritional Excesses & Deficiencies, and Resultant Deaths & Disease Burdens

Risk	Summary Exposure Values (%)		Deaths (in 1,000's)	DALYs (in 1,000s)
	Male	Female		
Nutritional Excesses				
Diet High in Calories / High BMI	10	11	4,525	135,381
Diet High in Sodium	40	36	2,310	47,567
Diet High in Trans Fatty Acids	4	5	224	5,111
Diet High in Processed Meats	6	4	140	3,196
Diet High in Red Meat	25	11	32	1,247
Diet High in Sugar Sweetened Beverages	18	13	23	780
Total for Excesses			7,254	193,282
Nutritional Deficiencies				
Diet Low in Whole Grains	59	61	2,499	62,596
Diet Low in Fruit	62	57	2,361	60,982
Diet Low in Nuts & Seeds	81	82	1,879	49,493
Diet Low in Iron		9	20	35,850
Diet Low in Vegetables	42	43	1,519	35,489
Diet Low in Marine Omega 3 PUFAs	77	79	1,539	33,347
Diet Low in Fibre	53	62	888	20,119
Diet Low in Legumes	45	52	672	14,214
Diet Low in Polyunsaturated Fatty Acids (PUFAs)	40	39	404	8,352
Diet Low in Calcium	57	61	160	3,353
Diet Low in Milk	83	84	123	2,582
Total for Excesses			12,064	326,377
Consequences of Excesses & Deficiencies				
High Systolic Blood Pressure	26	25	10,455	212,105
High Fasting Plasma Glucose	3.7	3	5,612	144,088
High Total Cholesterol	17	19	4,393	93,844
Totals for Consequences			20,460	450,037

*Global Burden Disease
2016 Risk Factors
Collaborators. Lancet 2017;
390: 1345-422*

Traffic Light System

Front of Pack Labelling for Nutritional Excesses

UNDERSTANDING THE TRAFFIC LIGHT SYSTEM

	Sugars	Fat	Saturates	Salt
What is HIGH per 100g?	Over 15g	Over 20g	Over 5g	Over 1.5g
What is MEDIUM per 100g?	Between 5g and 15g	Between 3g and 20g	Between 1.5g and 5g	Between 0.3g and 1.5g
What is LOW per 100g?	5g and below	3g and below	1.5g and below	0.3g and below

Source: Food Standards Agency

Each 1/2 pack serving contains

MED	LOW	MED	HIGH	MED
Calories	Sugar	Fat	Sat Fat	Salt
353	0.9g	20.3g	10.8g	1.1g
18%	1%	29%	54%	18%

of your guideline daily amount



“Eating loads of fruit and vegetables (10 portions a day) may give us longer lives - such eating habits could prevent 7.8 million premature deaths each year”



“The benefits of fruit and vegetables may be due to the complex network of nutrients that they hold”

IOEA

International Journal of Epidemiology, 2017, 1-28
doi: 10.1093/ije/dyx019
Original article



Original article

Fruit and vegetable intake and the risk of cardiovascular disease, total cancer and all-cause mortality—a systematic review and dose-response meta-analysis of prospective studies

Dagfinn Aune^{1,2,3*}, Edward Giovannucci^{4,5,6}, Paolo Boffetta⁷, Lars T. Fadnes⁸, NaNa Keum^{5,6}, Teresa Norat², Darren C. Greenwood⁹, Elio Riboli², Lars J. Vatten¹ and Serena Tonstad¹⁰

What about the Quality of Fruits, Vegetables, Grains & Legumes?

- Selection for rapid growth & appearance rather than for the complex network of nutrients
- Increased atmospheric CO₂ causes reduced crop protein, minerals & vitamins.

Should New Breeding Techniques (NBTs) such as the CRISPR-Cas Gene Editing Tool be Considered as Mitigating Solutions?

- Cereal seeds with increased fibre & minerals
- Enhanced vitamin C and carotenoids in tomatoes content in tomatoes
- Camelina plants engineered to accumulate long chain omega-3-PUFAs in their seeds

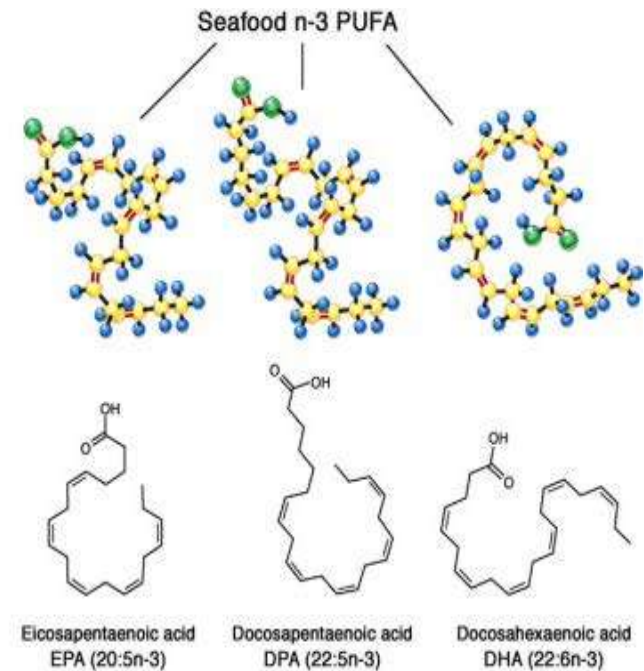
Benefits of Consumption of Oily Fish and/or Elevated Plasma Levels of Long Chain Omega-3-PUFAs (DHA & EPA)

Protection from

- Heart attacks and strokes
- Cancer
- Diabetes mellitus

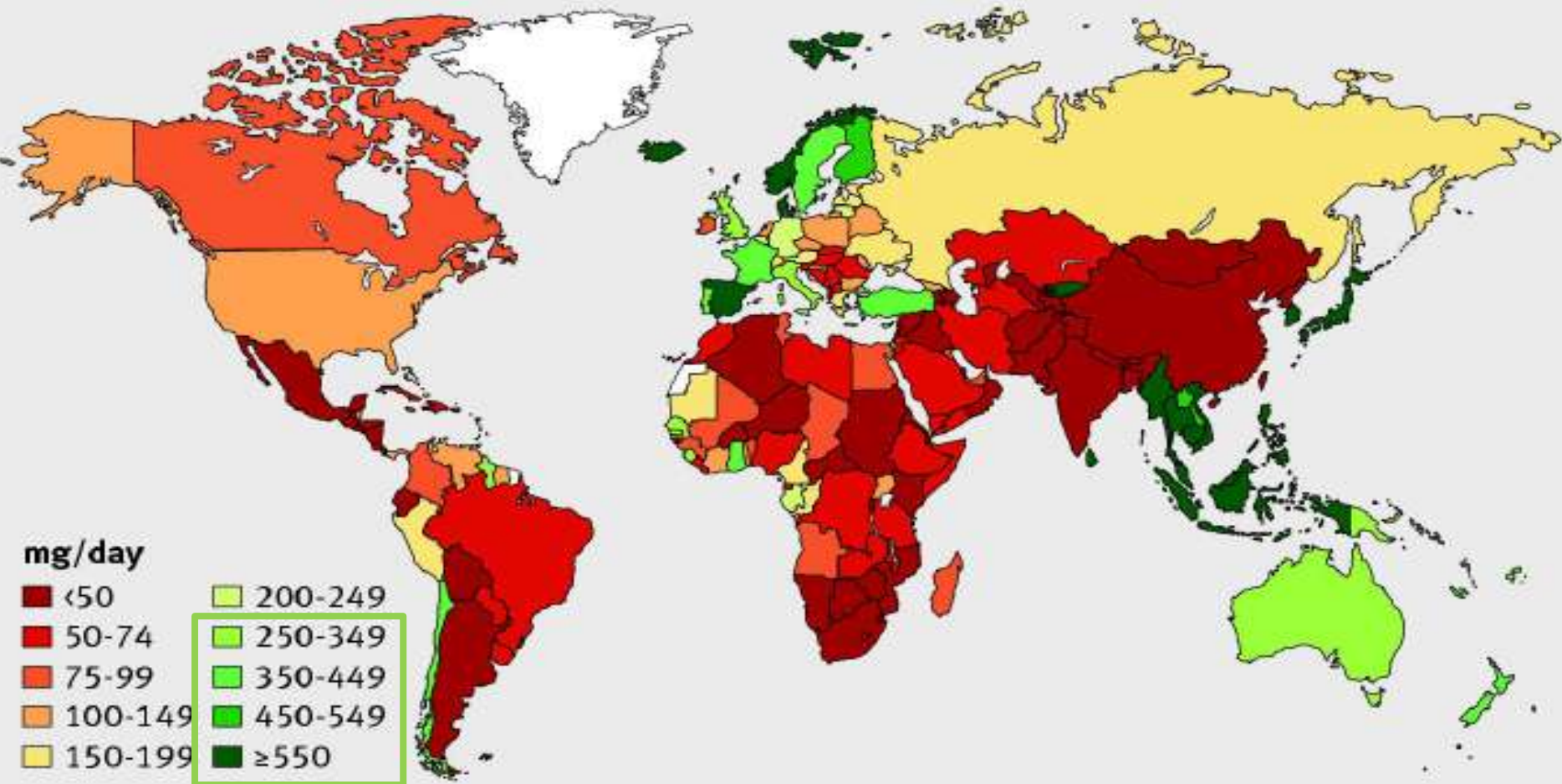
Improved

- Brain health
- Vision
- Muscle and joint health



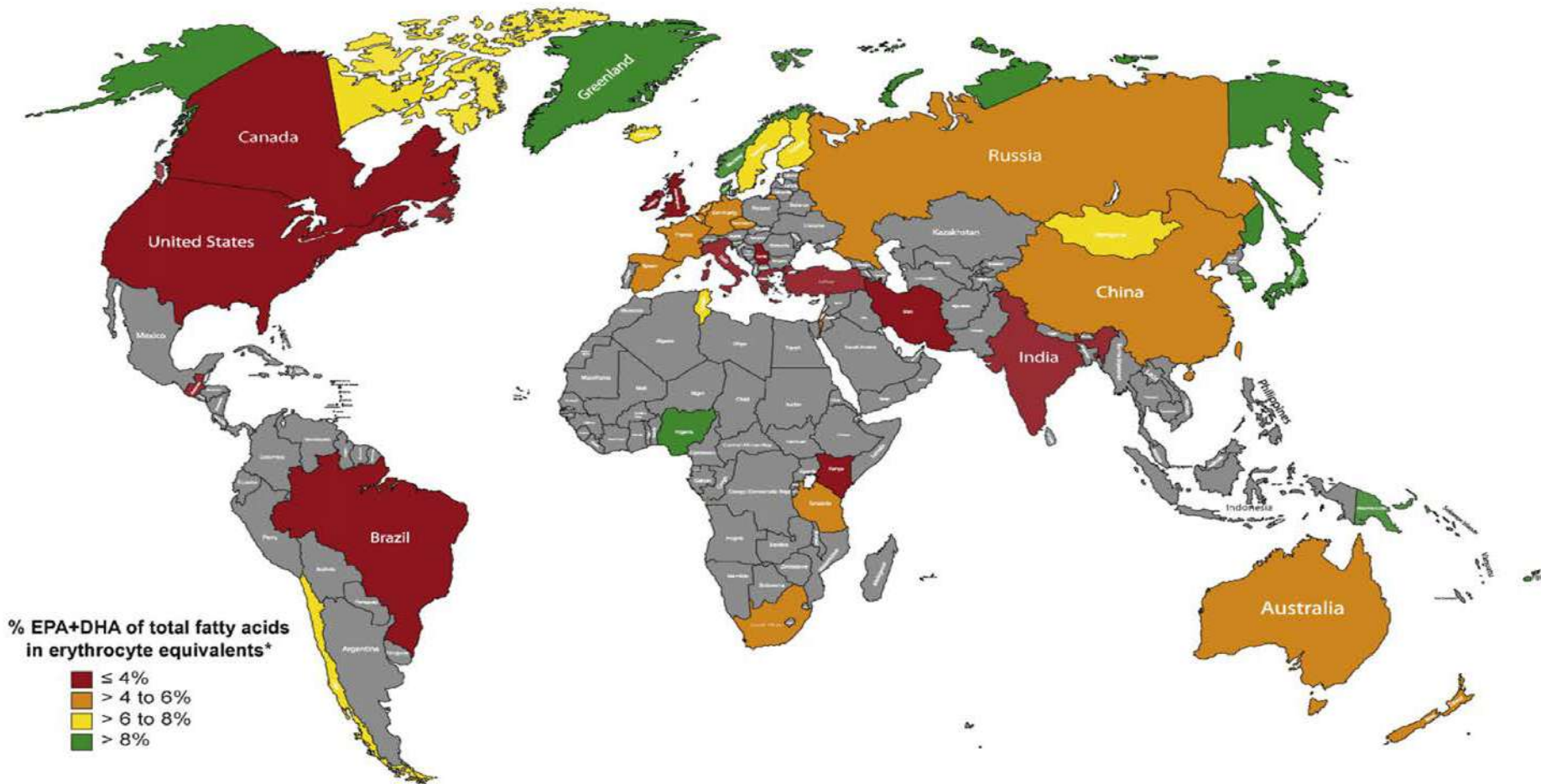
Only 20% of World's Populations Consume Recommended Intake of Seafood Derived Omega-3-PUFAs (≥ 250 mg/day)

Seafood omega 3 fat intake (mg/day) for adults ≥ 20 years (2010)



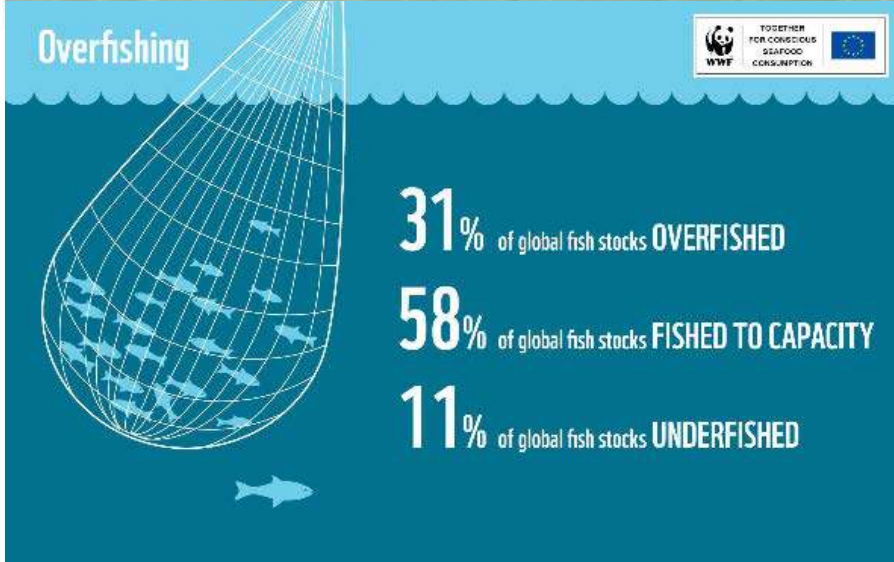
Global Blood Levels of EPA and DHA in Adults

(Omega-3-Index = sum of EPA+DHA as a percentage of total fatty acids in erythrocyte equivalents)



Fall in Fish Catch Threatens Human Health

Golden CD et al Nature June 2016; 534:317-20

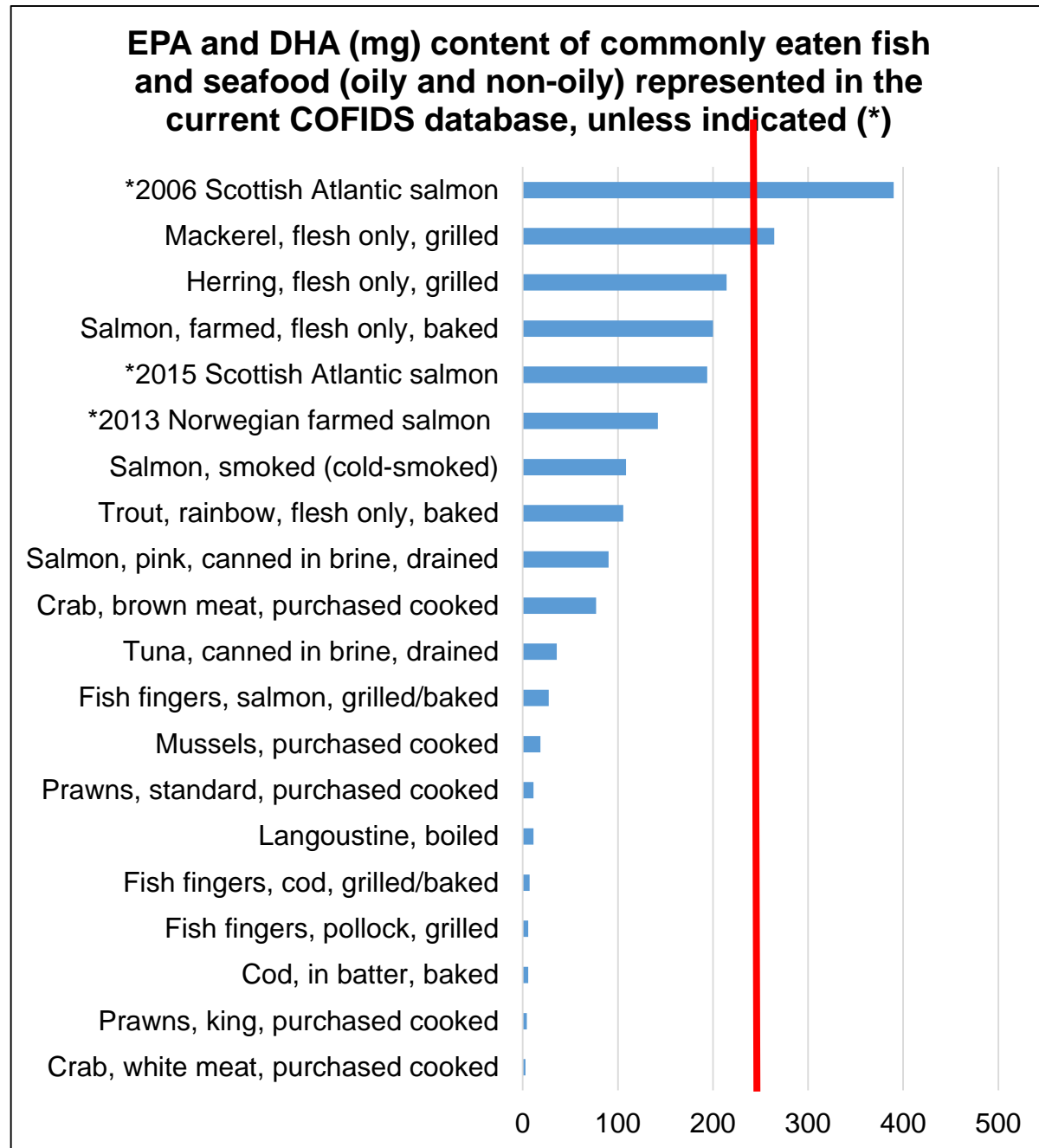


Fisheries Challenged by Rising Cost of Fish Oil in Feed

Financial Times April 2017



**Dietary
Recommendations
of
“One Oily Fish /
Week Delivering
250mg DHA and
EPA / Day”
Are Out of Date**



Are Supplements the Solution?

Omega-3-PUFA supplement trials have not consistently provided the same benefits as oily fish.



Omega-3 fatty acids for the primary and secondary prevention of cardiovascular disease (Review)

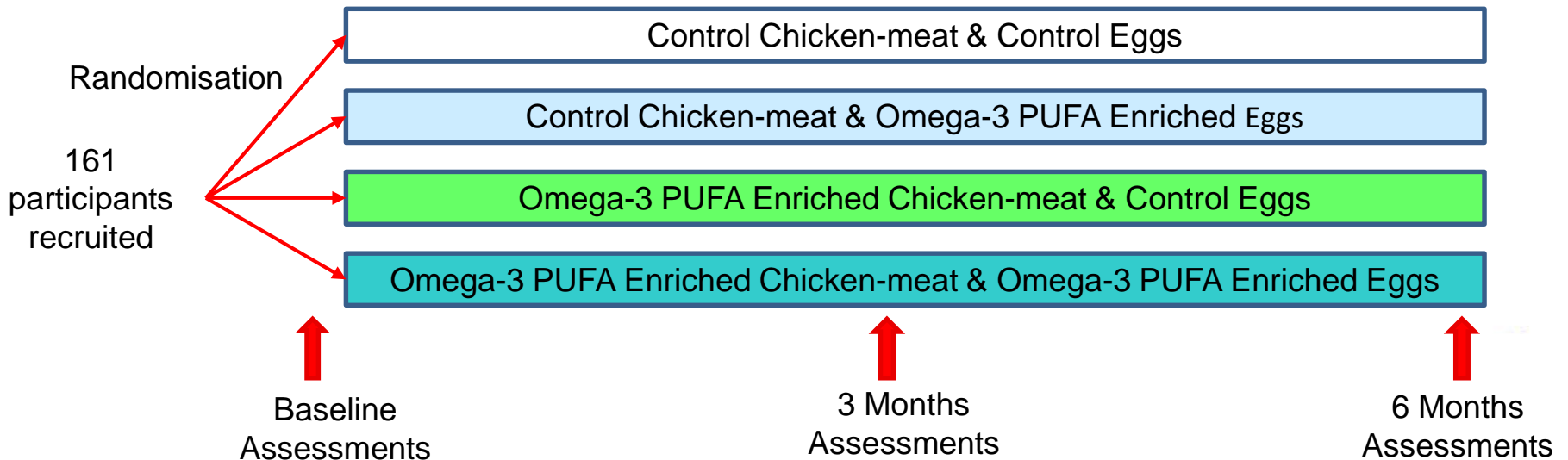
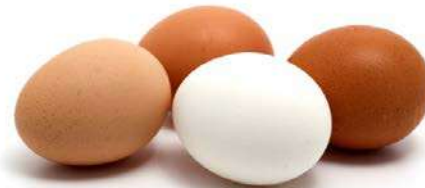
Abdelhamid AS, Brown TJ, Brainard JS, Biswas P, Thorpe GC, Moore HJ, Deane KHO, AlAbdulghafoor FK, Summerbell CD, Worthington HV, Song F, Hooper L

Authors' conclusions

This is the most extensive systematic assessment of effects of omega-3 fats on cardiovascular health to date. Moderate- and high-quality evidence suggests that increasing EPA and DHA has little or no effect on mortality or cardiovascular health (evidence mainly from supplement trials).

An Alternative Solution

Natural enrichment of commonly eaten foods such as chicken-meat and eggs with algae-sourced omega-3 PUFAs. (Devenish OmegaPro)



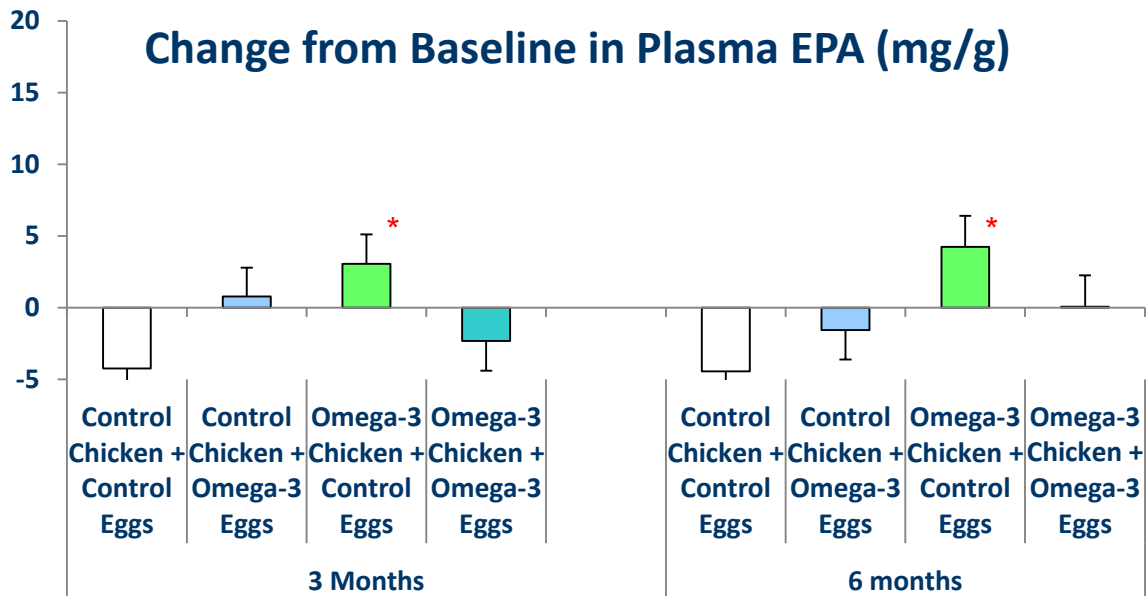
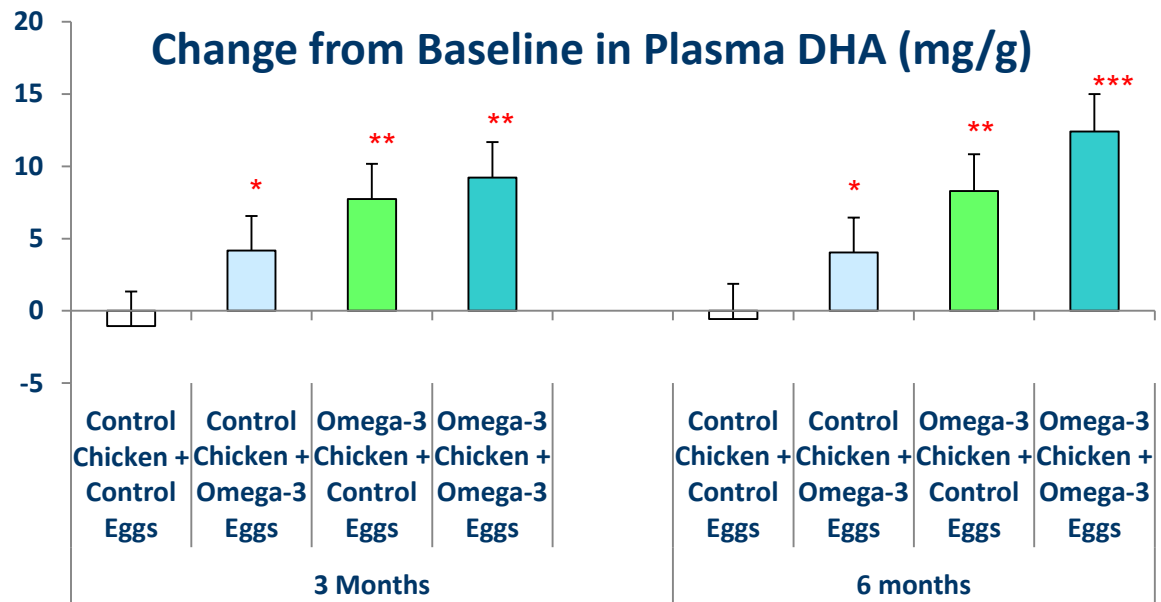
Clinically and Statistically Significant Increases in Plasma DHA & EPA Levels with Eating Omega-3 PUFA Enriched Chicken and Eggs

Compared to the group eating both control chicken and control eggs

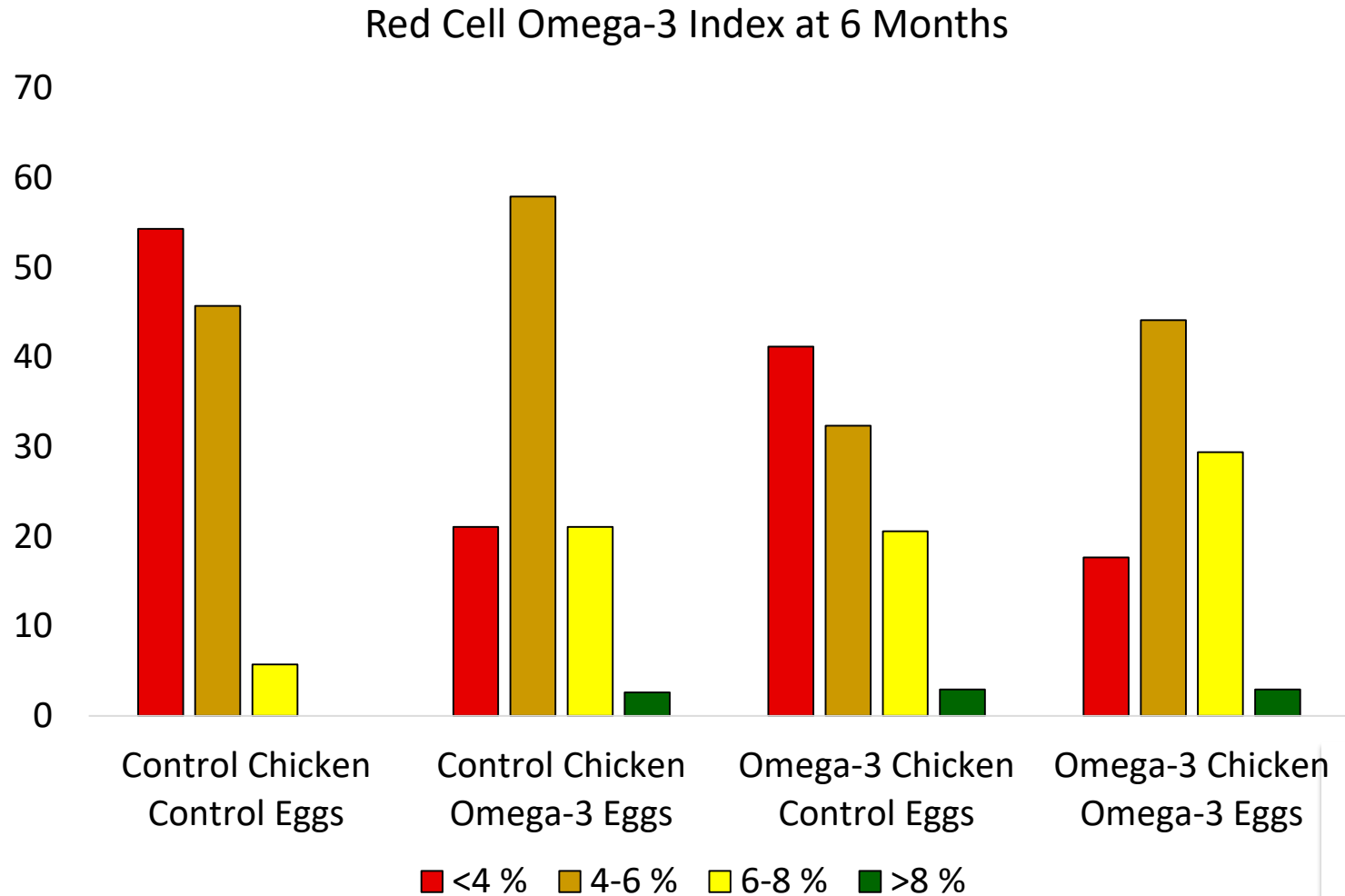
* $p < 0.05$

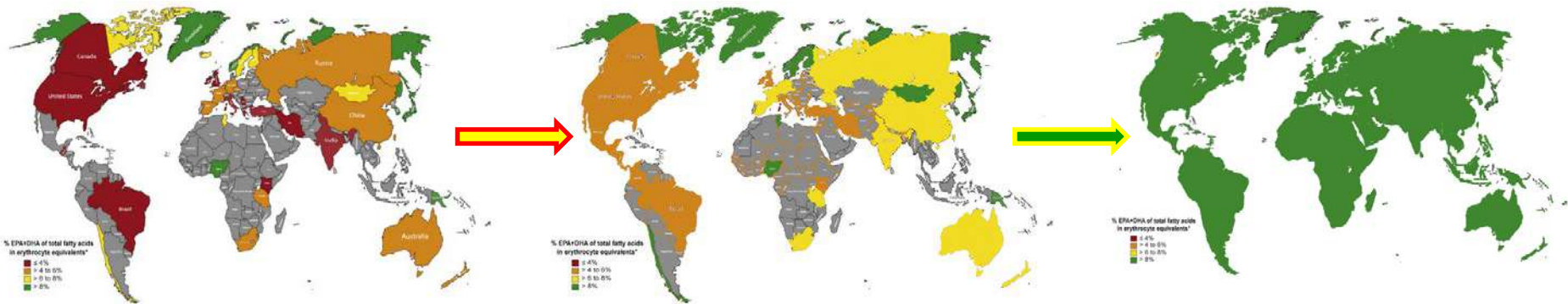
** $p < 0.01$

*** $p < 0.0001$



Eating Omega-3 PUFA Enriched Chicken-Meat & Eggs Resulted in Substantial Shift in the Distribution of the Omega-3-Index in a Healthy Irish Population





Recolouring the Omega 3 Map Green will Require Multiple Contributing Sources

	Wild Oily Fish	Farmed Oily Fish	Naturally Enriched Meats	Naturally Enriched Eggs	Biofortified Food Coatings	Biofortified Dairy Foods (Milk, Cheese)	Supplements
EPA+DHA Content (mg/100g or mg/pill)	500-2000	0-2000	100-250	100-250	100-250	20-100	250-4000
Sustainable Environmentally Friendly Source	++ (at limit)	++	++++	++++	++ / ??	++ / ??	++ / ??
Freedom from Toxins	++ / ??	++ / ??	++++	++++	++ / ??	++ / ??	++ / ??
Stability (Protected from Oxidant Damage)	++++	++++	++++	++++	??	??	++ / ??
Bioavailability	++++	++++	++++	++++	??	??	++ / ??
Component of Healthy Balanced Diet	++++	++++	++++	++++	++	+++	--
Likely Lifelong Adherence	++	++	++++	++++	++	+++	--



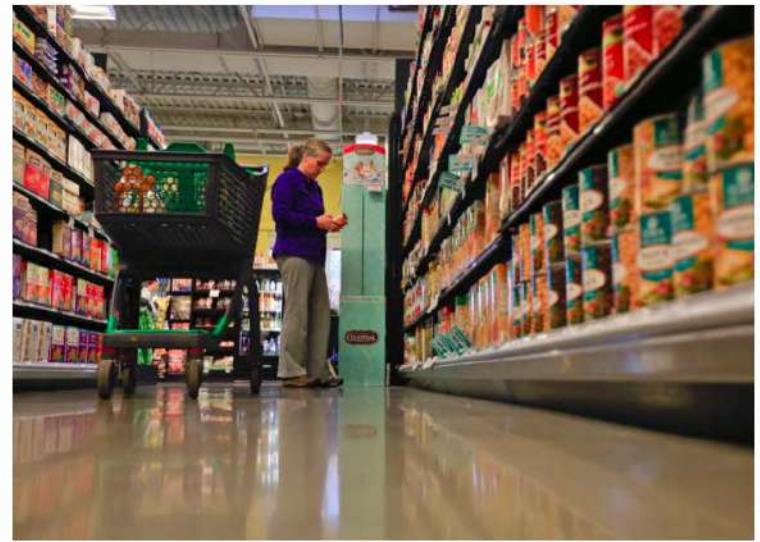
162,191 views | Dec 13, 2017, 08:00am

10 Food Trends That Will Shape 2018



Phil Lempert Contributor
Food & Agriculture
Cover issues and trends in the food, retail and agriculture sectors.

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“In 2018, look for EPA and DHA omega-3s to explode and become pervasive ingredients in all food and beverage products, for all consumers, from infants to seniors.”

Potential for Front of Pack Labeling for Beneficial Nutrients such as Long Chain Omega-3 FAs

Each 120 g serving contains

40 mg DHA + EPA	15% of guideline daily amount
125 mg DHA + EPA	50% of guideline daily amount
300 mg DHA + EPA	15% of guideline weekly amount
1 g DHA + EPA	60% of guideline weekly amount

Conclusions

- Poor dietary habits, particularly low intakes of healthy foods, are leading risk factors for morbidity & mortality.
- Ending malnutrition will require comprehensive food system interventions to promote the production, distribution and consumption of healthy foods.
- Greater focus of EU Agri-Food interventions on;
 - Improved food quality
 - Reduced added salt, sugar and trans fatty acids
 - Protective micronutrients within a whole food matrix (fibre, minerals, vitamins and omega-3-PUFAs)
 - Clear labeling of advantageous nutrients in addition to disadvantageous components