

ALICE STANTON - The role of meat in diet and health

Leroy et al. 2023

Featured Article

The role of meat in the human diet: evolutionary aspects and nutritional value

Frédéric Leroy,[†] Nick W. Smith,[‡] Adegbola T. Adesogan,^{||} Ty Beal,^{§¶} Lora Iannotti,^{**} Paul J. Moughan,[‡] and Neil Mann^{††}

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^{††}School of Agriculture and Food, FVAS, University of Melbourne, Victoria, Australia

Implications

- Aspects of human anatomy, digestion, and metabolism diverged from other primates, indicating evolutionary reliance on, and compatibility with, substantial meat intake. Implications of a disconnect from evolutionary dietary patterns may contribute to today's burden of disease, increasing the risk for both nutrient deficiencies and chronic diseases.
- Meat supplies high-quality protein and various nutrients, some of which are not always easily obtained with meat-free diets and are often already suboptimal or deficient in global populations. Removal of meat comes with implications for a broad spectrum of nutrients that need to be accounted for, whereas compensatory dietary strategies must factor in physiological and practical constraints.
- Although meat makes up a small part (<10%) of global food mass and energy, it delivers most of the global vitamin B12 intake and plays a substantial role in the supply of other B-vitamins, retinol, long-chain omega-3 fatty acids, several minerals in bioavailable forms (e.g., iron and zinc), and a variety of bioactive compounds with health-improving potential (e.g., taurine, creatine, and carnosine).

- As a food matrix, meat is more than the sum of its individual nutrients. Moreover, within the diet matrix, it can serve as a keystone food in food-based dietary interventions to improve nutritional status, especially in regions that rely heavily on cereal staples.
- Efforts to lower global meat intake for environmental or other reasons beyond a critical threshold may hinder progress towards reducing undernutrition and the effects this has on both physical and cognitive outcomes, and thereby stifle economic development. This is particularly a concern for populations with increased needs and in regions where current meat intake levels are low, which is not only pertinent for the Global South but also of relevance in high-income countries.

Key words: evolutionary diets, health, micronutrients, nutrition, Paleolithic, protein

Introduction

Historically and from an evolutionary perspective, meat has been cherished by human communities as a nutritious and highly symbolic food, against a 3-million-year background of biosocial needs. Whenever intake was low, this was mostly due to limited access and availability or because of ideological and religious reasons. Today, however, arguments for a widespread reduction of meat consumption have emerged from various actors, mostly in high-income countries. Leaving aside the degree of negative impact that meat may have on a variety of factors that relate to human and planetary health (addressed elsewhere in this Issue; Johnston et al., 2023; Thompson et al., 2023), the purpose of the present article is to summarize

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<https://doi.org/10.1093/afv/099>

April 2023, Vol. 13, No. 2

Johnston et al. 2023

Featured Article

Non-communicable disease risk associated with red and processed meat consumption—magnitude, certainty, and contextuality of risk?

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Implications

- Mean global intakes per person of red and processed meats are 51 and 17 g/day respectively. Consumption is lowest in South Asia (7 and 3 g/d), and highest in Central Europe/Asia (114 and 54 g/d).
- While some researchers claim that red meat consumption is intrinsically harmful, the evidence does not support this being the case where intakes are below 75 and 20 g/d, respectively.
- Even beyond these intake levels, only small increases in relative risks are reported (<25%), there is little to no effect on absolute risk, and the certainty of evidence remains low to very low based on the best available summary evidence.
- Importantly the relationship is not necessarily causal - when meat consumption is part of healthy dietary

patterns, harmful associations tend to disappear, suggesting that risk is more likely to be contingent on the dietary context rather than meat itself.

Key words: certainty, meat, mortality, noncommunicable diseases, public health, risk

Introduction

Despite being a foundational part of human evolutionary diets and a source of high-quality protein and bioavailable micronutrients in a global context of nutrient insecurity (see elsewhere in this Special Issue; Leroy et al., 2023), the consumption of red and processed meats is nowadays increasingly discouraged by a vocal group of scientists and organizations. The rationale for this is based on a purported association of their intake with an increased risk of obesity and non-communicable diseases, such as myocardial infarction, stroke, diabetes, and particular cancers. As for most foods, one could assume that there may be compelling evidence for optimal intake levels, balancing the potential benefits and harms of meat as a human food. Such an optimum, however, is difficult to estimate, as the evidence is highly contextual and complex, or even conceptually incorrect to begin with.

A first factor complicating the reliable and universal estimation of optimal intake levels has to do with interpersonal variability, based on differences in genetics, sex, age group,

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<https://doi.org/10.1093/afv/099>

April 2023, Vol. 13, No. 2

- “Too little”?
- “Too much”?

Prof. Alice Stanton

Meat in human health and nutrition - reflections on "too little"/"too much"

Alice Stanton is a clinician-scientist. She is currently a Professor in Cardiovascular Pharmacology at the Royal College of Surgeons in Ireland, and Director of Human Health at Devenish Nutrition. She served on the Committee developing “Ireland’s Agri-food Strategy to 2030” and as an Assembly Member for the Horizon Europe Cancer Mission. She is a Member of the Irish Climate and Health Coalition, and of the World Action against Salt, Sugar, and Health (WASSH). She has delivered many lectures concerning evidence-based healthy diets from sustainable food systems, including the Science Lecture at the 2020 Oxford Farming Conference. **Corresponding author:** astanton@rcsi.ie



Meat in Human Health and Nutrition

Reflections on “Too Little” / “Too Much”

The Importance of Transparent Evidence-Based Health Metrics

Alice V. Stanton

Professor, Royal College of Surgeons in Ireland

&

Director Human Health, Devenish Nutrition

WHO Definition of Healthy Diet

A healthy diet helps to protect against;

Malnutrition in all its forms,

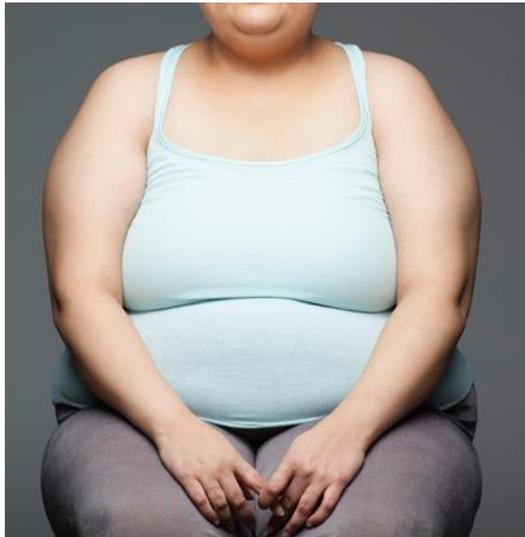
as well as

Non-communicable diseases (NCDs),

such as diabetes, heart disease, stroke and cancer.

Current ~~Double~~ Health Burden of Malnutrition.

Triple



1.9 billion are
Overweight or Obese

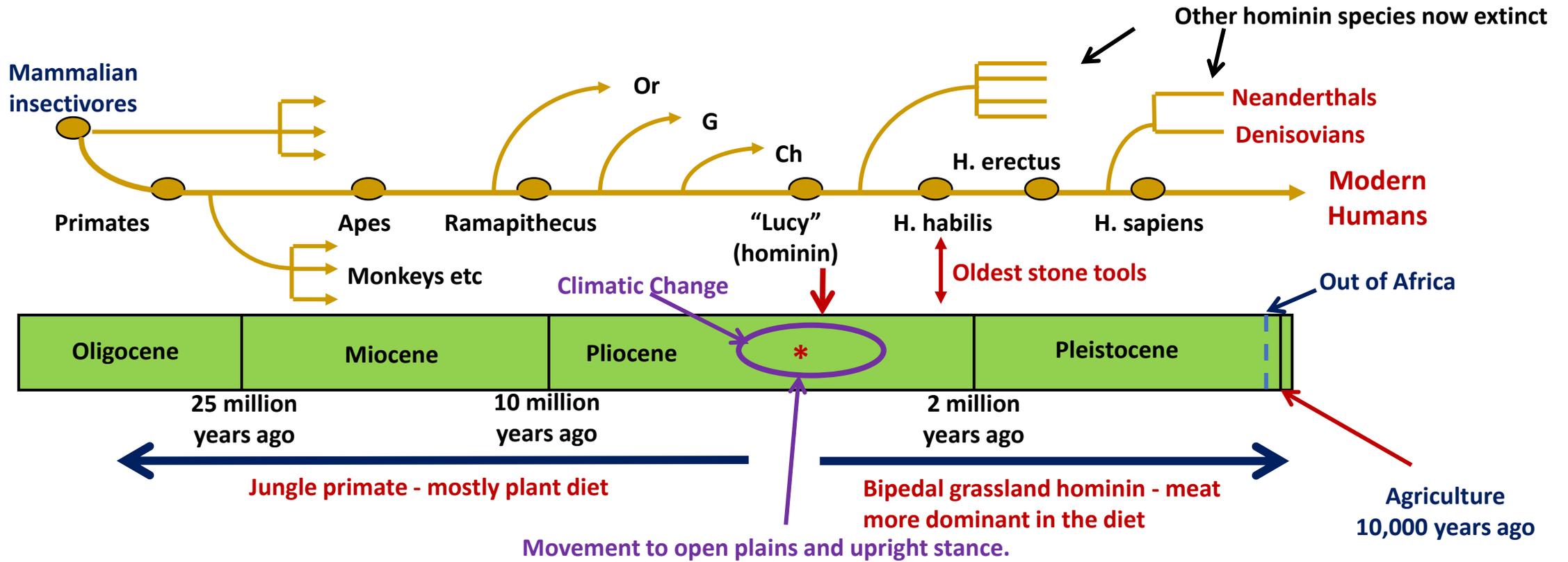


850 million are
Chronically Undernourished

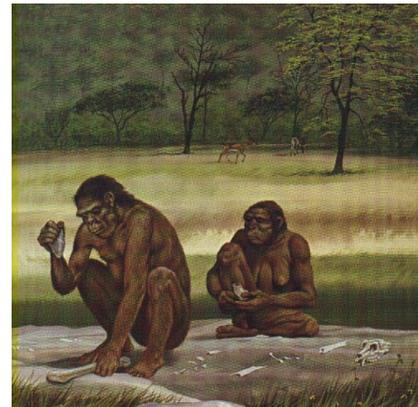


2 billion suffer from
Hidden Hunger

Humans have been Omnivores for 4 Million Years

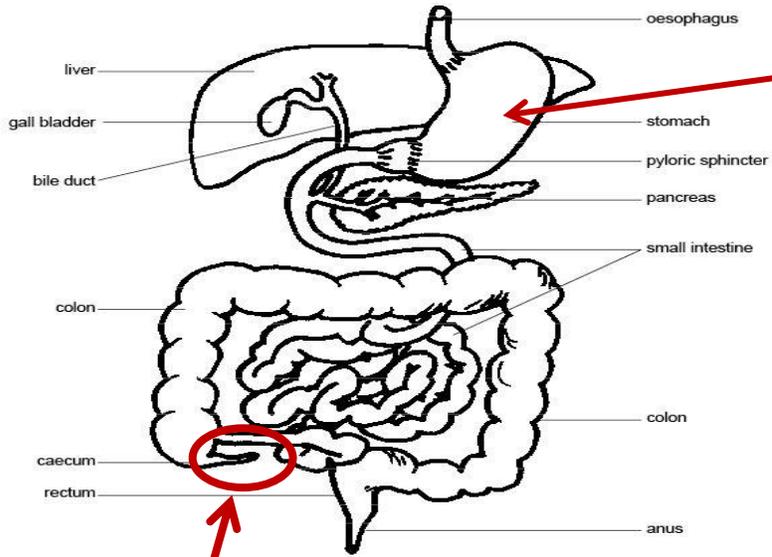


Prior to climate change we were mainly herbivores and living on plants (fruits, foliage, flowers and seeds), much like our closest living relatives today?



Australopithecus Aferensis
(an early hominin, approximately 4 million years ago)

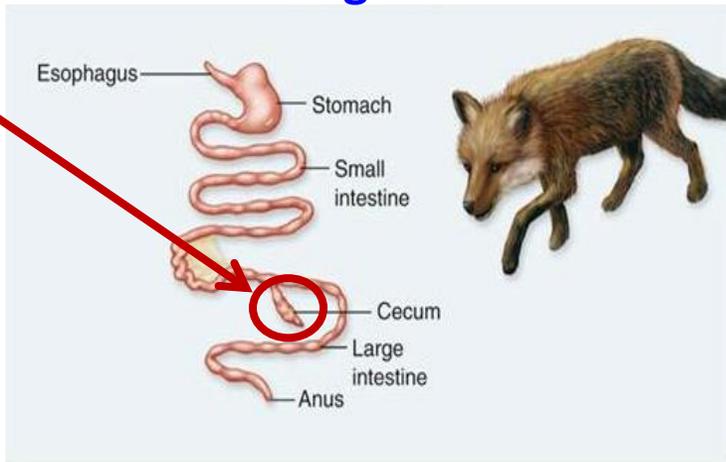
Human digestive structure



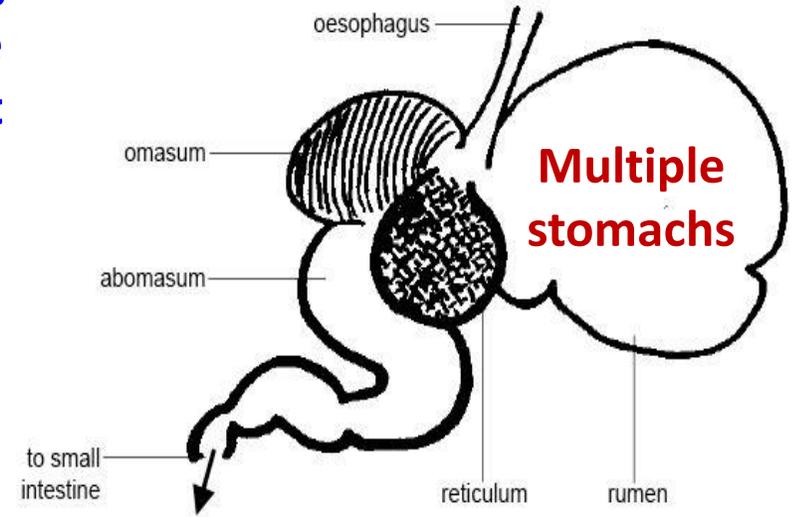
Single acid stomach

Carnivore digestive structure Eg. Fox

Non functional caecum



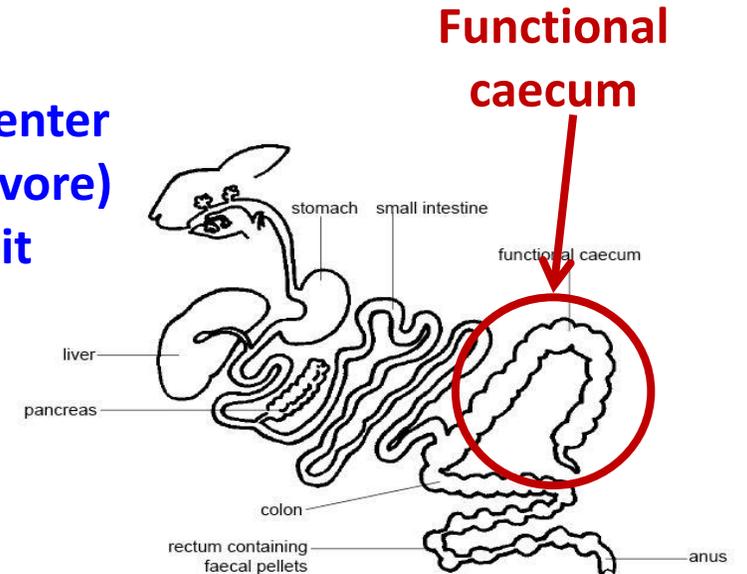
Ruminant gut structure (Fore-gut Folivore) Eg. Cow



Multiple stomachs

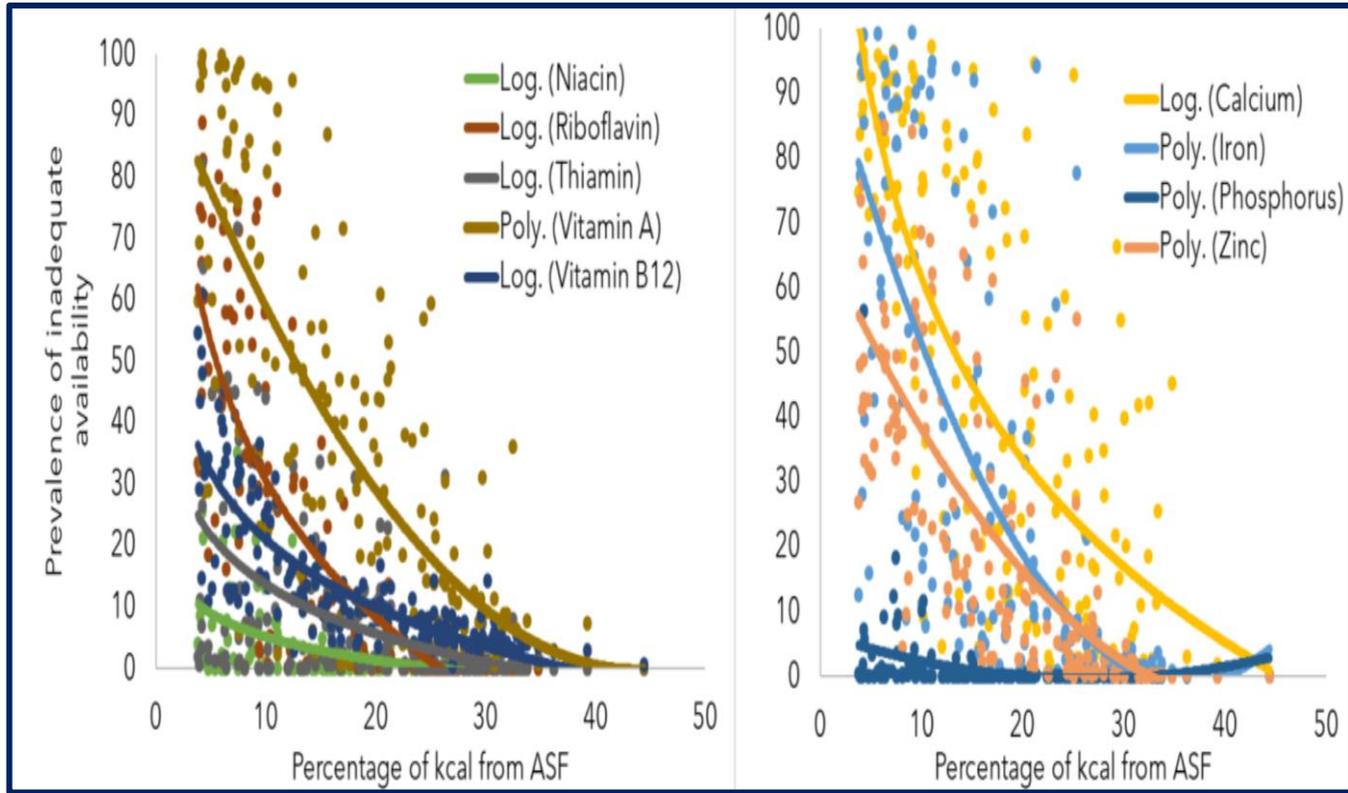
Mammalian herbivores

Caecal fermenter (mid gut folivore) Eg. Rabbit



Functional caecum

Average National Diets Low in Animal-Source Foods Do Not Meet Needs for Essential Micronutrients



Nordhagen S, Beal T & Haddad L. *The role of animal-source foods in healthy, sustainable, and equitable food systems.*
GAIN Discussion Paper 2020

Animal-Source Foods Top Sources of Commonly Lacking Nutrients

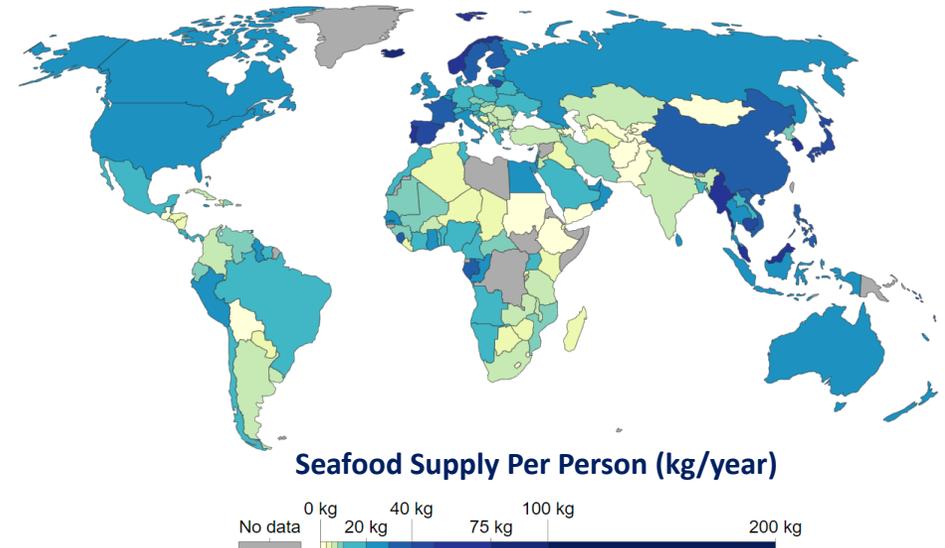
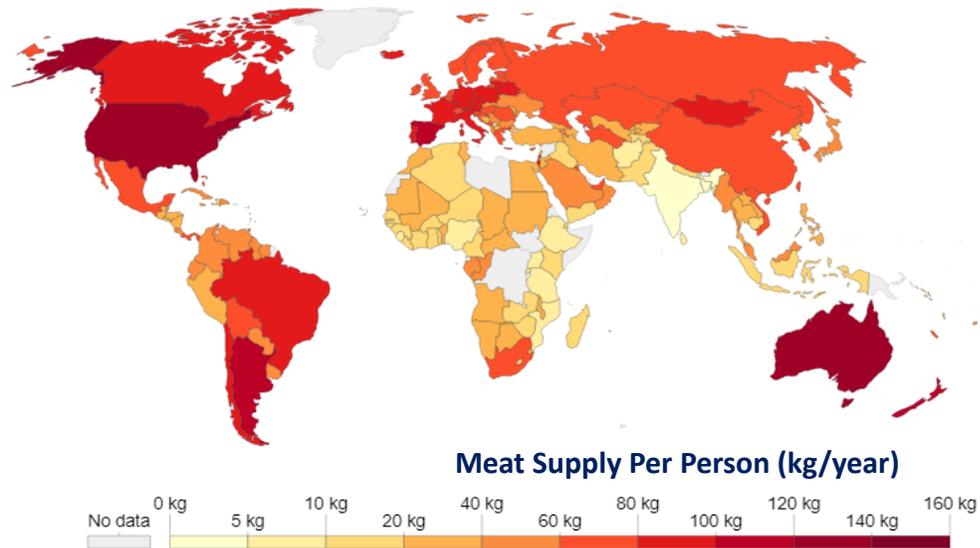
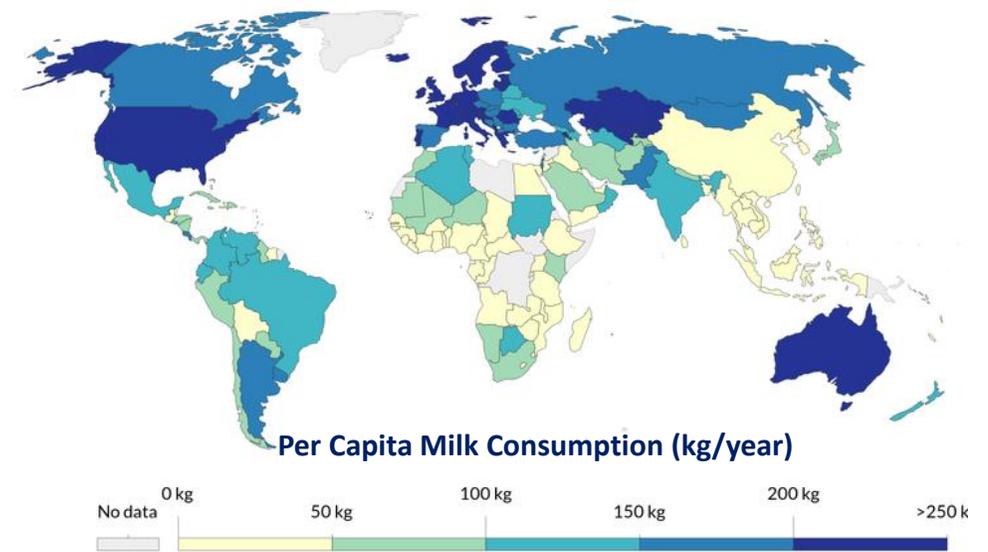
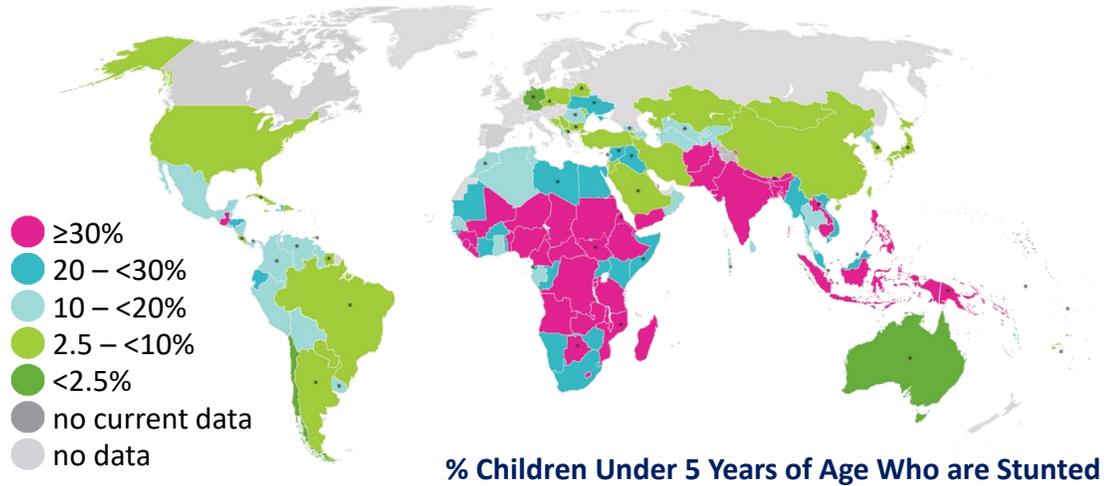
	2+ nutrients	Iron	Zinc	Vitamin A	Calcium	Folate	Vitamin B ₁₂
Liver	Very high	Very high	Very high	Very high	Low	Very high	Very high
Spleen	Very high	Very high	Very high	Low	Low	Low	Very high
Small dried fish	Very high	Very high	Very high	Very high	Very high	Low	Very high
Dark leafy greens	Very high	High	Low	Very high	Very high	Very high	Low
Bivalves	Very high	Very high	Very high	Very high	Very high	Moderate	Very high
Kidney	Very high	Very high	Very high	High	Low	High	Very high
Heart	Very high	Very high	Very high	Low	Low	Moderate	Very high
Crustaceans	Very high	Moderate	Very high	Low	Moderate	Low	Very high
Goat	Very high	Very high	Very high	Low	Low	Low	Very high
Beef	Very high	High	Very high	Low	Low	Low	Very high
Eggs	Very high	Moderate	Very high	Very high	Low	Very high	Very high
Cow milk	Very high	Low	High	Very high	Very high	Low	Very high
Canned fish w/ bones	Very high	Moderate	Very high	Low	Very high	Low	Very high
Lamb/mutton	Very high	High	Very high	Low	Low	Low	Very high
Cheese	Very high	Low	Very high	Very high	Very high	Low	Very high
Goat milk	High	Low	Moderate	High	Very high	Low	Low
Pork	High	Low	Very high	Low	Low	Low	Very high
Yoghurt	Moderate	Low	Low	Low	Very high	Low	Very high
Fresh fish	Moderate	Low	Moderate	Low	Low	Low	Very high
Pulses	Moderate	Moderate	Moderate	Low	Low	Very high	Low
Teff	Moderate	Very high	Moderate	Low	Low	High	Low
Vit A-rich fruit/veg	Low	Low	Low	Very high	Low	High	Low
Other vegetables	Low	Low	Low	Low	Low	Low	Low
Quinoa	Low	Moderate	Moderate	Low	Low	Very high	Low
Canned fish w/o bones	Low	Low	Moderate	Low	Low	Low	Very high
Seeds	Low	Low	High	Low	High	High	Low
Fonio	Low	Moderate	Moderate	Low	Low	Moderate	Low
Chicken	Low	Low	High	Low	Low	Low	High
Other fruits	Low	Low	Low	Low	Low	High	Low
Millet	Low	Moderate	Moderate	Low	Low	Moderate	Low
Unrefined grain prod	Low	Low	Moderate	Low	Low	Moderate	Low
Sorghum	Low	Moderate	Low	Low	Low	Low	Low
Roots/tubers/plantains	Low	Low	Low	Low	Low	Low	Low
Whole grains	Low	Low	Moderate	Low	Low	Low	Low
Nuts	Low	Low	Low	Low	Low	Low	Low
Refined grain products	Low	Low	Low	Low	Low	Low	Low
Refined grains	Low	Low	Moderate	Low	Low	Low	Low

Beal T & Orzenzi F. *Priority micronutrient density in foods.*
Frontiers in Nutrition 2022

Inverse Relationship between Childhood Stunting & Annual Meat, Milk & Seafood Consumption

UNICEF, WHO, World Bank Joint Child Malnutrition dataset, March 2019 edition

UN Food and Agriculture Organization (FAO) 2017



Primary school test scores of children after 5 semesters of receiving animal sourced foods (meat or dairy) were significantly greater than those of the control groups (plant-based foods or no additional nutrition).

Number of schools in two Embu subregions
Two sublocations, eighteen possible schools

Twelve schools selected

Randomisation of schools to feeding groups

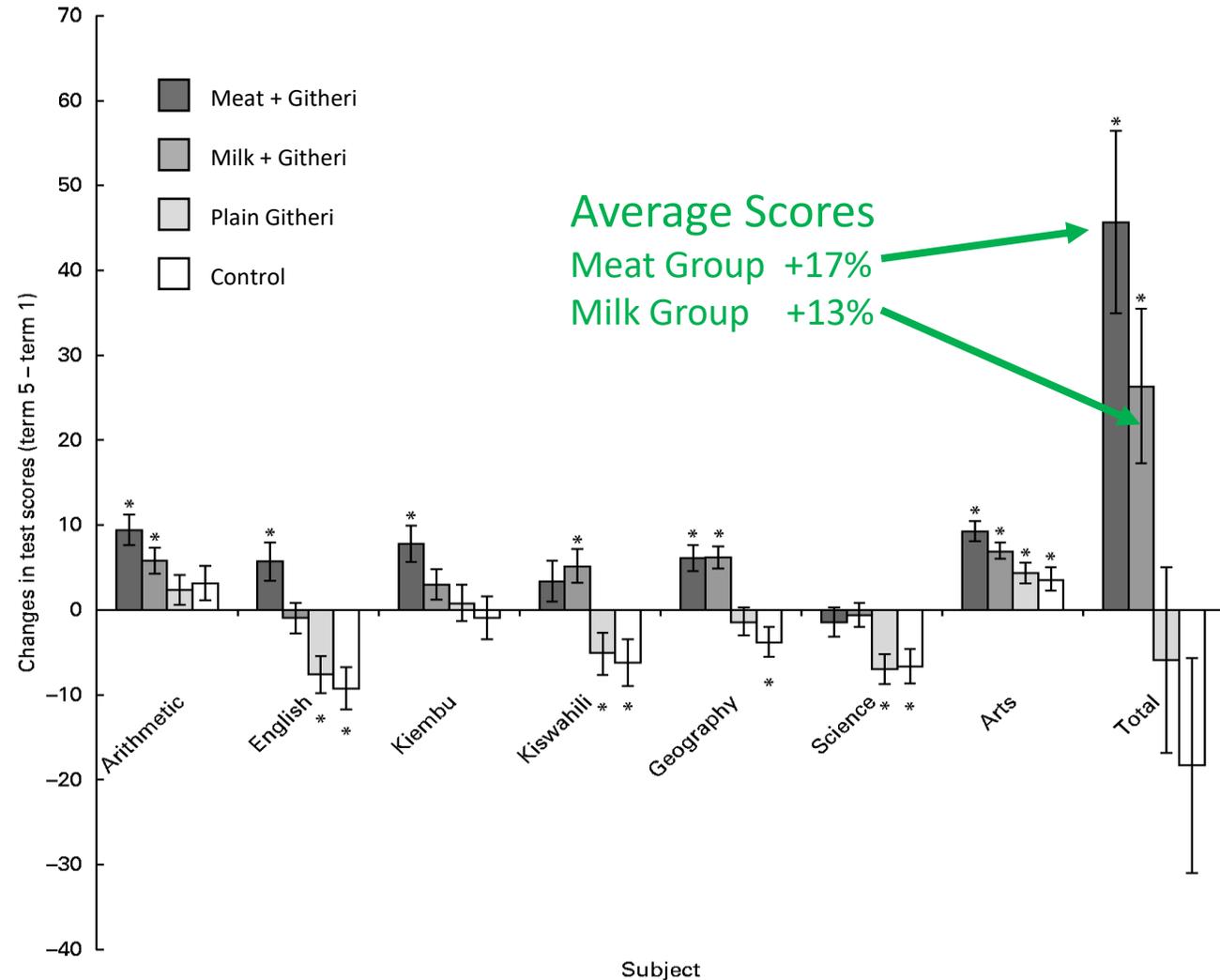
Plain Githeri group
Three schools
Ninety-nine children

Milk group
Three schools
105 children

Meat group
Three schools
Sixty-seven children

Control group
Three schools
Eighty-nine children

Serving size	Githeri + meat 225 g (includes 85 g meat)	Githeri + milk 100 g + 250 ml milk	Plain githeri 230 g + 3.8 g oil
Energy (kJ)	1310	1310	1310
Energy (kcal)	313	313	313
Total protein (g)	21.7	15.2	8.4
Total Fe (mg)	2.94	1.57	3.93
Available Fe (mg)	0.48	0.10	0.20
Total Zn (mg)	2.89	1.66	1.68
Available Zn (mg)	0.44	0.38	0.23
Vitamin B ₁₂ (µg)	1.17	1.04	0.00
Ca (mg)	21.3	306.0	33.8



Hulett et al. Animal source foods have a positive impact on the primary school test scores of Kenyan schoolchildren in a cluster randomised, controlled feeding intervention trial. *Brit J Nutrition* 2014

Low Intake of Animal-Source Foods Also Shown to be Non-Optimal for Longevity



THE
GERONTOLOGICAL
SOCIETY OF AMERICA®

Journals of Gerontology: Medical Sciences
cite as: *J Gerontol A Biol Sci Med Sci*, 2022, Vol. XX, No. XX, 1–7
<https://doi.org/10.1093/gerona/glab334>
Advance Access publication November 27, 2021



Research Report

Animal Protein Intake Is Inversely Associated With Mortality in Older Adults: The InCHIANTI Study

Tomás Meroño, PhD,^{1,2,•} Raúl Zamora-Ros, PhD,^{1,3,*} Nicole Hidalgo-Liberona, PhD,^{1,2,•} Montserrat Rabassa, PhD,¹ Stefania Bandinelli, MD,⁴ Luigi Ferrucci, MD, PhD,^{5,•} Massimiliano Fedecostante, MD,⁶ Antonio Cherubini, MD, PhD,^{6,†,•} and Cristina Andres-Lacueva, PhD^{1,2,†}

International Journal of General Medicine

Dovepress

open access to scientific and medical research

 Open Access Full Text Article

ORIGINAL RESEARCH

Total Meat Intake is Associated with Life Expectancy: A Cross-Sectional Data Analysis of 175 Contemporary Populations

Wenpeng You ^{1,2}, Renata Henneberg¹, Arthur Saniotis^{1,3}, Yanfei Ge^{4,5}, Maciej Henneberg ^{1,6}

24-Feb-2022

Climate Change Poses Potentially Catastrophic Threats to Human Health



Heat & Extreme Weather Events

Endangerment of Global Food Supplies
Droughts & Desertification



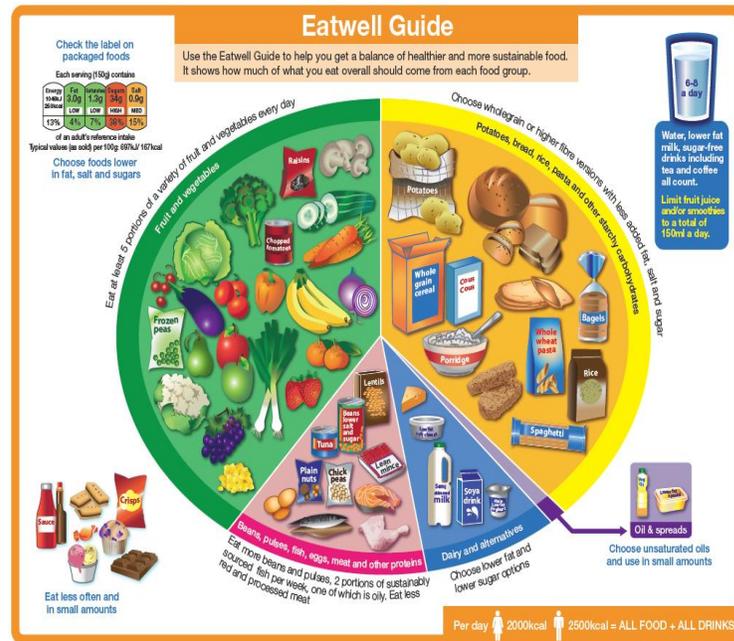
Increased Poverty, Inequalities and Migration



Vector-borne Diseases

The EAT-Lancet Commission Reference Diet Recommended;

- Doubling Intakes of Fruits, Vegetables, Legumes, Nuts & Seeds,
- Halving Meat & Dairy Intakes



BUT

- Predicted annual saving of 11 million deaths
 - due to changed intakes of calories, salt, fruits, vegetables, whole grains & nuts,
 - not due to reduced meat & dairy intakes.
- Nutritional deficiencies caused by the halving of meat & dairy not considered.
- Impact of ultra-processed nature of alternative foods not considered.

Willett W et al. Food in the Anthropocene: the EAT-Lancet Commission on healthy diets from sustainable food systems. Lancet January 2019.

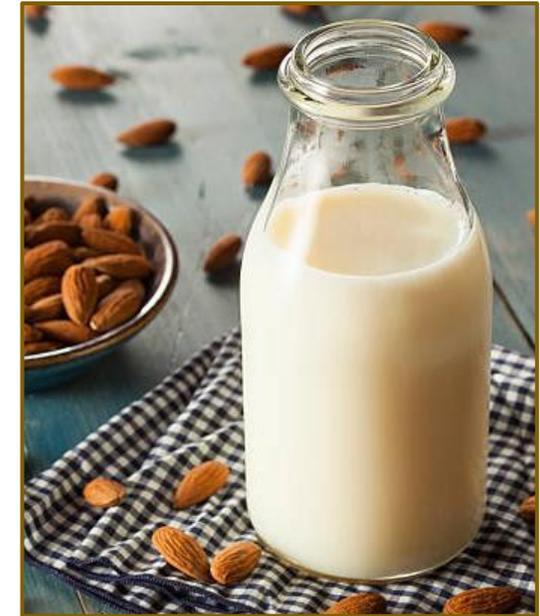
Currently Available Plant-Based Meat & Dairy Alternatives are Ultra-Processed Foods, High in Added Sugars, Salt & Multiple Cosmetic Additives



Same Protein Content as Steak
but 5 times the Salt



Jackfruit & Mushroom Products Typically Have
Even More Sugar & Salt, Multiple Additives, &
<20% of the Protein



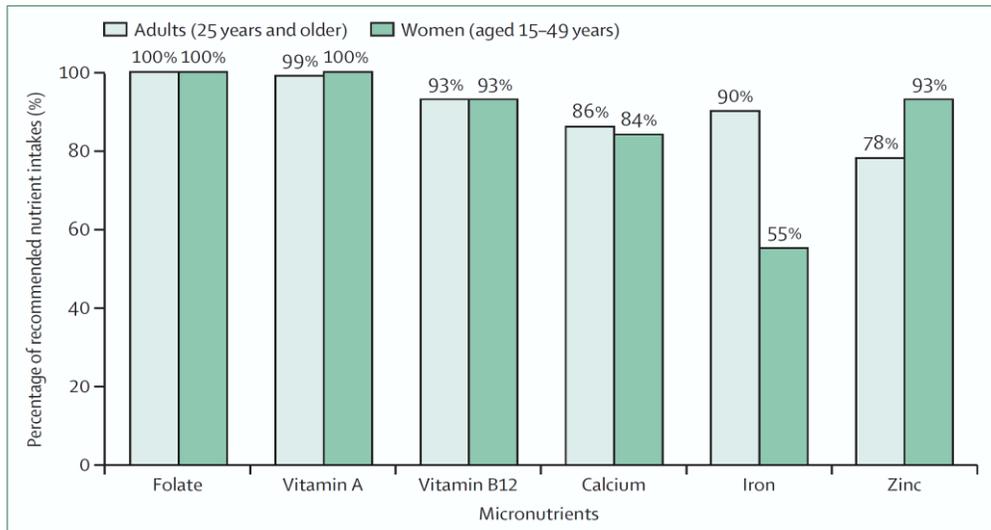
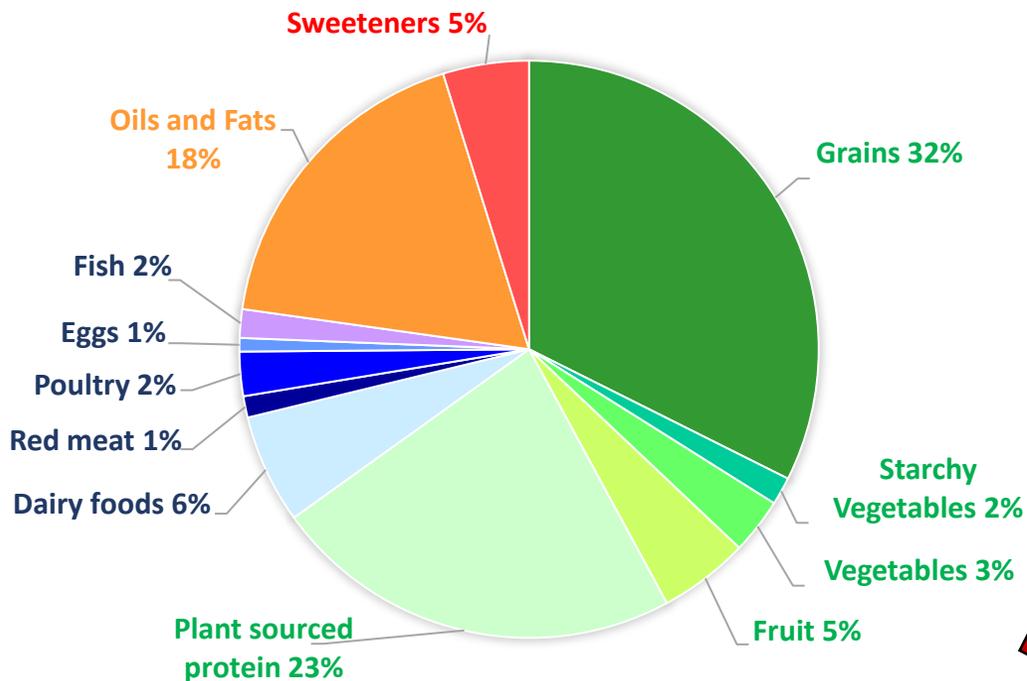
Unsweetened Almond Milk
Twice the Salt
1/8 the Protein, & 1/4 the Zinc

Consumption of Ultra-processed Foods Strongly Associated with Obesity & Salt Excess
- 2 Leading Dietary Risk Factors for NCDs

Cultured Meats and Precision-Fermented Animal-Free Dairy Products are also Ultra-Processed Foods

EAT-LANCET HEALTHY REFERENCE DIET

(% Calories in Daily Diet)



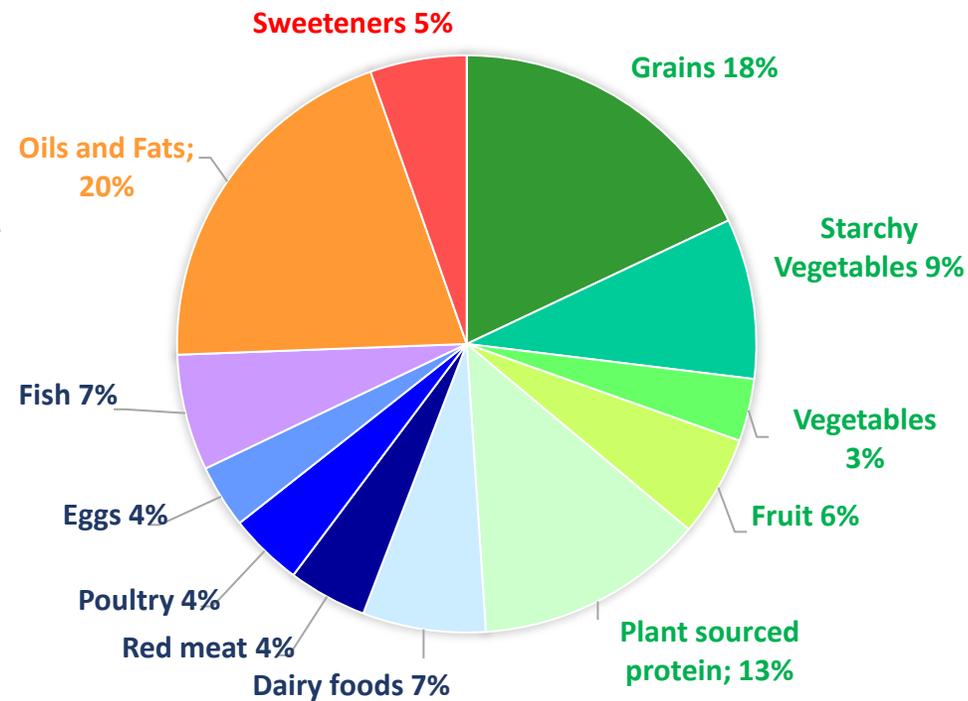
Estimated micronutrient shortfalls of the EAT-Lancet planetary health diet

Ty Beal, Flaminia Ortenzi, Jessica Fanzo

Lancet Planet Health 2023

ADEQUATE DIET FOR ADULTS

(% Calories in Daily Diet)



However Other Recent Publications Continue to Recommend Dramatic Reductions or Exclusion of Animal-Sourced Foods (Particularly Meat) from the Human Diet.

Global burden of 87 risk factors in 204 countries and territories, 1990–2019: a systematic analysis for the Global Burden of Disease Study 2019

GBD 2019 Risk Factors Collaborators*



ARTICLES

<https://doi.org/10.1038/s43016-021-00343-4>

nature
food



Small targeted dietary changes can yield substantial gains for human health and the environment

Katerina S. Stylianou¹✉, Victor L. Fulgoni III² and Olivier Jolliet¹✉

The 2020 report of The *Lancet* Countdown on health and climate change: responding to converging crises

Nick Watts, Markus Amann, Nigel Arnell, Sonja Ayeb-Karlsson, Jessica Beagley, Kristine Belesova, Maxwell Boykoff, Peter Byass, Wenjia Cai, Diarmid Campbell-Lendrum, Stuart Capstick, Jonathan Chambers, Samantha Coleman, Carole Dalin, Meaghan Daly, Niheer Dasandi, Shouro Dasgupta, Michael Davies, Claudia Di Napoli, Paula Dominguez-Salas, Paul Drummond, Robert Dubrow, Kristie L Ebi, Matthew Eckelman, Paul Ekins, Luis E Escobar, Lucien Georgeson, Su Golder, Delia Grace, Hilary Graham, Paul Haggard, Ian Hamilton, Stella Hartinger, Jeremy Hess, Shih-Che Hsu, Nick Hughes, Slava Jankin Mikhaylov, Marcia P Jimenez, Ilan Kelman, Harry Kennard, Gregor Kiesewetter, Patrick L Kinney, Tord Kjellstrom, Dominic Kniveton, Pete Lampard, Bruno Lemke, Yang Liu, Zhao Liu, Melissa Lott, Rachel Lowe, Jaime Martinez-Urtaza, Mark Maslin, Lucy McAllister, Alice McGushin, Celia McMichael, James Milner, Maziar Moradi-Lakeh, Karyn Morrissey, Simon Munzert, Kris A Murray, Tara Neville, Maria Nilsson, Maquins Odhiambo Sewe, Tadj Oreszczyn, Matthias Otto, Fereidoon Owfi, Olivia Pearman, David Pencheon, Ruth Quinn, Mahnaz Rabbaniha, Elizabeth Robinson, Joacim Rocklöv, Marina Romanello, Jan C Semenza, Jodi Sherman, Lihua Shi, Marco Springmann, Meisam Tabatabaei, Jonathon Taylor, Joaquin Triñanes, Joy Shumake-Guillemot, Bryan Vu, Paul Wilkinson, Matthew Winning, Peng Gong*, Hugh Montgomery*, Anthony Costello*



Global, regional, and national burden of stroke and its risk factors, 1990–2019: a systematic analysis for the Global Burden of Disease Study 2019

GBD 2019 Stroke Collaborators*



Lancet Neurol 2021; 20: 795–820

PLOS MEDICINE

RESEARCH ARTICLE

Estimating impact of food choices on life expectancy: A modeling study

Lars T. Fadnes^{1,2*}, Jan-Magnus Økland^{1,3}, Øystein A. Haaland^{1,3*}, Kjell Arne Johansson^{1,2,3*}

¹ Department of Global Public Health and Primary Care, University of Bergen, Norway, ² Bergen Addiction Research, Department of Addiction Medicine, Haukeland University Hospital, Bergen, Norway, ³ Bergen Center for Ethics and Priority Setting, University of Bergen, Norway

BMJ Global Health

Global red and processed meat trade and non-communicable diseases

Min Gon Chung^{1,2}, Yingjie Li^{1,3}, Jianguo Liu¹

However Other Recent Publications Continue to Recommend Dramatic Reductions or Exclusion of Animal-Sourced Foods (Particularly Meat) from the Human Diet.

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1 Department of Global Public Health and Primary Care, University of Bergen, Norway, 2 Bergen Addiction Research, Department of Addiction Medicine, Haukeland University Hospital, Bergen, Norway, 3 Bergen Center for Ethics and Priority Setting, University of Bergen, Norway

The longevity diet: what to eat for a healthier life



If you were to start somewhere, there is a clear pecking order to dietary change. “Cutting out red and processed meats was one of the most important shifts, adding an average 1.6 years to a young woman’s lifespan and 1.9 years to a man’s,” says Jan-Magnus Okland, a co-author on the paper.

Peta Bee

Saturday July 09 2022, 12.01am BST, The Times

nature
food

Check for updates

GBD W CrossMark

21; 20: 795–820

oa
OPEN ACCESS

eat trade
ases

However Other Recent Publications Continue to Recommend Dramatic Reductions or Exclusion of Animal-Sourced Foods (Particularly Meat) from the Human Diet.

ARTICLES
<https://doi.org/10.1038/s43016-021-00343-4>

nature food
Check for updates

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795-820

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Estimating impact of food choices on life expectancy: A modeling study

Lars T. Fadnes^{1,2*}, Jan-Magnus Økland^{1,3}, Øystein A. Haaland^{1,3}, Kjell Arne Johansson^{1,2,3}

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BMJ Global Health

Global red and processed meat trade and non-communicable diseases

Min Gon Chung^{1,2}, Yingjie Li^{1,3}, Jianguo Liu¹

Global Burden of Disease (GBD) Data and Analyses are Quoted and Influence Policies of;

- **Food and Agriculture Organization of the United Nations**
- **World Health Organization.**
- **European Commission** - Farm to Fork Strategy for a fair, healthy and environmentally-friendly food system.

GBD studies are led by the Institute for Health Metrics and Evaluation, University of Washington, Seattle, who recently described the GBD studies as

“THE DE-FACTO SOURCE FOR GLOBAL HEALTH ACCOUNTING”.

Dietary Risks and Deaths

GBD 2017 Analysis *Versus* GBD 2019 Analysis

Christopher JL Murray & GBD 2017 Diet Collaborators. *Lancet* 2019

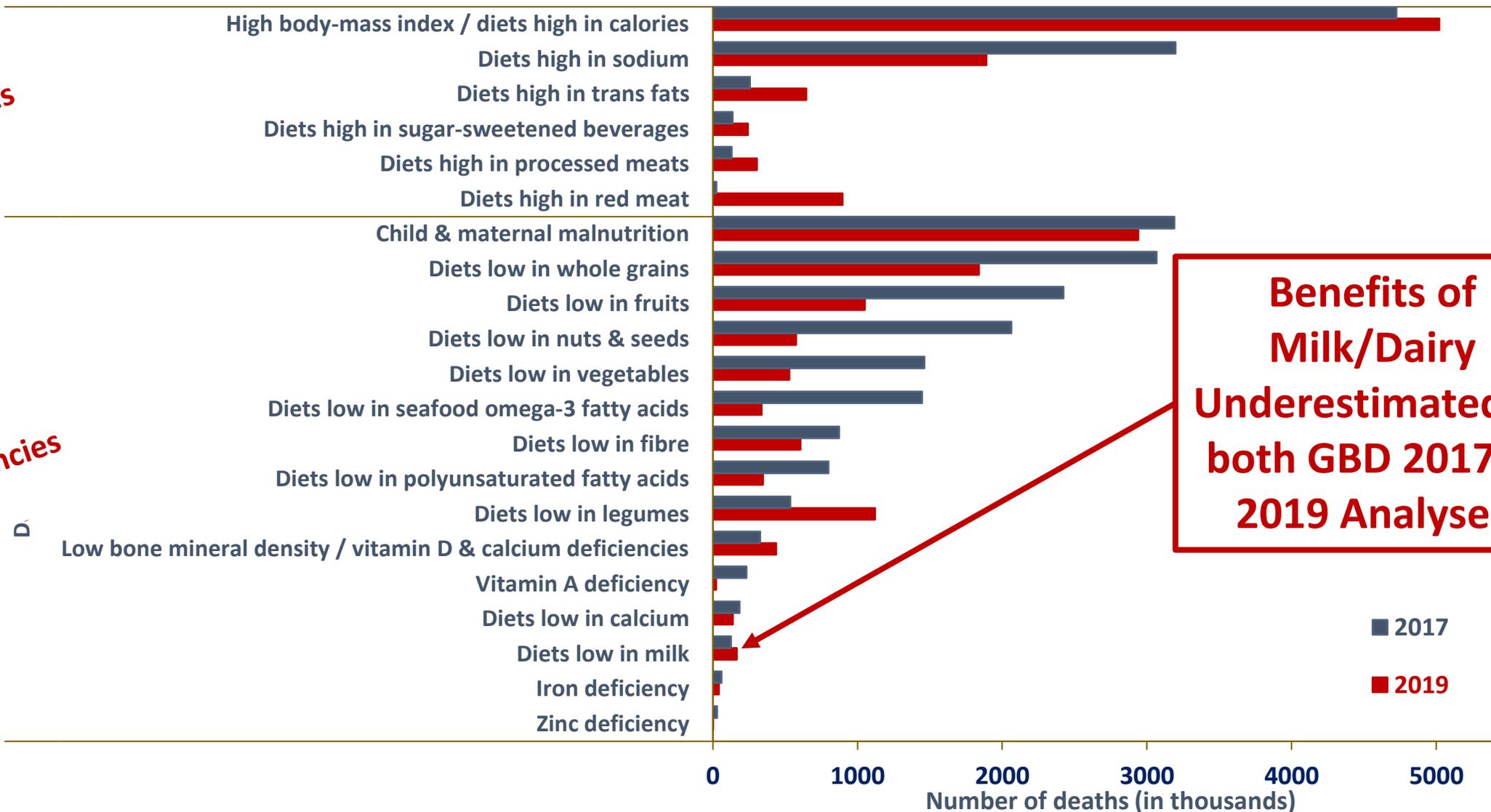
Institute for Health Metrics and Evaluation (2018) *GBD Compare*. Seattle, WA: IHME, University of Washington. <http://vizhub.healthdata.org/gbd-compare>.

Christopher JL Murray et al. *Global burden of 87 risk factors in 204*

countries and territories, 1990–2019: a systematic analysis for the Global Burden of Disease Study 2019 *Lancet* 2020

Excesses

Deficiencies

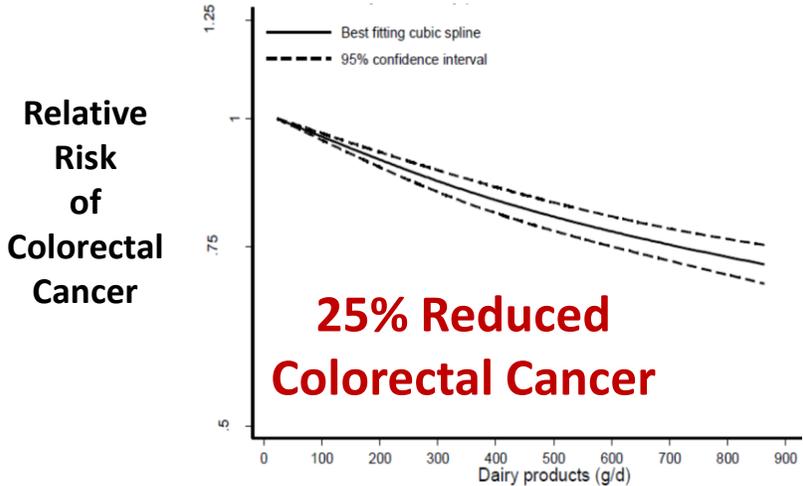


Benefits of Milk/Dairy Underestimated in both GBD 2017 & 2019 Analyses

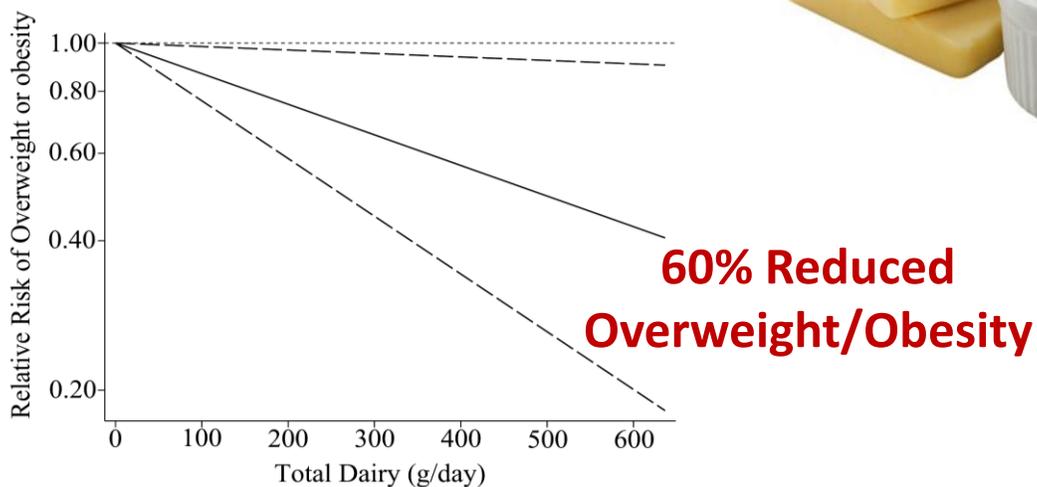
■ 2017

■ 2019

Two or more Full-Fat Dairy Servings/Day Associated With:



World Cancer Research Fund/ American Institute for Cancer Research. Continuous Update Project Expert Report 2018.



Feng et al, Adv Nutr 2022; 13 (6): 2165–2179.

	n	Events	HR (95% CI)	P _{trend}
Total mortality				0.01
<0.5 servings per day	12399	547 (4.4%)		
0.5–1 servings per day	12023	374 (3.1%)	0.84 (0.71–0.98)	
1–2 servings per day	8853	317 (3.6%)	0.89 (0.74–1.06)	
>2 servings per day	7552	248 (3.3%)	0.75 (0.60–0.92)	
Major cardiovascular disease				0.0001
<0.5 servings per day	12399	624 (5.0%)		
0.5–1 servings per day	12023	538 (4.5%)	0.88 (0.76–1.06)	
1–2 servings per day	8853	308 (3.5%)	0.76 (0.64–0.90)	
>2 servings per day	7552	278 (3.7%)	0.68 (0.56–0.84)	

0.5 1 1.5

Dehghan M et al. Association of dairy intake with cardiovascular disease and mortality in 21 countries from five continents (PURE): a prospective cohort study. Lancet 2018

Dietary Risks and Deaths

GBD 2017 Analysis *Versus* GBD 2019 Analysis

Christopher JL Murray & GBD 2017 Diet Collaborators. *Lancet* 2019

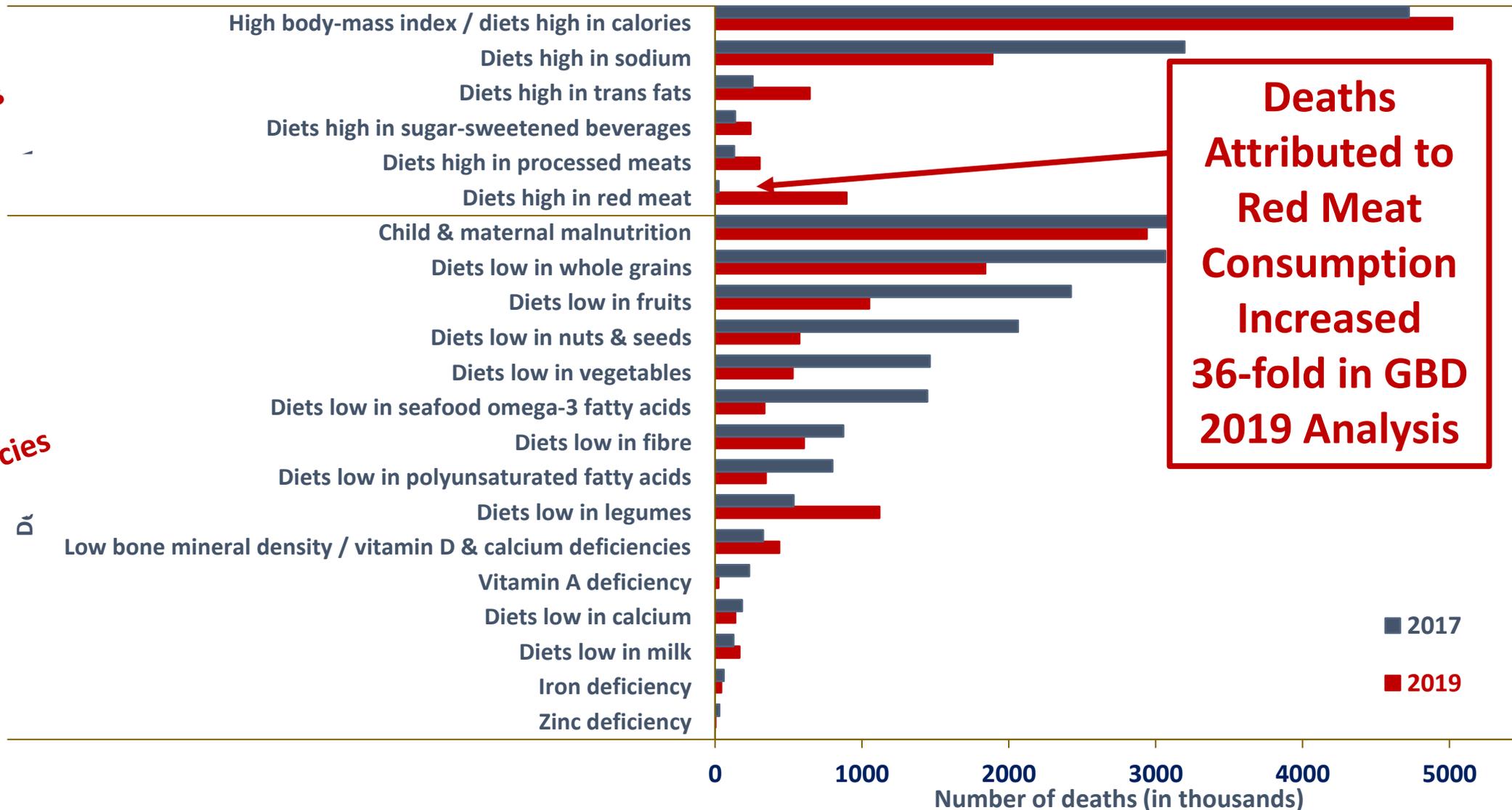
Institute for Health Metrics and Evaluation (2018) *GBD Compare*. Seattle, WA:

IHME, University of Washington. <http://vizhub.healthdata.org/gbd-compare>.

Christopher JL Murray et al. *Global burden of 87 risk factors in 204 countries and territories, 1990–2019: a systematic analysis for the Global Burden of Disease Study 2019* *Lancet* 2020

Excesses

Deficiencies



**Deaths
Attributed to
Red Meat
Consumption
Increased
36-fold in GBD
2019 Analysis**

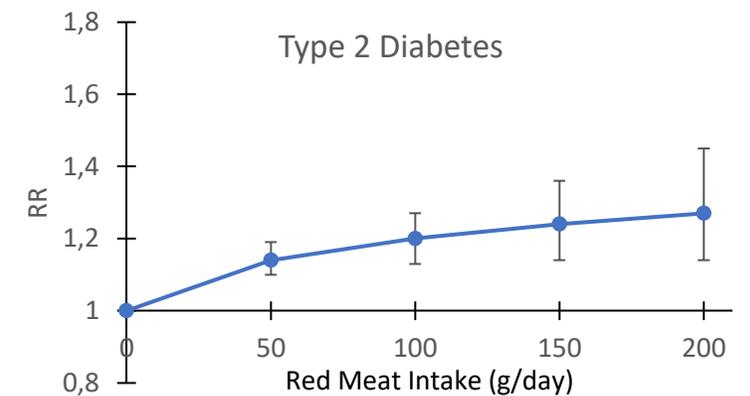
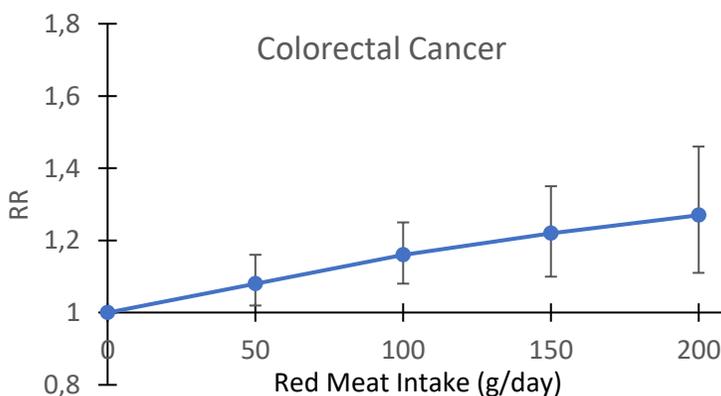
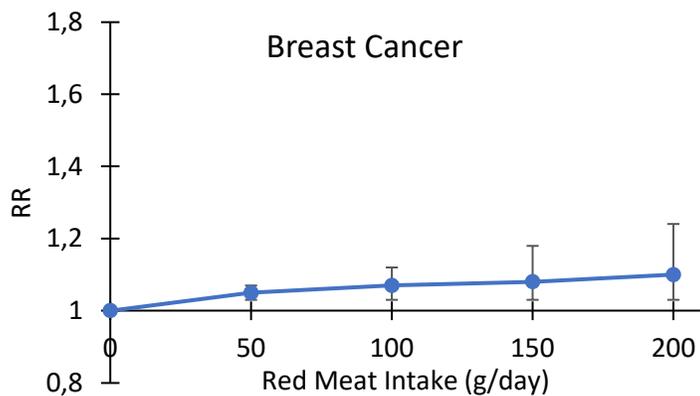
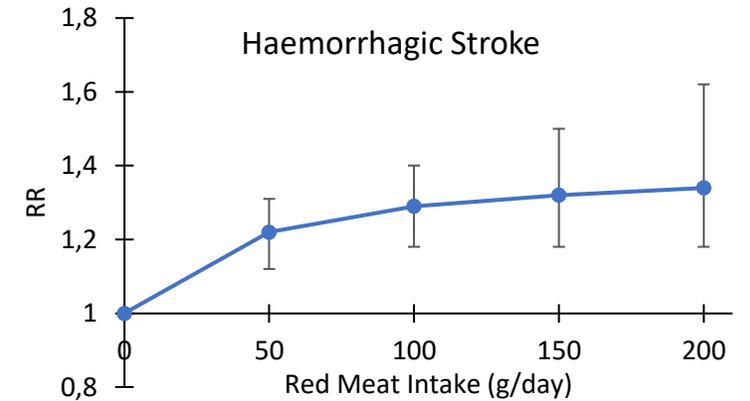
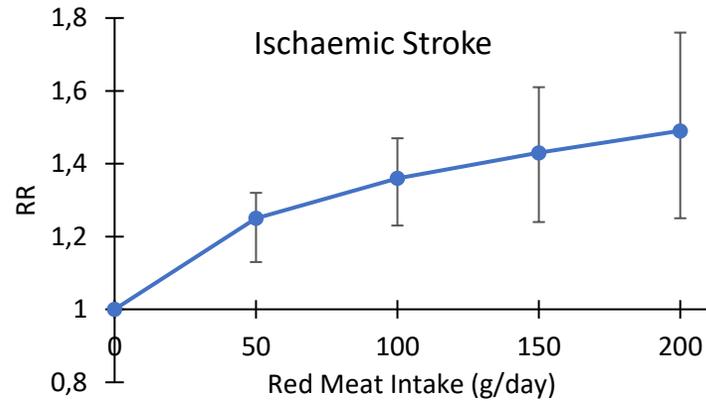
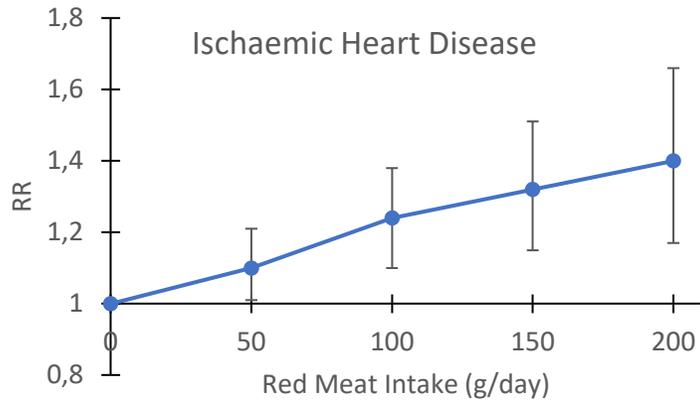
■ 2017

■ 2019

Number of deaths (in thousands)

Global Burden of Disease Study 2019

Conducted their own systematic reviews and meta-regressions, and stated that they found
“Sufficient evidence supporting the causal relationship of red meat intake with 6 adverse outcomes”

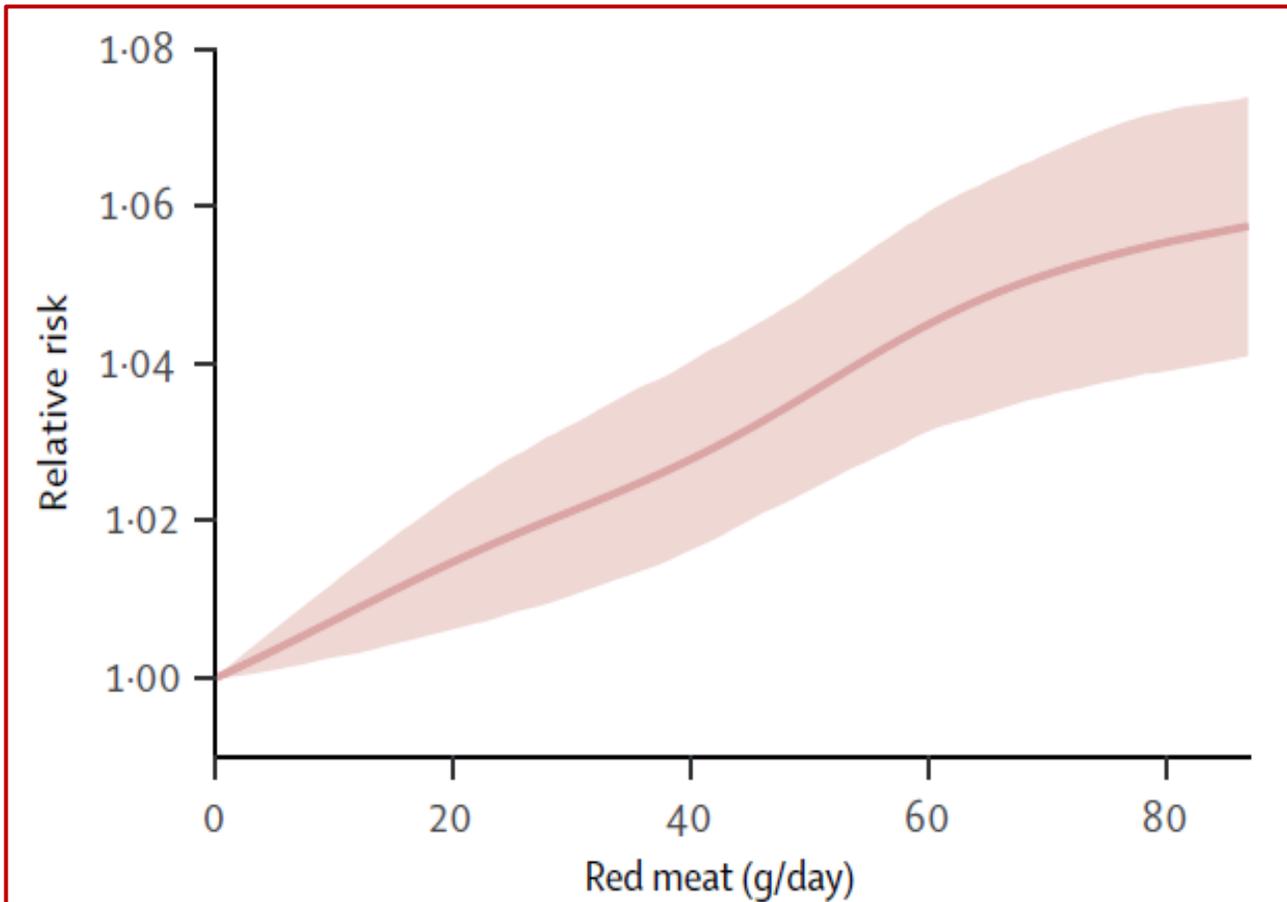


Global Burden of Disease Study 2019

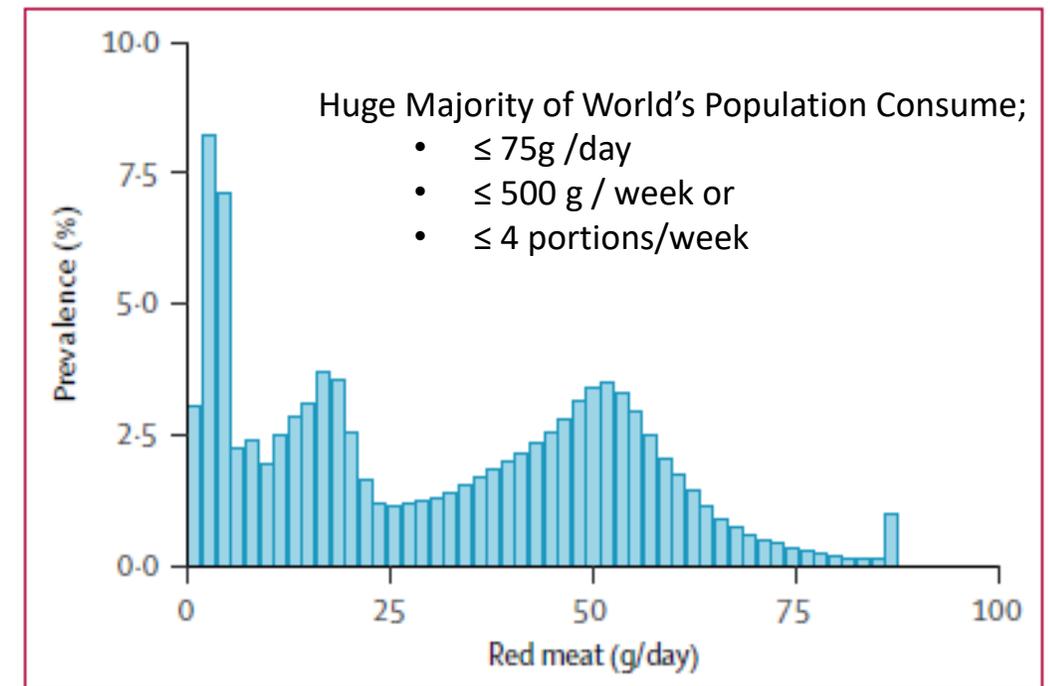
More empirical standardised methods for selecting the theoretical minimum risk exposure level (TMREL)

“Red meat TMREL changed from 22.5g/day to 0 g/day.”

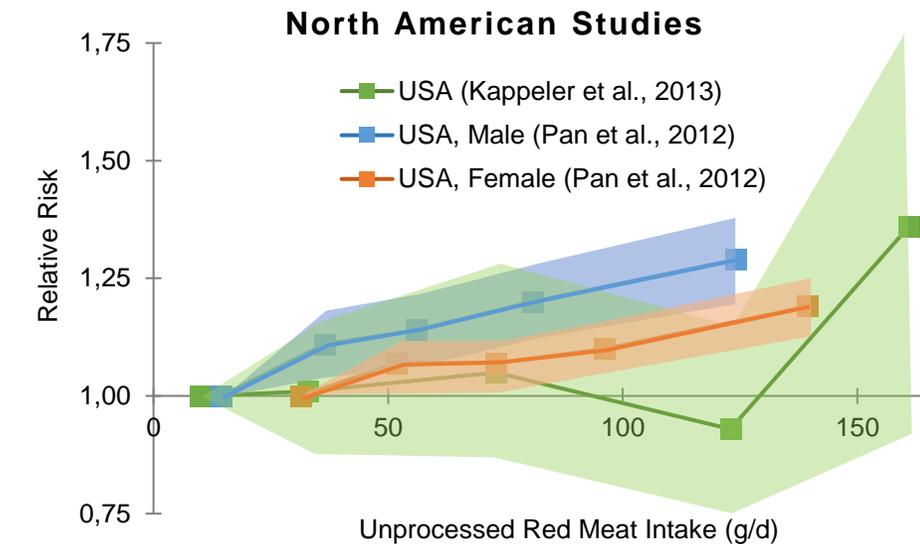
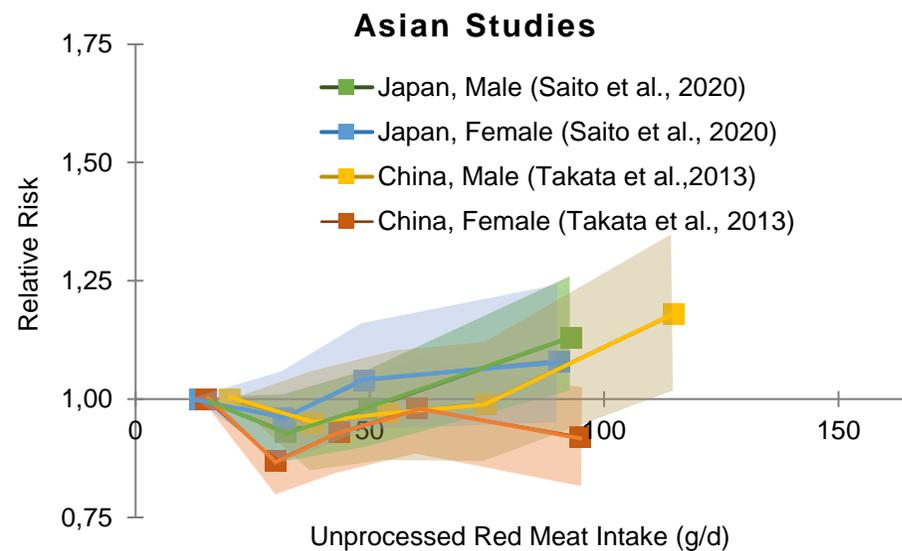
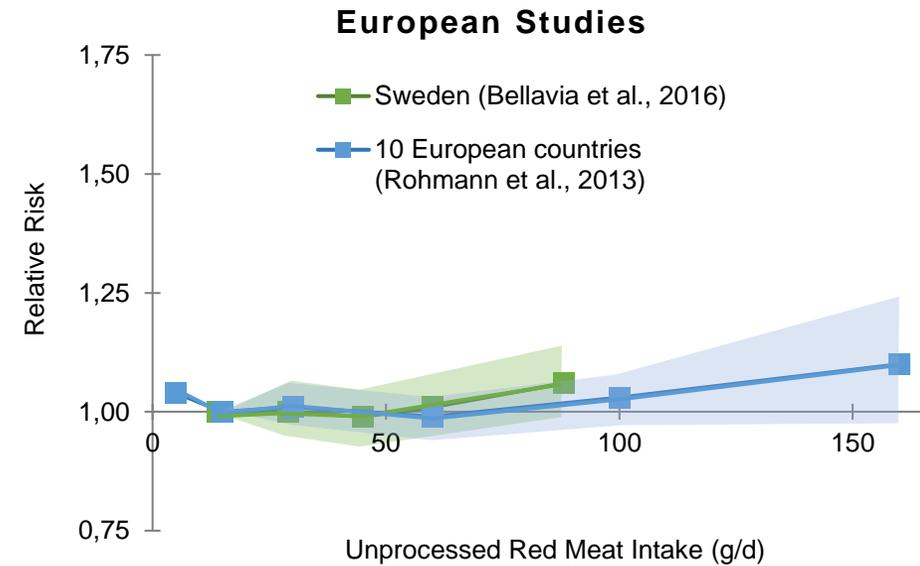
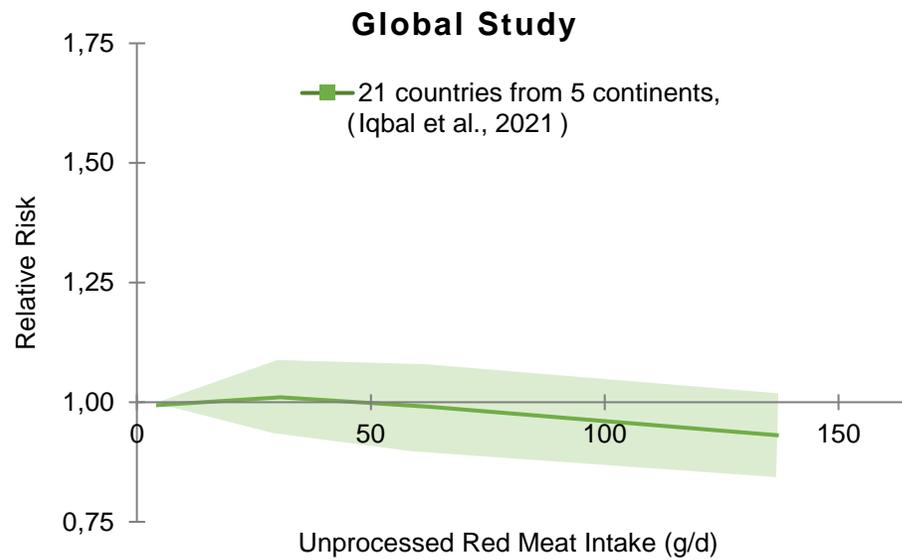
Red Meat Consumption & All-Cause Mortality Risk



Estimation of Red Meat Consumption



Relative Risk for All-Cause Mortality from Large Published Cohort Studies



36-fold higher estimate of deaths attributable to red meat intake in GBD 2019: is this reliable?

Alice V Stanton, Frédéric Leroy, Christopher Elliott, Neil Mann, Patrick Wall, Stefaan De Smet

Published: February 25, 2022 DOI:[https://doi.org/10.1016/S0140-6736\(22\)00311-7](https://doi.org/10.1016/S0140-6736(22)00311-7)

Key Questions

- **Where are the peer-reviewed publications of their updated or new systematic reviews, which;**
 - Address the 27 item PRISMA Statement and the 20 item GATHER Statement checklists?
 - Provide the evidence for the changing of the red meat TMREL from 22.5g/day to 0g/day?
- Have the **additional deaths and illnesses, from iron deficiency anaemia, elderly fragility, child and maternal malnutrition**, that would result from imposition of a red meat TMREL of zero been included in the GBD 2019 estimates?

36-fold higher estimate of deaths attributable to red meat intake in GBD 2019: is this reliable? – Author's reply

Christopher J L Murray on behalf of the GBD Risk Factors Collaborators

Published: March 21, 2022 DOI:[https://doi.org/10.1016/S0140-6736\(22\)00518-9](https://doi.org/10.1016/S0140-6736(22)00518-9)

Admission of Errors

- “Clear protective relationship between red meat intake and haemorrhagic stroke”
- *“No evidence supporting a relationship between red meat consumption & sub-arachnoid haemorrhage.”*
- “The strength of evidence regarding the relationship between red meat and various outcomes - including ischaemic heart disease - is relatively weak.”
- *“Setting of the red meat TMREL to zero in the GBD 2019 analysis is not correct.”*
- “Estimates of attributable deaths for red meat will be reduced in all future GBD analyses.”

Immediate correction of all errors of fact is mandatory according to Lancet’s guidelines, Committee on Publication Ethics (COPE) & International Committee of Medical Journal Editors (ICMJE).

Key Questions Unanswered

- GBD Collaborators unable/unwilling to provide peer-reviewed published evidence to substantiate their new systematic reviews - *Professor Murray has since confirmed that GBD 2019 is not PRISMA compliant.*
- GBD Collaborators do not intend to include the totality of nutritional effects of red meat in their analyses

Troubling assumptions behind GBD 2019 on the health risks of red meat

Vanessa L Z Gordon-Dseagu, Martin J Wiseman, Kate Allen, Judy Buttriss, Christine Williams

Published: August 06, 2022 DOI:[https://doi.org/10.1016/S0140-6736\(22\)01283-1](https://doi.org/10.1016/S0140-6736(22)01283-1)

“We support Stanton and colleagues’ call for **further clarification, justification, or reconsideration of the TMREL of zero for unprocessed red meat** selected by GBD in their latest estimates.”

“The **increase in the estimated burden appears implausible**, and the **lack of transparency undermines the authority** of the GBD estimates.”

“**Neither WCRF nor other international organisations recommend complete avoidance of meat**”

“The absence of an explicit rationale for the assumptions is **troublesome, unsupported by the evidence**, and **unrealistic**.”

Academy of Nutrition Sciences & World Cancer Research Fund

Considerable Media & Scientific Interest

Irish Farmers Journal

Leading scientists challenge findings that red meat is harmful

Farming Independent 

Scientists challenge data linking red meat to health risks

THE GROCER MEAT

Growing concerns over widely-used Global Burden of Disease meat data
By [Kevin White](#) 4 March 2022

agriland.ie

IFA contacts international bodies on red meat data concerns

The Sunday Times

Valerie Flynn August 28th 2022



‘Serious errors’ in research linking deaths to red meat’

Scientists claim a study ignored nutritional benefits and have called on The Lancet to correct or retract the findings

The **World Cancer Research Fund** and the **Academy of Nutrition Sciences** have expressed their support for RCSI, UCD and QUB scientists who uncovered the serious errors in the [Global Burden of Disease](#) (GBD) study.



SOCIAL MEDIA	1,782
• Tweets	1,235
• Facebook	547

[Gordon H. Guyatt](#)

[@GuyattGH](#)



Latest estimates of deaths from [#redmeat](#) by Global Burden Disease Study 36 times greater than 2017. Red meat may not kill at all, but something seriously wrong in estimate.

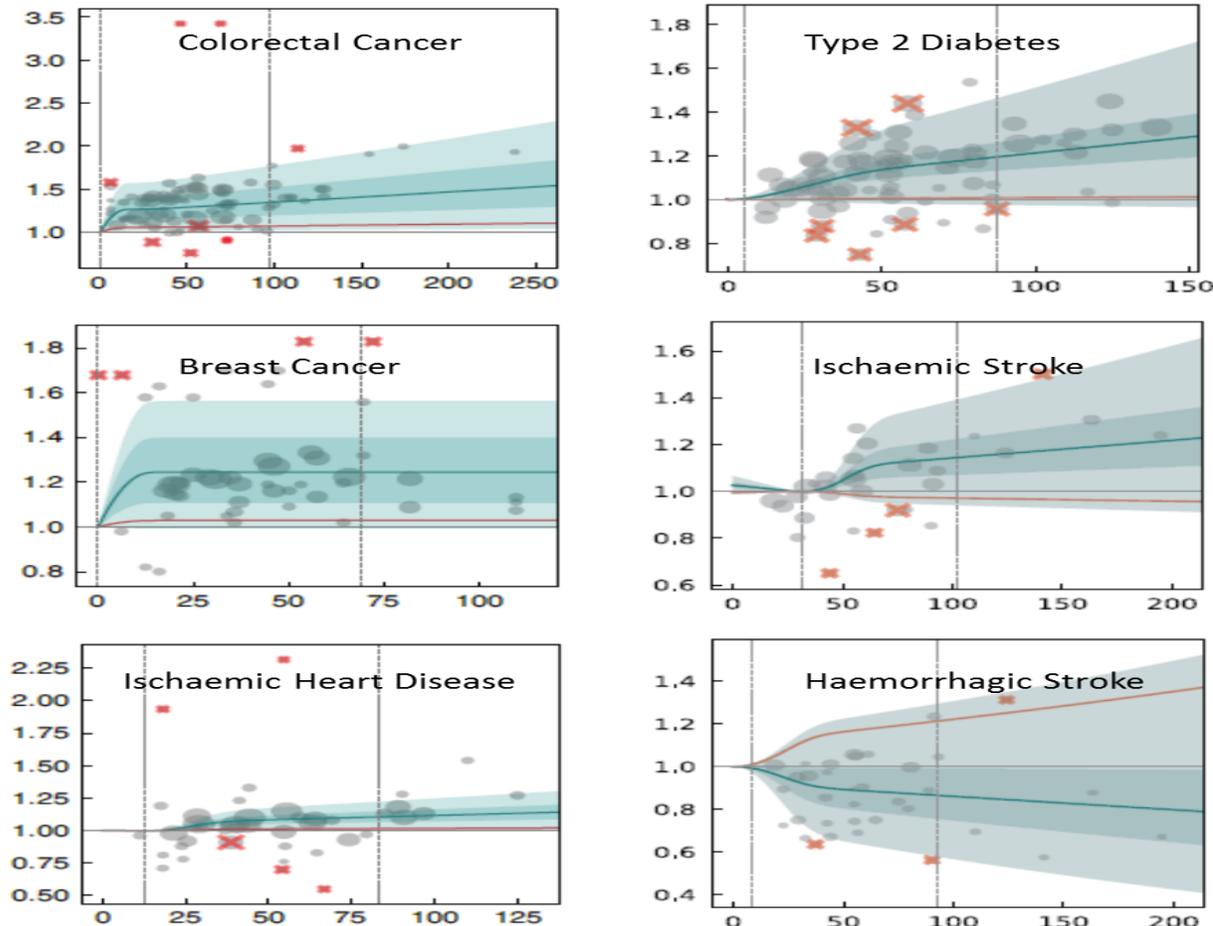
Calls for evidence remain unanswered even in latest author’s response – big problem



OPEN

Health effects associated with consumption of unprocessed red meat: a Burden of Proof study

Haley Lescinsky¹, Ashkan Afshin^{1,2}, Charlie Ashbaugh¹, Catherine Bisignano¹, Michael Brauer^{1,2,3}, Giannina Ferrara¹, Simon I. Hay^{1,2}, Jiawei He^{1,2}, Vincent Iannucci¹, Laurie B. Marczak¹, Susan A. McLaughlin¹, Erin C. Mullany¹, Marie C. Parent¹, Audrey L. Serfes¹, Reed J. D. Sorensen¹, Aleksandr Y. Aravkin^{1,2,4}, Peng Zheng^{1,2} and Christopher J. L. Murray^{1,2} 



Very Different Conclusions from GBD Collaborators Concerning Risks of Red Meat

- “No or very weak evidence that unprocessed red meat is associated with any increased risk.”
- “Evidence insufficient to make any strong or conclusive recommendations.”
- “95% uncertainty interval for the TMREL for unprocessed red meat is very wide (0-200g/d).” – optimal intake could be as high as 200g per day.

Consequences of Non-Correction / Retraction of GBD Risk Factors Study 2019



March 2023

2,147 Scientific Paper Citations

THE LANCET

Published online October 25, 2022

The 2022 report of the *Lancet* Countdown on health and climate change: health at the mercy of fossil fuels

Co-chairs of the Lancet Countdown

Anthony Costello, Hugh Montgomery (University College London) & Peng Gong (University of Hong Kong)

HEADLINE FINDING

In 2019 two million deaths were related to red and processed meat and dairy consumption.

Consequences of Non-Correction/ Retraction of GBD Risk Factors Study 2019



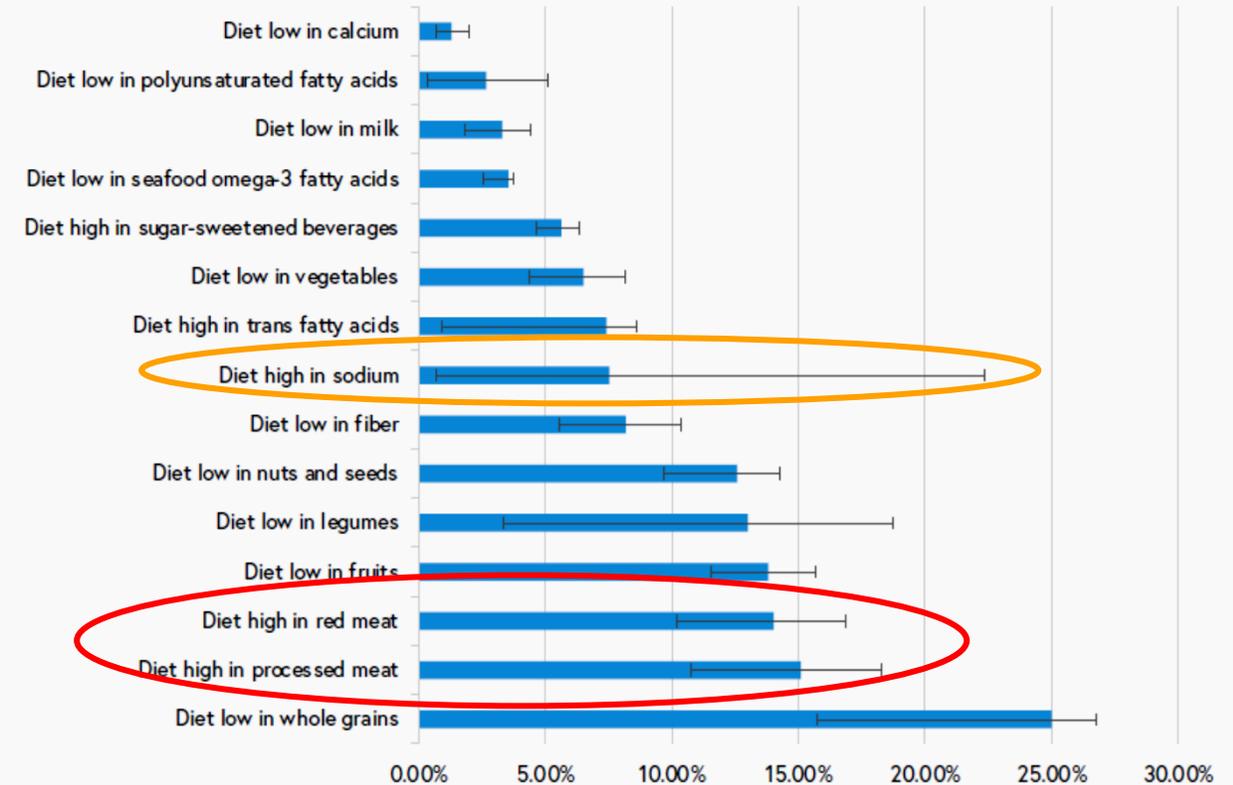
March 2023

40 Policy Document Citations

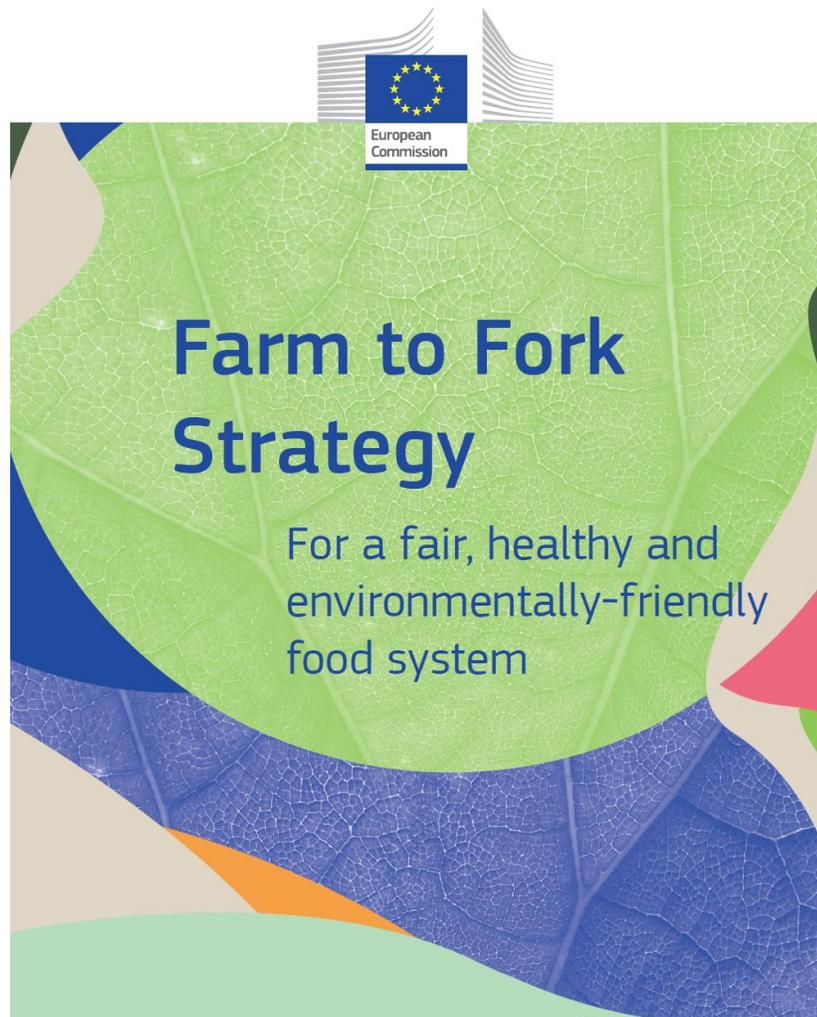
The National Food Strategy - The Evidence – July 2021.

The dietary risk factors for all-cause DALYs

PERCENTAGE DIETARY DALYs (ALL CAUSES)



Will the Non-Correction/Retraction of the GBD Risk Factors Study 2019 have Consequences for EU & Other International Policies?



Key Take Home Messages

- Scientists, policy-makers and all involved in the food system should be extremely wary of global health estimates that;
 - Are not rigorously & transparently evidence-based.
 - Ignore the protections against nutritional deficiencies & chronic diseases afforded by animal-source foods.
- The relationship between red meat & disease burden is U-shaped;
 - Excess red meat consumption (>4 portions or 500g / week) may be associated with small (5-15%) increases in colon cancer.
 - Insufficient red meat consumption (<2 portions / week) is associated with very large (100-1000%) increases in anaemia, stunted childhood growth and cognition, osteoporosis and sarcopenia.
- The majority of the world's population are not eating enough dairy nor omega-3-PUFA rich foods.
- Consumption of nutrient-rich animal-sourced foods, in appropriate evidence-based quantities, should continue to be included in national and international guidelines for a healthy, balanced diet.

