OUR FOOD SYSTEM'S IMPACT ON US AND THE WORLD

Corn Mother by Julie Komenda

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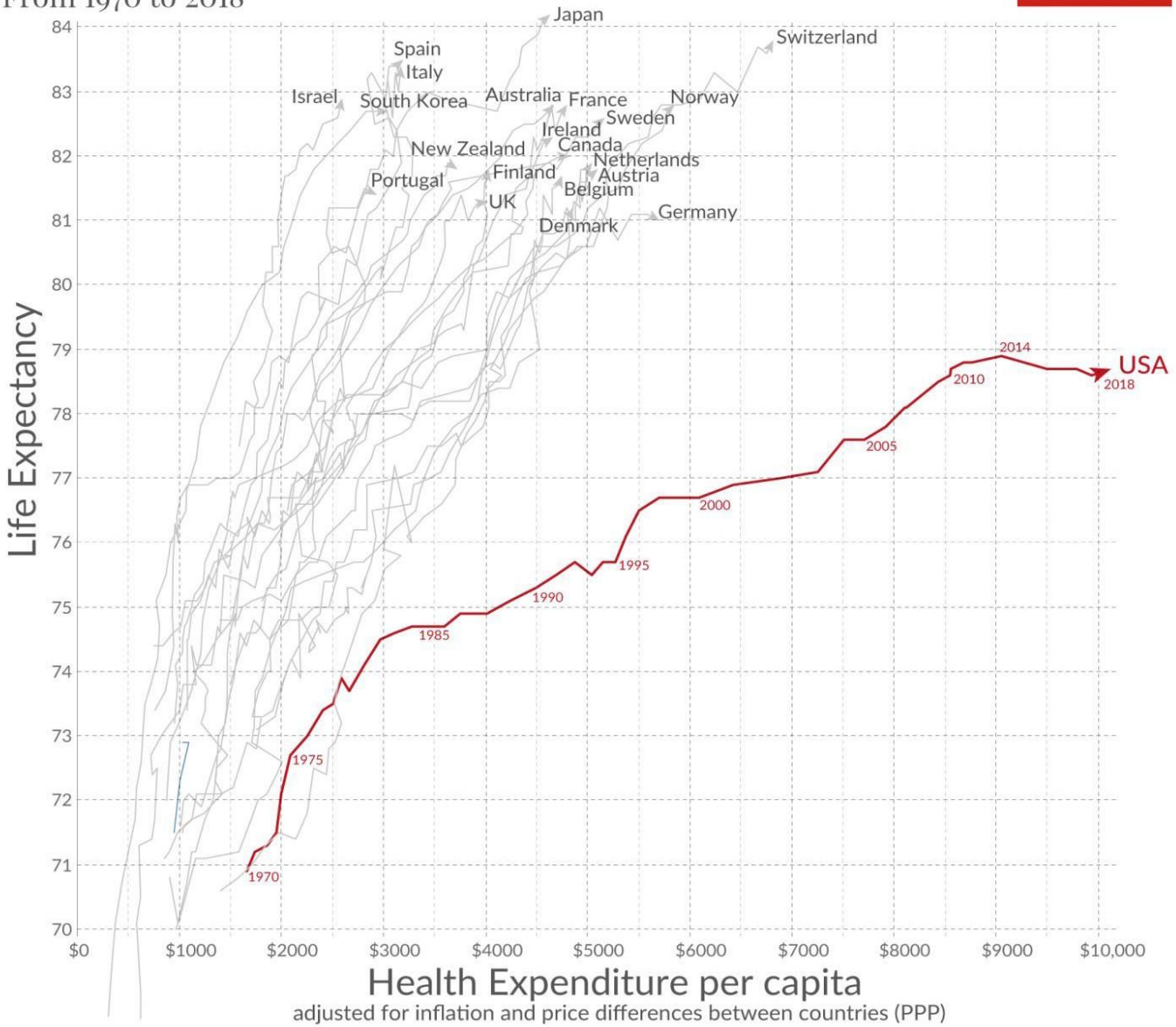
THE STANDARD AMERICAN DIET

- 63% refined and processed foods.
- 25% animal products (meat, dairy, eggs).
- 12% plant-based foods:
  - 6% French fries;
  - 6% others including fruit juice & ketchup.
- Average of:
  - 26 grams saturated fat/day;
  - 185 pounds sugar & sweeteners/year;
  - 3,400 milligrams salt/day, mainly from processed foods.

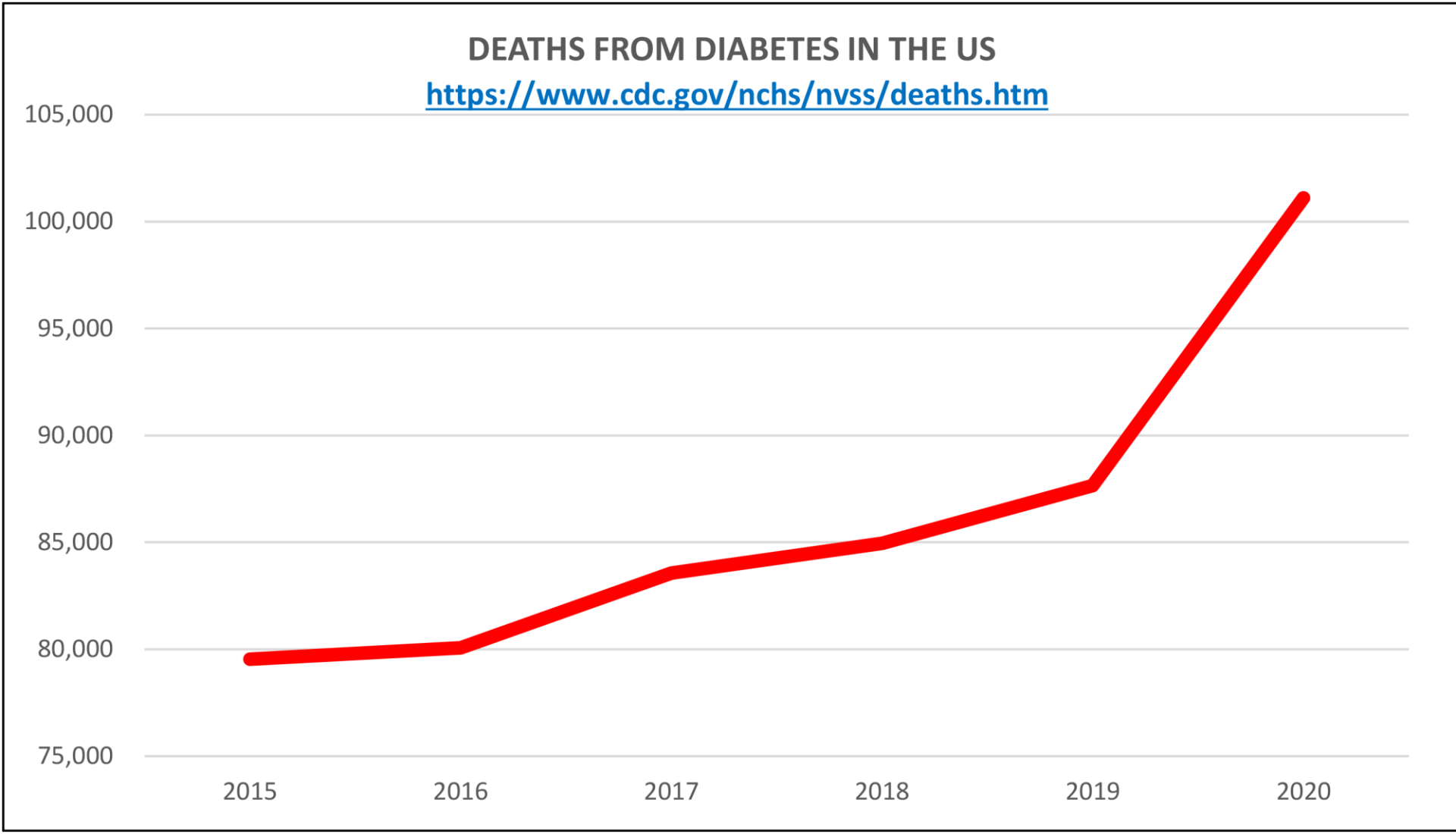
Life expectancy vs. health expenditure

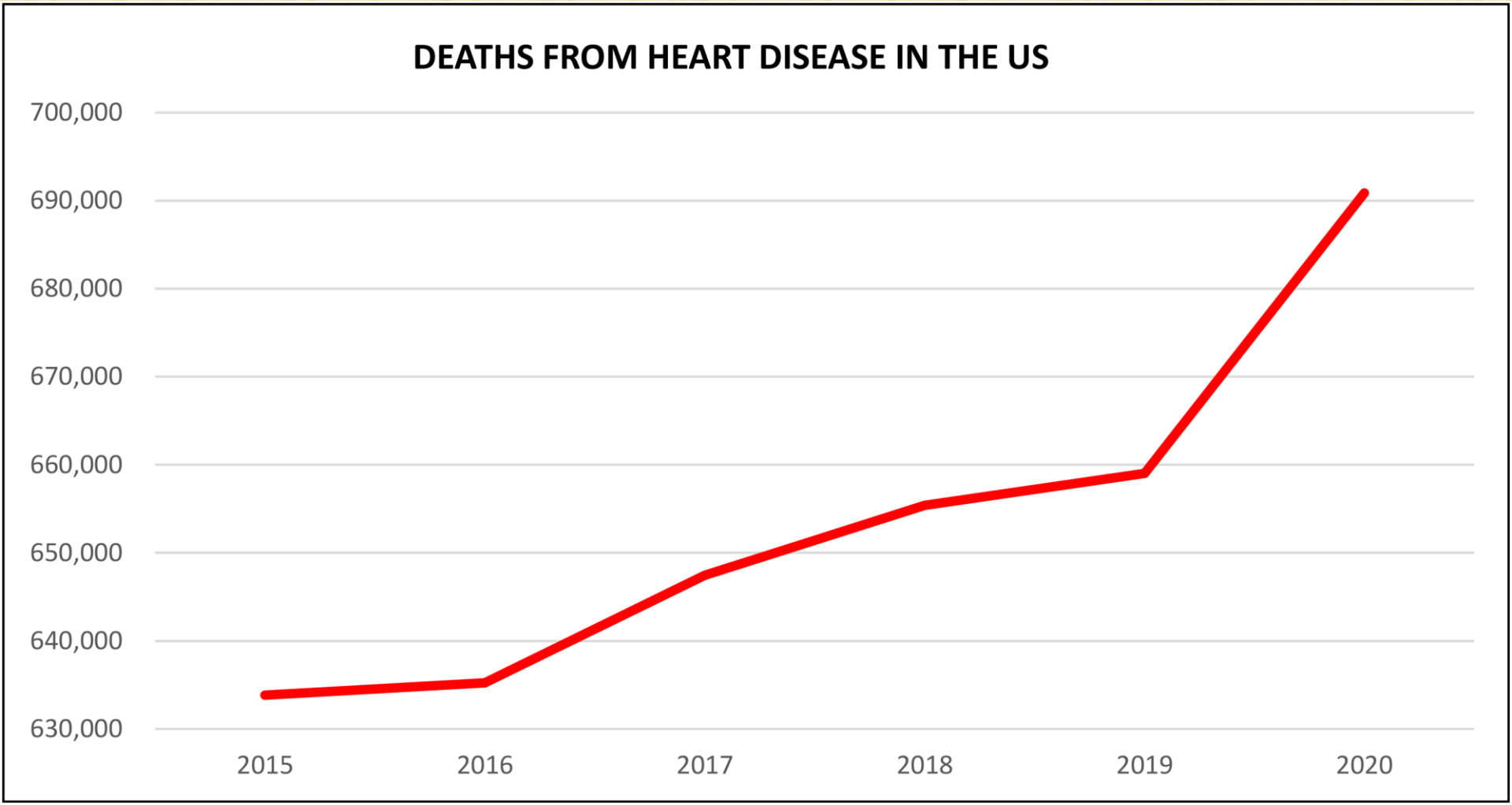
From 1970 to 2018

Our World in Data

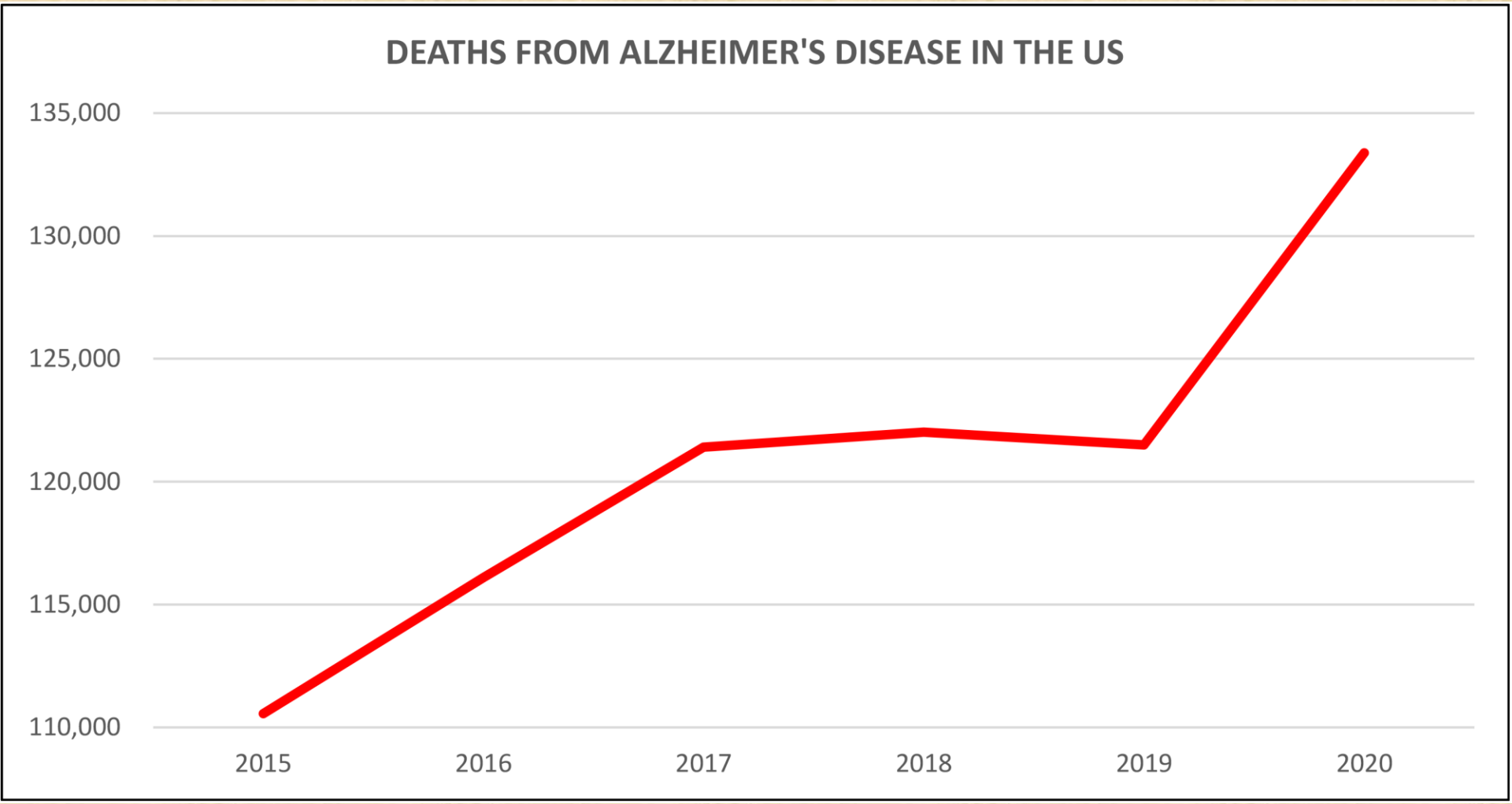


Data source: OECD — Note: Health spending measures the consumption of health care goods and services, including personal health care (curative care, rehabilitative care, long-term care, ancillary services, and medical goods) and collective services (prevention and public health services as well as health administration), but excluding spending on investments.
Shown is total health expenditure (financed by public and private sources).


DEATHS FROM DIABETES IN THE US
https://www.cdc.gov/nchs/nvss/deaths.htm
105,000
100,000
95,000
90,000
85,000
80,000
75,000
2015
2016
2017
2018
2019
2020

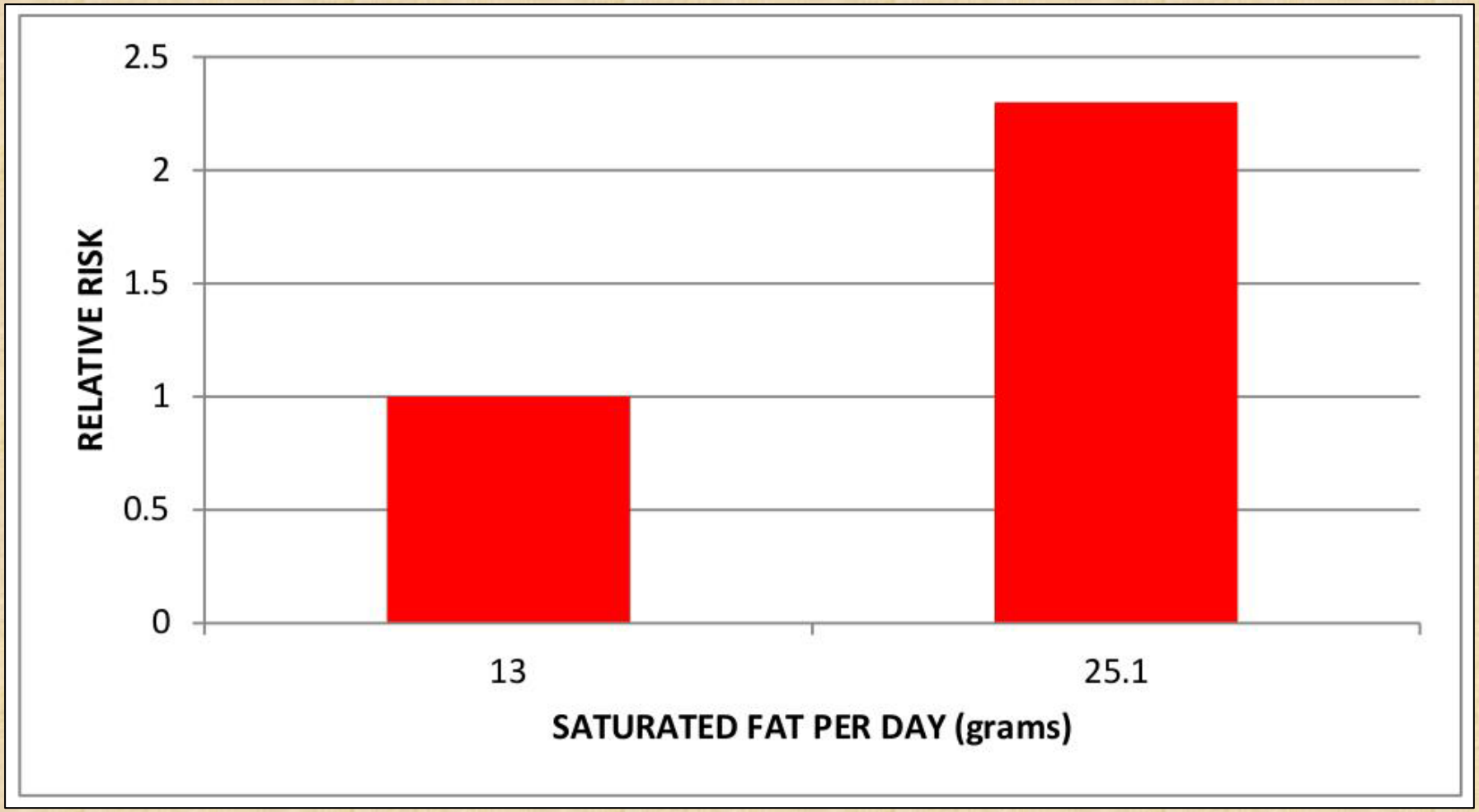


https://www.cdc.gov/nchs/nvss/deaths.htm



https://www.cdc.gov/nchs/nvss/deaths.htm

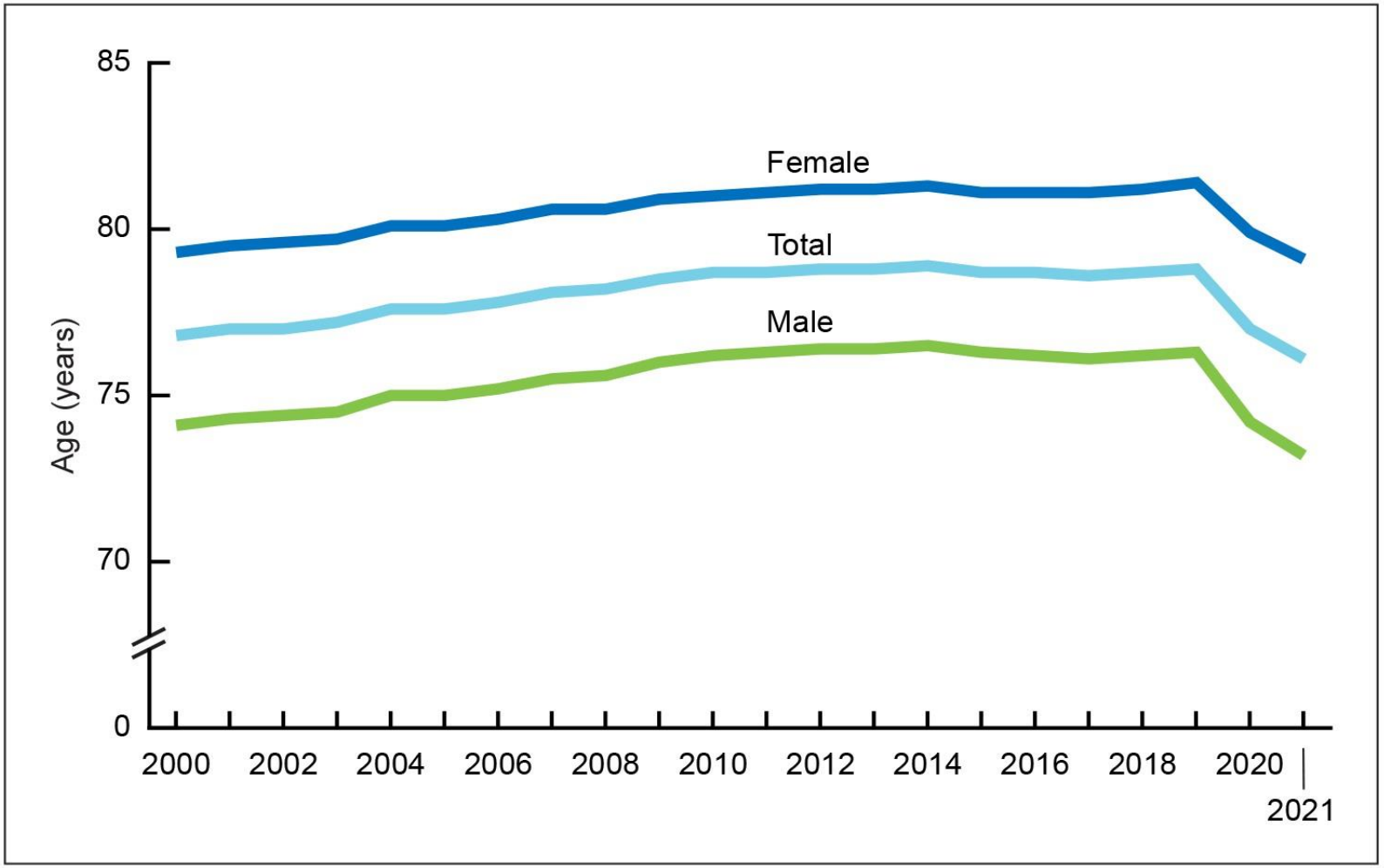
ALZHEIMER'S RISK FROM SATURATED FAT



Chicago Health and Aging Project, *Power Foods for the Brain*, Dr. Neal Barnard, Physicians Committee for Responsible Medicine, 2013.

LIFE EXPECTANCY DECLINING IN THE U.S.

Figure 1. Life expectancy at birth, by sex: United States, 2000–2021

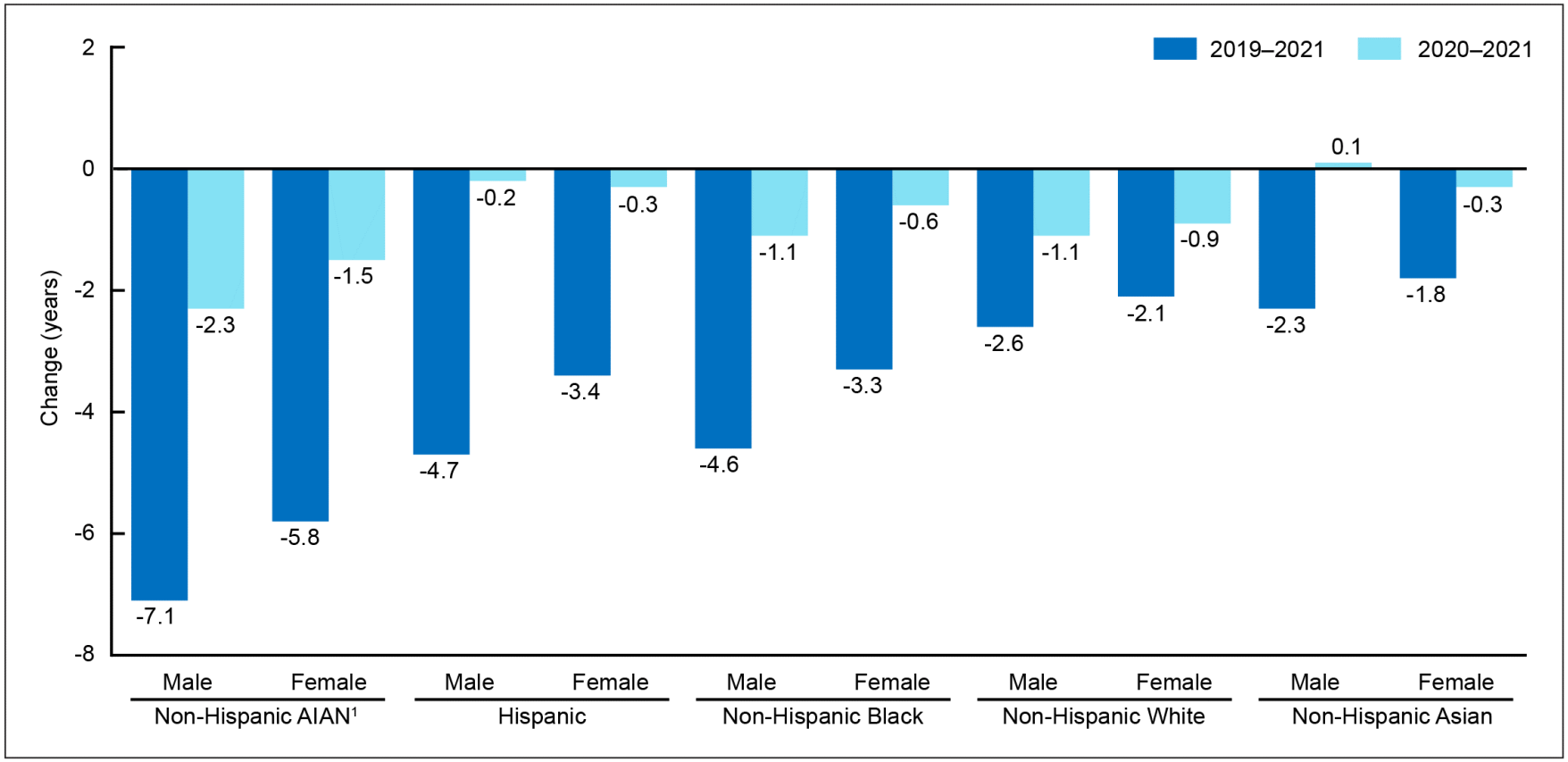


NOTES: Estimates are based on provisional data for 2021. Provisional data are subject to change as additional data are received. Estimates for 2000–2020 are based on final data.
SOURCE: National Center for Health Statistics, National Vital Statistics System, Mortality.

CHANGE IN LIFE EXPECTANCY, 2019-2021

Vital Statistics Surveillance Report

Figure 3. Change in life expectancy at birth, by Hispanic origin and race: United States, 2019–2021 and 2020–2021



[1]American Indian or Alaska Native.

NOTES: Estimates are based on provisional data for 2021. Provisional data are subject to change as additional data are received. Estimates for 2019 and 2020 are based on final data. Life tables by race and Hispanic origin are based on death rates that have been adjusted for race and Hispanic-origin misclassification on death certificates; see Technical Notes in this report.

SOURCE: National Center for Health Statistics, National Vital Statistics System, Mortality.

PHARMACY VS. FARMACY

According to the CDC, 60% of Americans have at least one chronic illness (heart disease, type 2 diabetes, obesity, auto-immune diseases, and more).

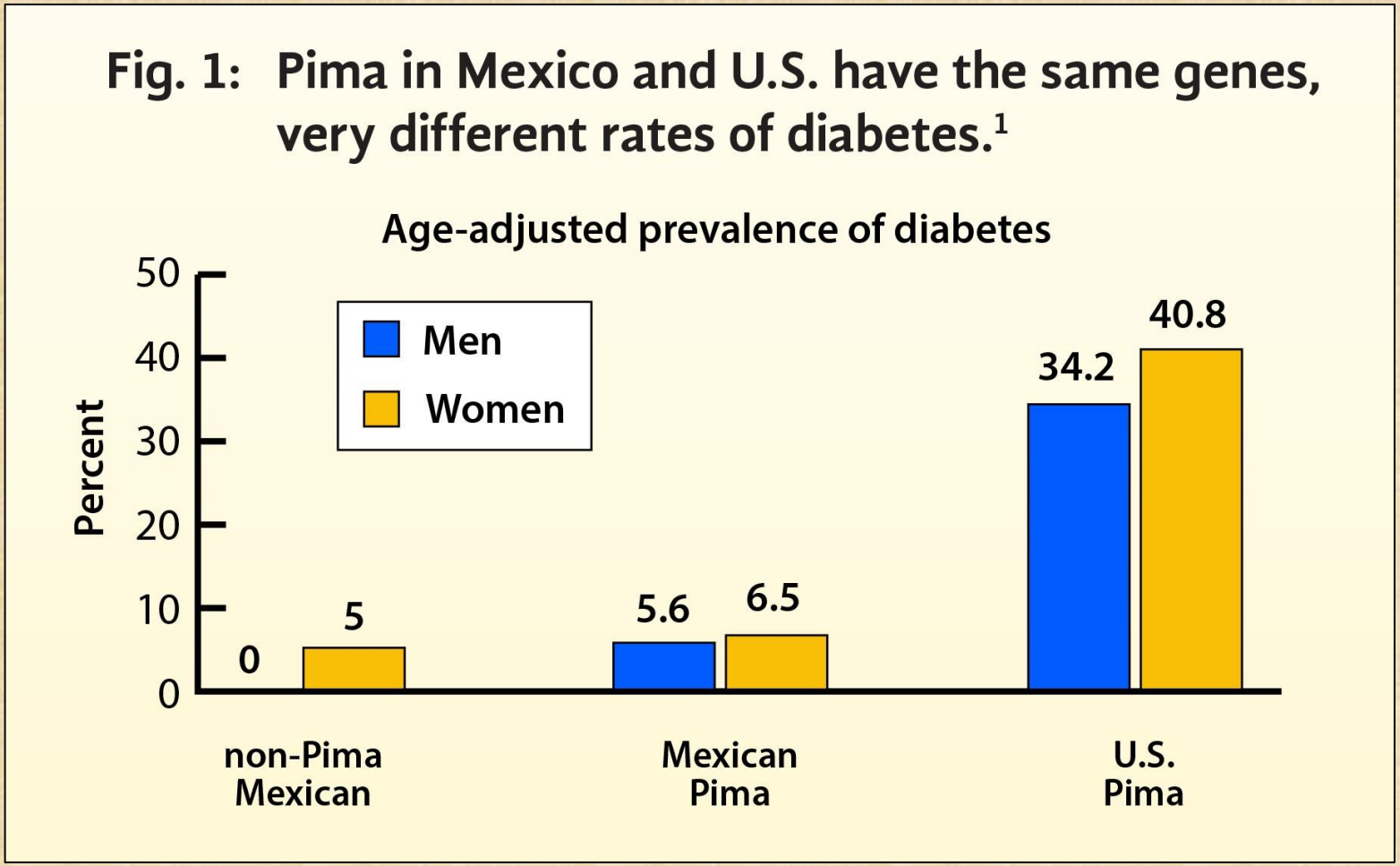
More than 70% of chronic illnesses can be prevented or reversed with a whole food, plant-based dietary lifestyle.

Despite these numbers, physicians receive less than 20 hours of nutrition education training during the entire course of medical school.

The Plantrician Project®
Planting the seeds of change™

https://plantricianproject.org/

DIET MORE IMPORTANT THAN GENES



"Effect of Traditional and Western Environments on Prevalence of Type 2 Diabetes in Pima Indians in Mexico and the U.S." (Schulz, L.O., et al.) *Diabetes Care*, Vol. 29, No. 8, August 2006.

MORAL, ETHICAL & PUBLIC HEALTH ISSUES

ANIMALS SLAUGHTERED & ENERGY REQUIREMENTS (2001)

Animal	Number (millions)	Energy In/Protein Out (kilocalories)
Lamb	7	57:1
Beef Cattle	74	40:1
Dairy Cattle	13	14:1
Swine	60	14:1
Eggs	77,000	39:1
Chickens	8,000	4:1

https://academic.oup.com/ajcn/article-pdf/78/3/660S/23712272/660.pdf

SOCIAL & ENVIRONMENTAL JUSTICE ISSUES

- North Carolina study of 2,500 hog CAFOs - located disproportionately in communities of color with higher poverty, highest disease rates, least medical care access, and greatest need of economic development.
- Exposure to CAFOs results in impaired respiratory function, occupational asthma, and organic dust syndrome.
- CAFOs located in areas that depend on wells for drinking water, but CAFO waste stored in lagoons which contaminate groundwater.
- Pattern of location of industrial facilities reflects 'institutional factors' and political & economic power of local populations.
- North Carolina legislation provided tax breaks to build CAFOs, use subsidized fuel, and get exemptions from monitoring.

https://www.ncbi.nlm.nih.gov/pmc/articles/PMC1637958/

ECONOMIC ISSUES

- Top 4% of U.S. farms have 69% of sales, while bottom 76% of farms have 3%.
- 90% of poultry farming and 60% of hog farming is under contract, but farmers have little or no choice in the 'integrators' they contract with.
- Farmers are paid in a tournament system, with inconsistent income and disparity, and assume risk without control.
- 55% of poultry farms and 68% of dairy farms in debt, farm bankruptcies growing by 20% from 2018 to 2019.
- 45% of U.S. farmers have negative net income.

https://file-cdn.mercyforanimals.org/mercy4animals.wpengine.com/sites/442/2021/04/The_Economic_State_of_U.S._Farming-Fact_Sheet.pdf

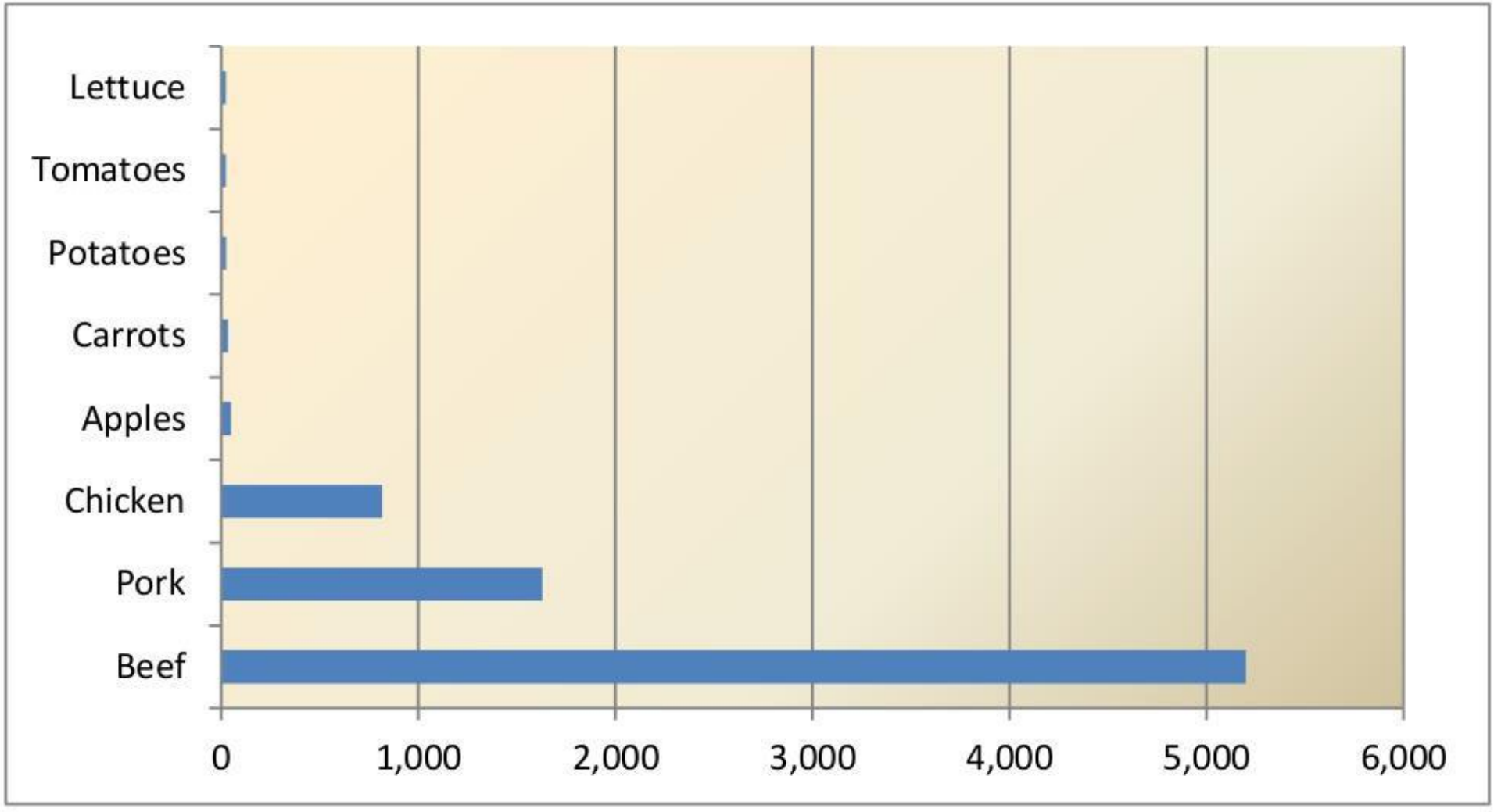
LAND USE ISSUES

- Animal products use 83% of world farmland, provide only 18% of global calories & 37% of protein.
- U.S. livestock consume more than 7X more grain than the U.S. population.
- Food fed to U.S. livestock could feed 840 million people.
- Pasture for livestock uses 1/4 of earth's land area, 2X that of food & fiber crops.
- 98% of U.S. soy meal feeds pigs, chickens and cows.

Sustainability of Meat-based and Plant-based Diets and the Environment, American Journal of Clinical Nutrition 2003, 78(suppl.), pgs. 660S-663S.

Livestock's Long Shadow, Food and Agriculture Organization of the United Nations, 2006
https://doi.org/10.1126/science.aaq0216

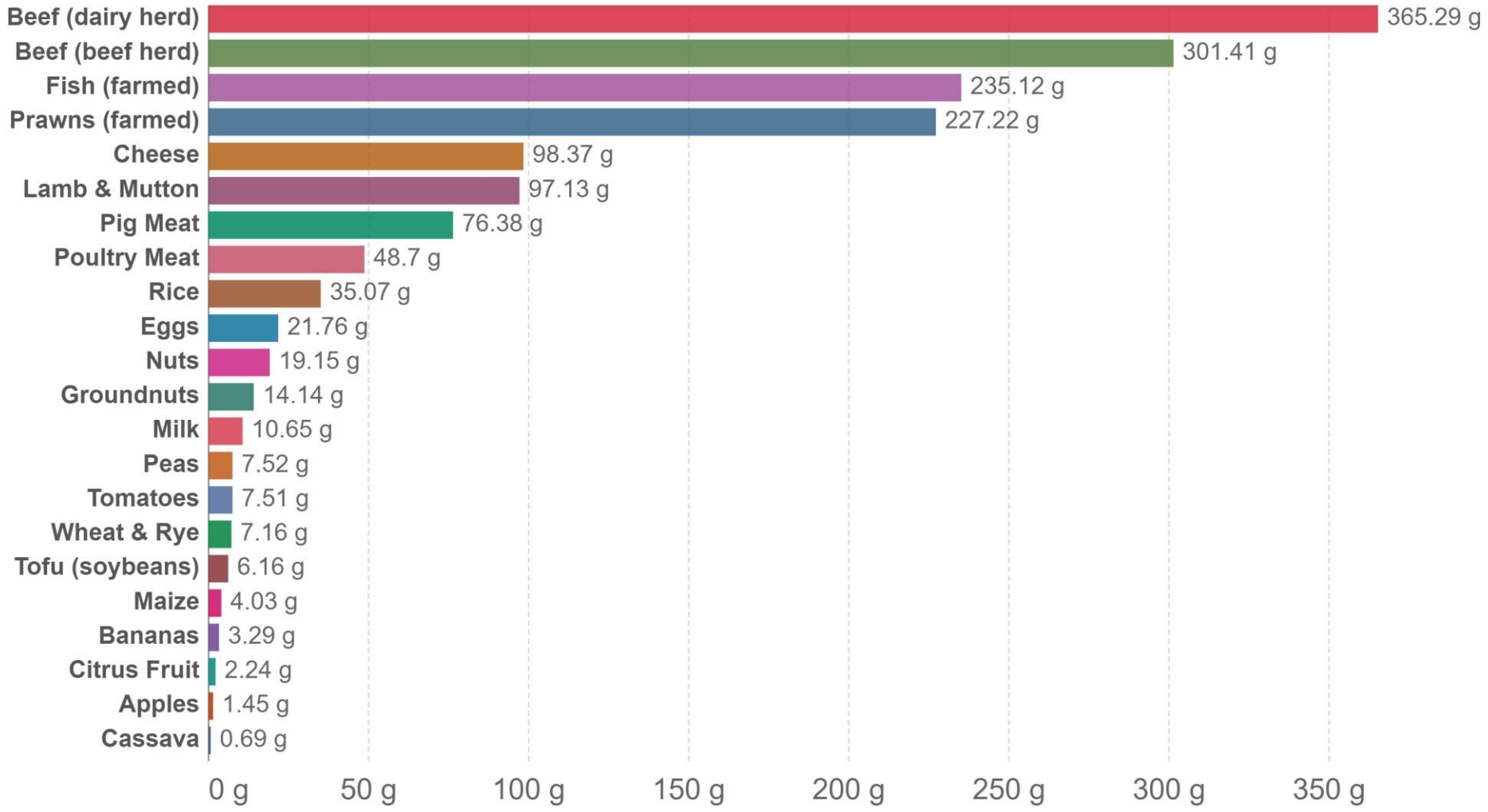
WATER REQUIREMENTS (gal/lb)



Sustainability of Meat-based and Plant-based Diets and the Environment, American Journal of Clinical Nutrition 2003, 78(suppl.), pgs. 660S-663S.

Eutrophying emissions per kilogram of food product

Eutrophying emissions represent runoff of excess nutrients into the surrounding environment and waterways, which affect and pollute ecosystems. They are measured in grams of phosphate equivalents (PO_4eq).



Source: Poore, J., & Nemecek, T. (2018). Reducing food's environmental impacts through producers and consumers.
OurWorldInData.org/environmental-impacts-of-food • CC BY

https://ourworldindata.org/environmental-impacts-of-food

DEFORESTATION

- Beef production & exports responsible for 60% of deforestation in Argentina, Bolivia, Brazil, Paraguay, Indonesia, Malaysia, & Papua New Guinea (2000-2011).
- Beef, soybeans, palm oil & wood products from these countries account for 40% of total tropical deforestation (2000-2011).
- Export markets driving increased deforestation.
- Brazilian rainforest is approximately 17% deforested, with tipping point expected at 20-25%.

https://iopscience.iop.org/article/10.1088/1748-9326/10/12/125012

BIODIVERSITY LOSS

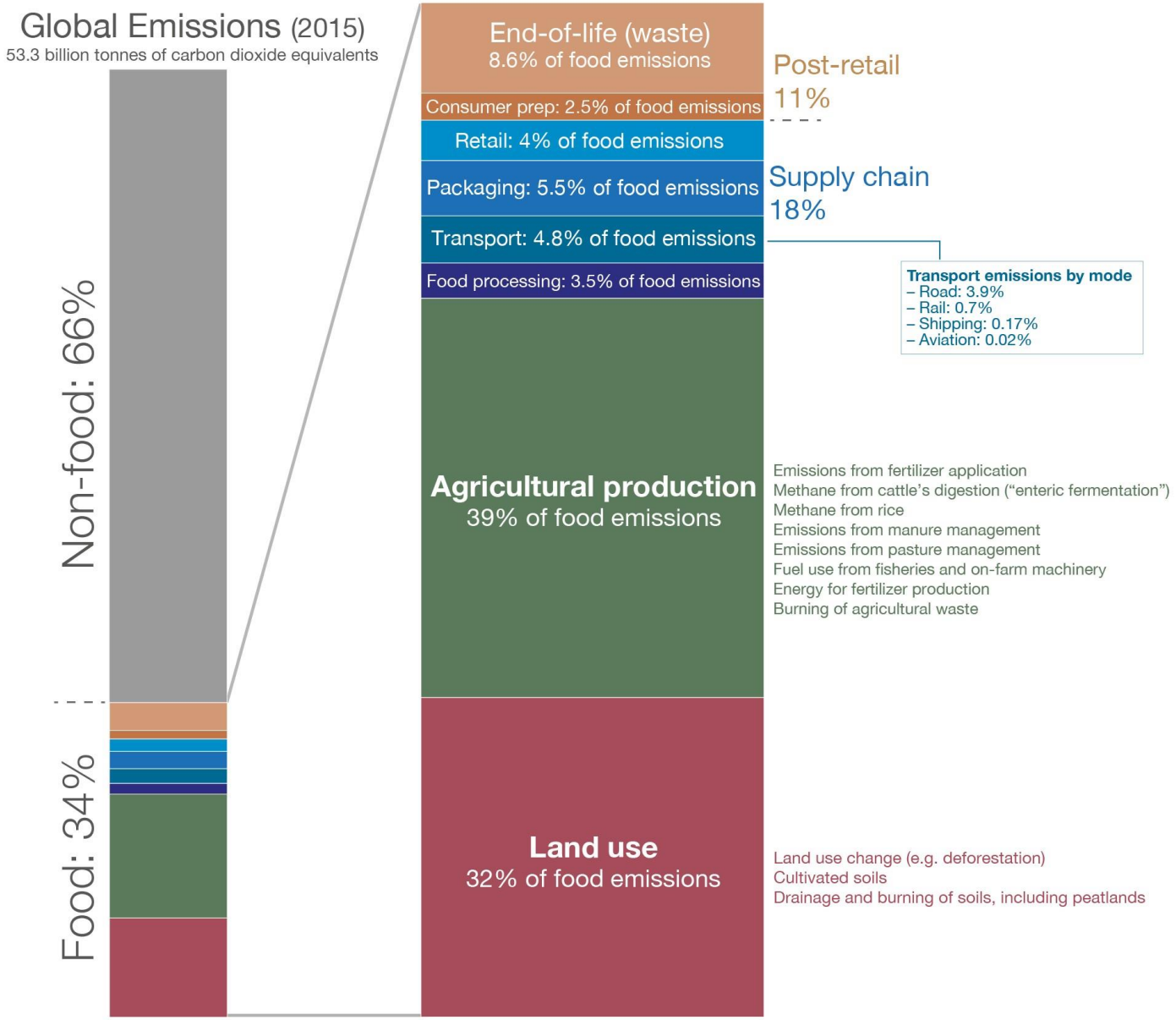
- Only 6% of non-human mammal biomass on Earth are wild animals.
- ¼ of Earth's vertebrates are threatened by animal product consumption through livestock, predation & bycatch.
- Competitive & invasive species of animal products are threatened.
- World Wildlife Fund & Zoological Society of London found a 69% decline in wildlife populations around the world from 1970 to 2018.
- Latin America showed the greatest regional decline in population abundance (94%), while freshwater species populations showed the greatest overall global decline (83%).

https://www.weforum.org/agenda/2022/10/nature-loss-biodiversity-wwf/

https://www.sciencedirect.com/science/article/pii/S2530064420300614

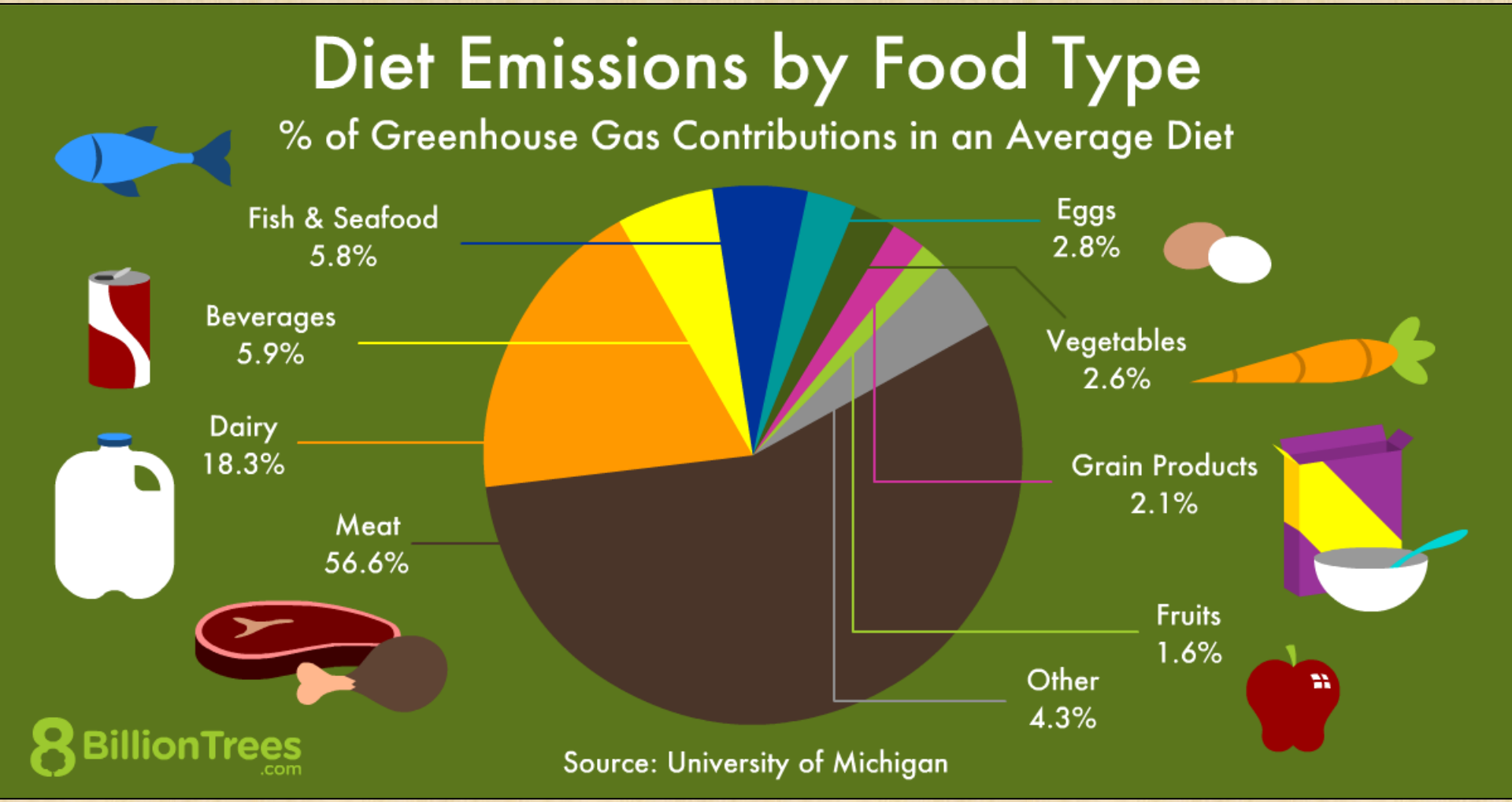
One-third of global greenhouse gas emissions come from food systems

Our World in Data

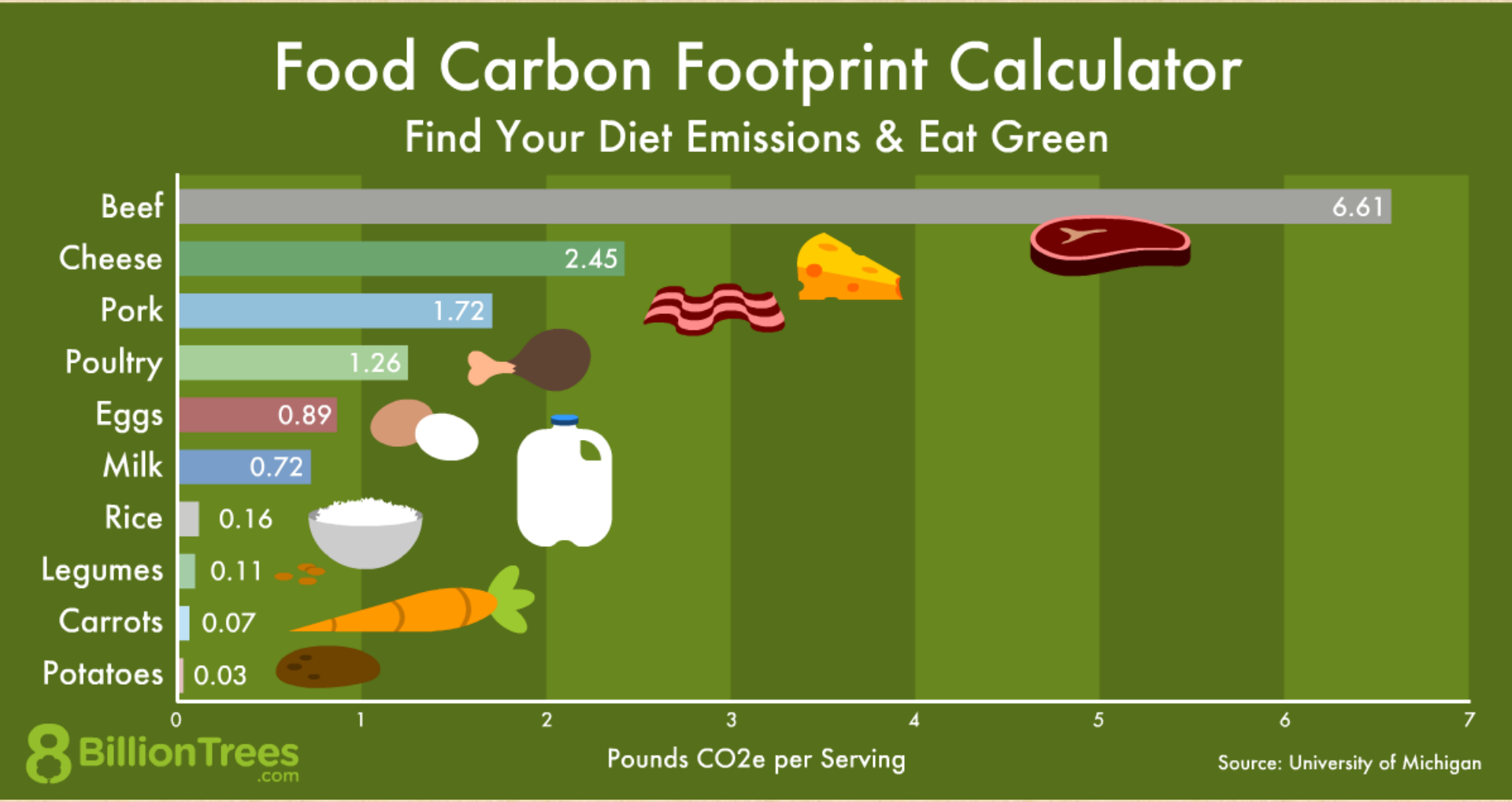


Data source: Crippa, M., et al. (2021) Food systems are responsible for a third of global anthropogenic GHG emissions. *Nature Food*.

ANIMAL PRODUCTS = 83.5% OF DIETARY GHG EMISSIONS



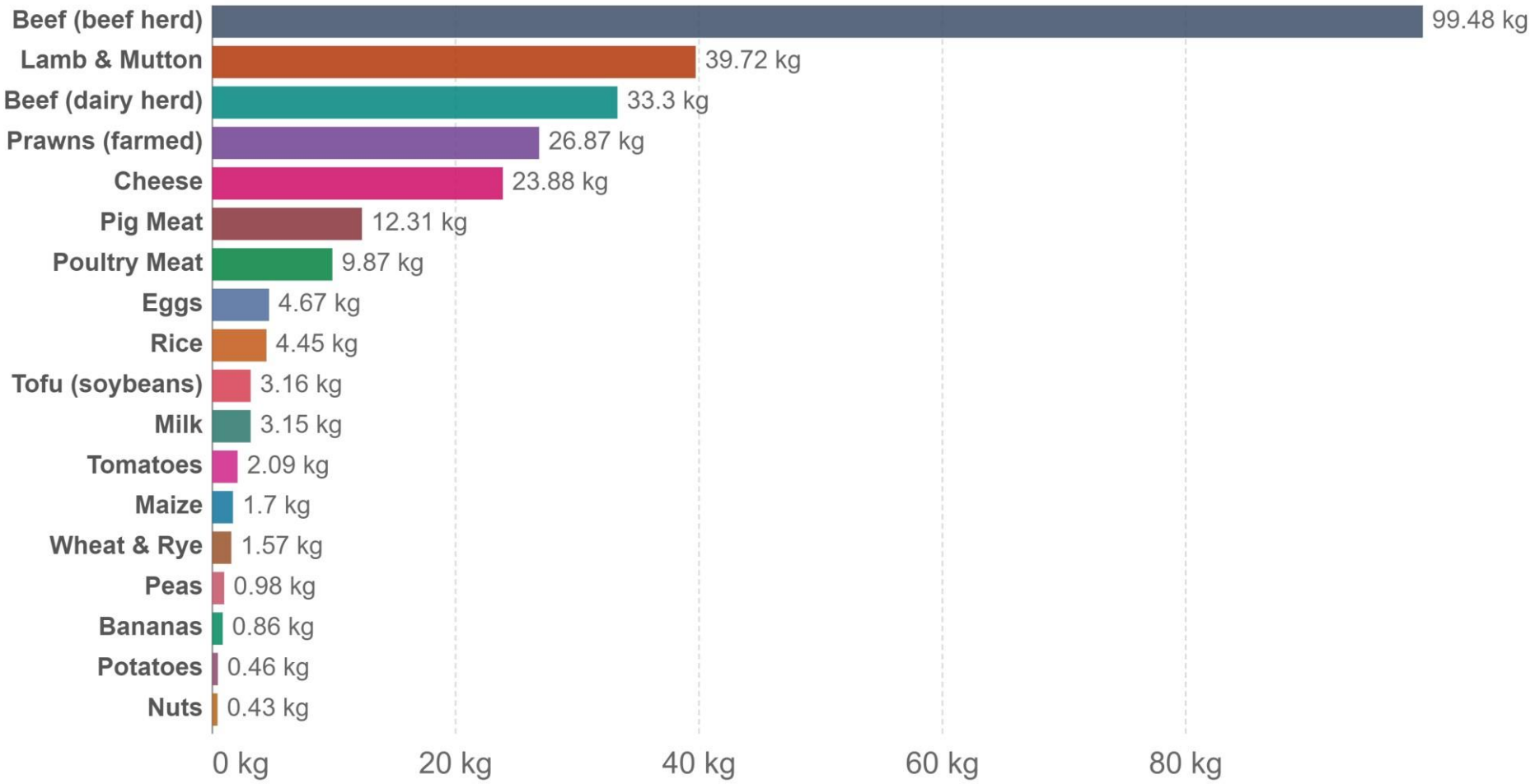
SERVING-SIZE GHG EMISSION CALCULATOR



Greenhouse gas emissions per kilogram of food product

Our World in Data

Emissions are measured in carbon dioxide equivalents (CO_2eq). This means non-CO_2 gases are weighted by the amount of warming they cause over a 100-year timescale.



Source: Poore, J., & Nemecek, T. (2018). Reducing food's environmental impacts through producers and consumers.
Note: Greenhouse gases are weighted by their global warming potential value (GWP100). GWP100 measures the relative warming impact of one molecule of a greenhouse gas, relative to carbon dioxide, over 100 years.
OurWorldInData.org/environmental-impacts-of-food • CC BY

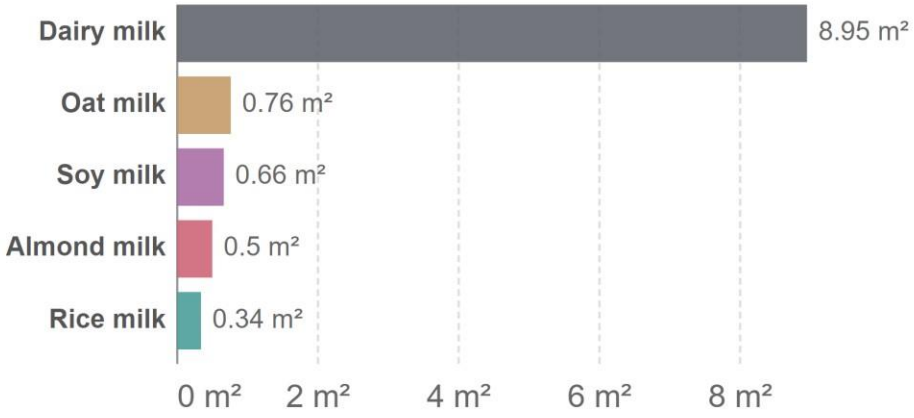
https://ourworldindata.org/environmental-impacts-of-food

Environmental footprints of dairy and plant-based milks

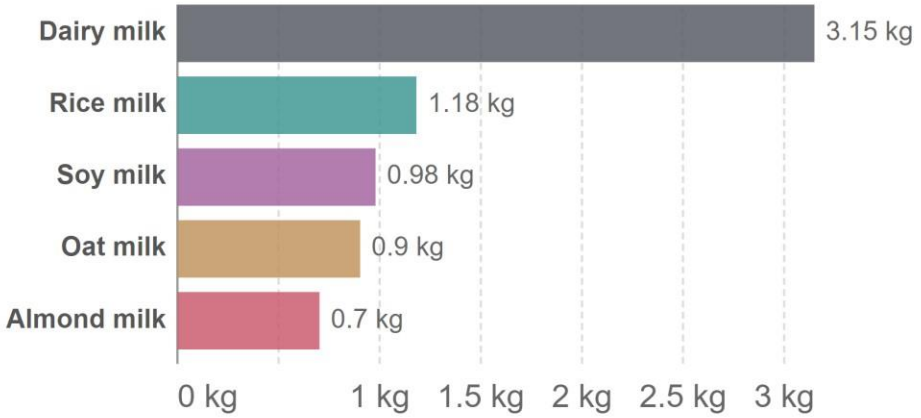
Our World in Data

Impacts are measured per liter of milk. These are based on a meta-analysis of food system impact studies across the supply chain which includes land use change, on-farm production, processing, transport, and packaging.

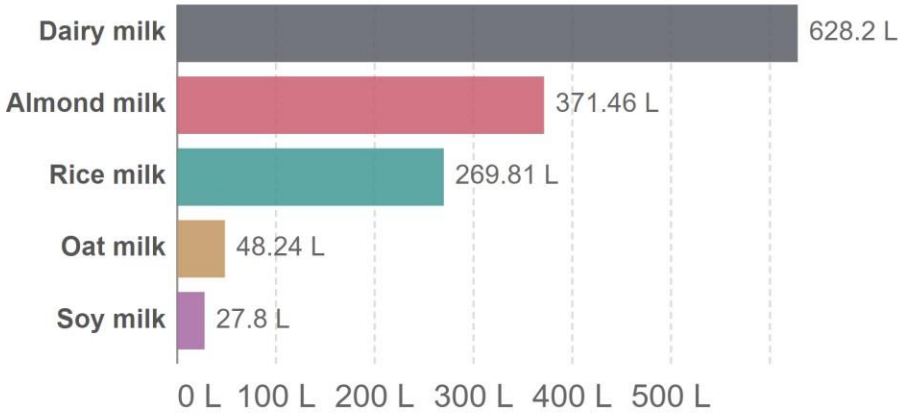
Land use



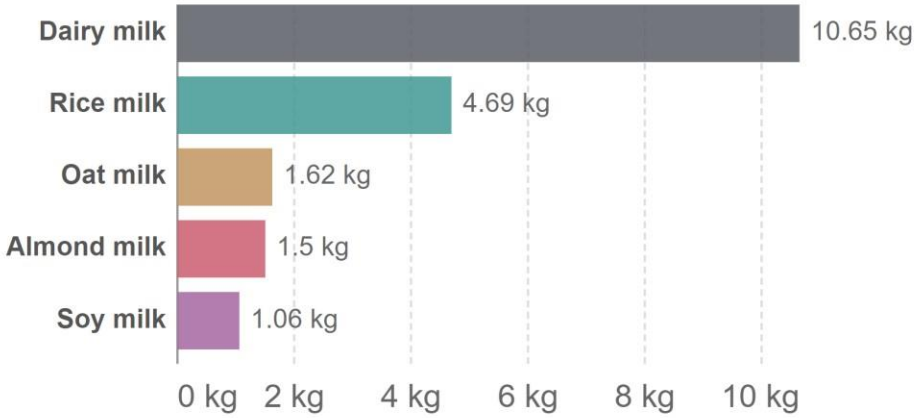
Greenhouse gas emissions



Freshwater use



Eutrophication



Source: Poore, J., & Nemecek, T. (2018). Reducing food's environmental impacts through producers and consumers. Science.
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https://ourworldindata.org/environmental-impacts-of-food

UNIVERSITY OF OXFORD STUDY

- Evaluated data from 38,700 farms in 119 countries & 40 products comprising 90% of global protein & calories.

- Excluding animal products would free up 76% of farmland, which could remove 8.1 billion metric tons CO_2 per year as vegetation & soil recover.

- In the U.S., excluding animal products reduces one's emission footprint (GHG, acidification, eutrophication, land & water use) up to 73%.

- Widespread behavioral change needed in narrow timeframe to limit global warming & prevent further, irreversible biodiversity loss.

https://doi.org/10.1126/science.aaq0216

WORLD SCIENTISTS' WARNING OF CLIMATE EMERGENCY 2021

RECOMMENDATIONS

1. Eliminate fossil fuels & shift to renewables.
2. Slash black carbon (soot), methane & hydrofluorocarbons.
3. Restore & protect ecosystems for biodiversity & carbon storage.
4. Switch to plant-based diets, reduce waste, improve crop practices.
5. Use circular economy where prices reflect full environmental costs.
6. Stabilize & gradually reduce human population.

FINAL WORD

Transformative change needed now more than ever and speed of change essential.

https://academic.oup.com/bioscience/article/71/9/894/6325731

INDIGENOUS LAND TENURE BUILDS RESILIENCE

Pacific Northwest forests managed by Indigenous peoples 150 years ago are still distinct from surrounding forests (more species, more diversity of plant foods, more animal/insect pollinators, larger seeds, more ecosystem functional diversity).

Forest gardens featured an open canopy of small fruit and nut trees, understory of berry plants, and floor of herbaceous plants of ethnobotanical importance (10 indicator species).

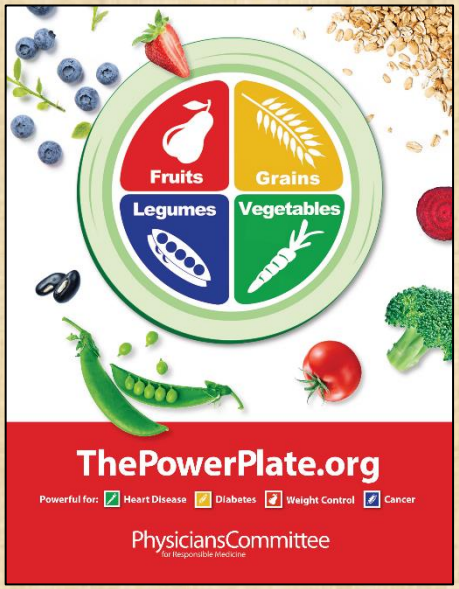
Results similar in Mexico, Belize, and Brazil, demonstrating that Indigenous land tenure legacy is long-persisting, high functional diversity and high species diversity.

Studies demonstrate that Indigenous legal rights and autonomy need to be secured.

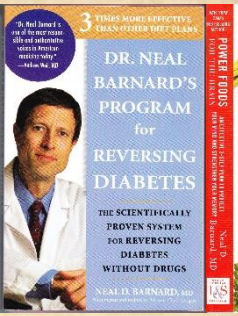
Armstrong, C. et al., 2021. "Historical Indigenous Land-Use Explains Plant Functional Trait Diversity." *Ecology and Society* 26(2):6. https://doi.org/10.5751/ES-12322-260206
Benzeev, R. et al., 2022. "Formalizing Tenure of Indigenous Lands Improved Forest Outcomes in the Atlantic Forest of Brazil." *PNAS Nexus* 2, 1-8.
https://academic.oup.com/pnasnexus/article/2/1/pgac287/7005261

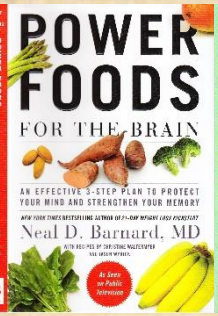
Physicians Committee for Responsible Medicine

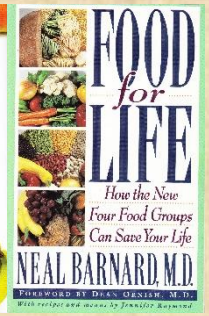
https://www.pcrm.org

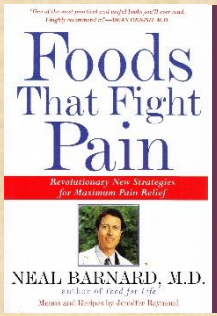


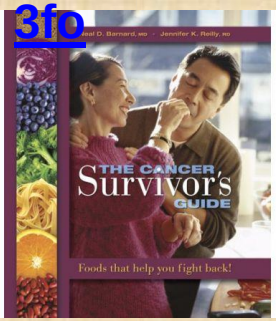
https://www.youtube.com/watch?v=dxzSfiFz3fo

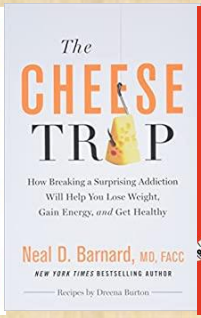


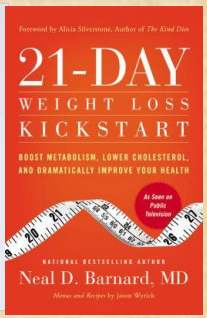


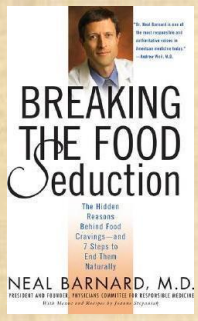


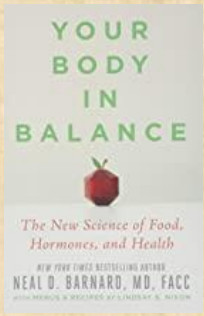












https://www.pcrm.org/good-nutrition/healthy-communities/native-american-resources

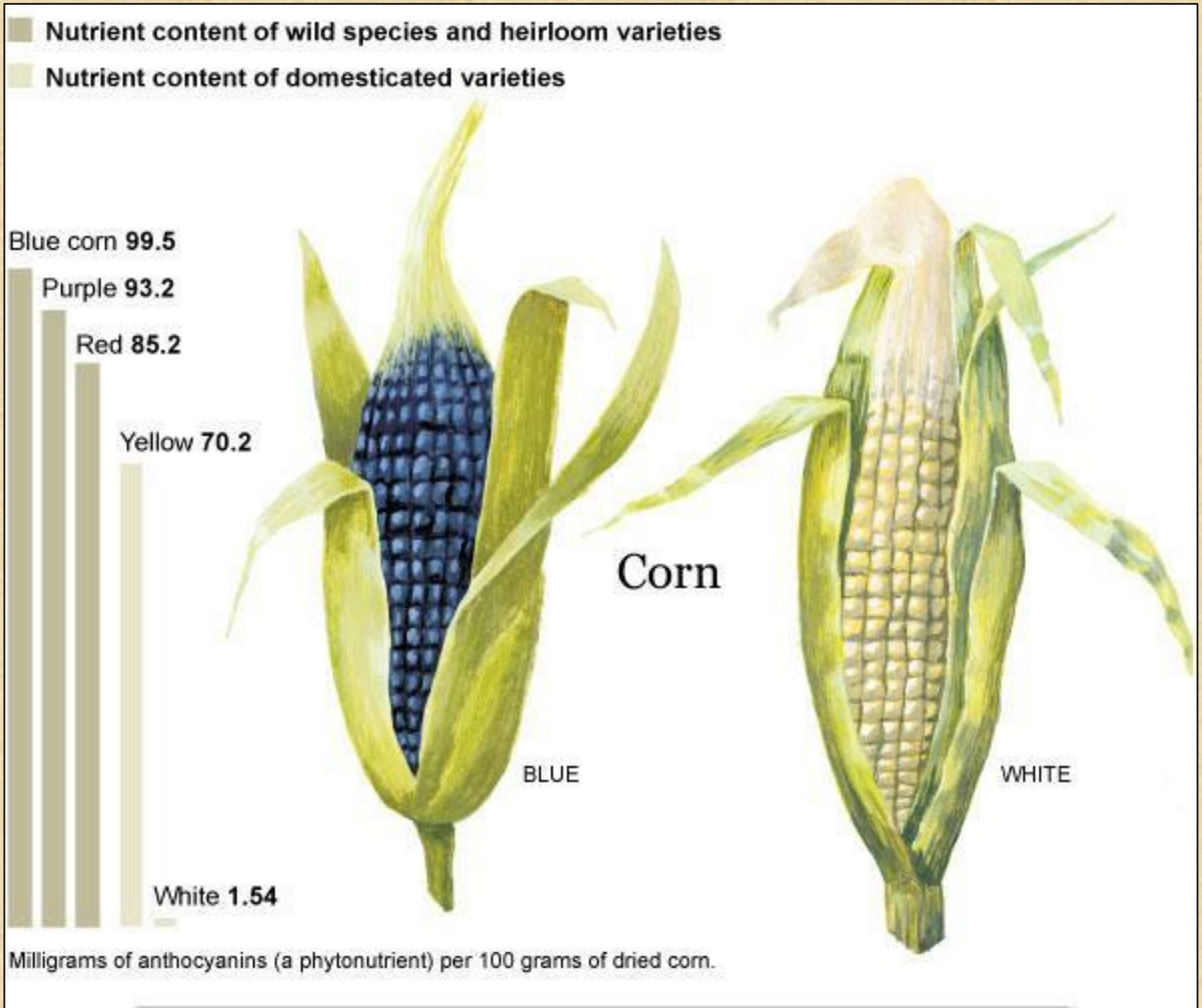
Transfarmation = The repurposing of a concentrated animal feeding operation (CAFO) to help create a sustainable and compassionate plant-based food system.

Mission: To help farmers transition their industrial animal-agriculture operations to plant-focused farms raising crops for human consumption.

Farmers have used Transfarmation to convert from poultry, cattle and hog farming to growing organic vegetables, hemp, mushrooms, herbs, and flowers.

https://thetransfarmationproject.org/

LOST NUTRITION



After 400 generations of agriculture, we have bred the nutrition out of our food, in favor of starches and sugars.

Eating on the Wild Side (Robinson, J., 2013)

HEIRLOOM BLUE CORN


IF IT CAME FROM A PLANT, eat it;
IF IT WAS MADE IN A PLANT, don't.
—MICHAEL POLLAN
POPSUGAR