Food Consumption and Health

AGRICULTURAL AND RESOURCE ECONOMICS
KASETSART UNIVERSITY

Suwanna Sayruamyat
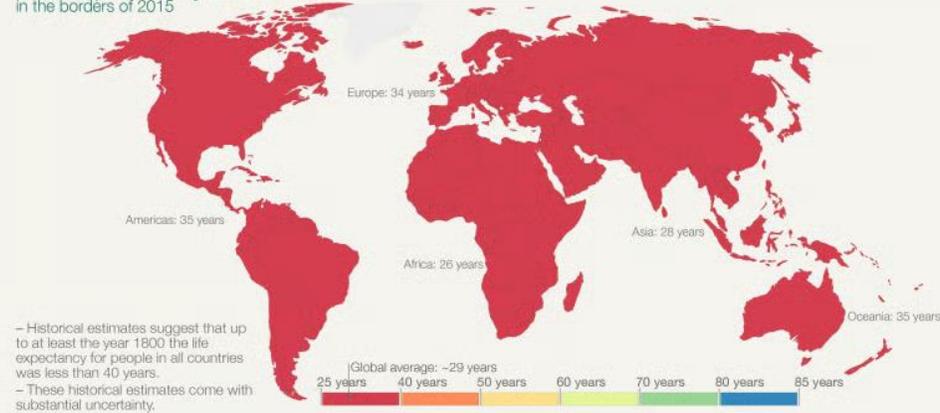
Department of Agricultural and Resource Economics
Faculty of Economics, Kasetsart University
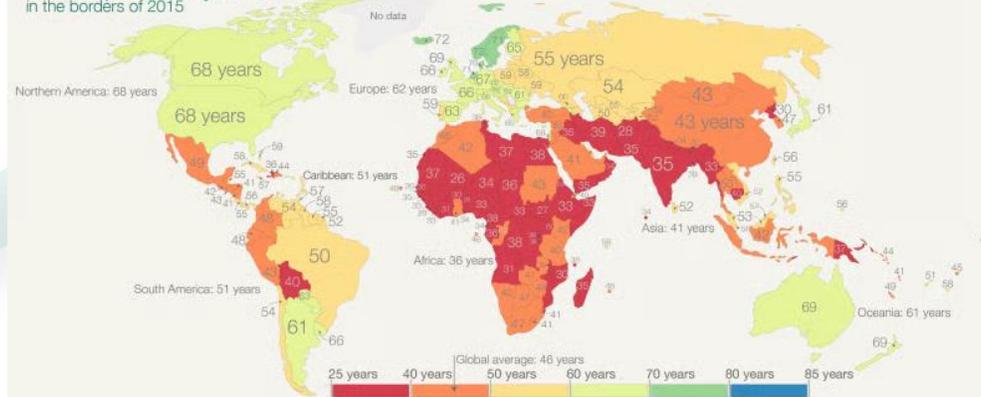
Email: suwanna.s@ku.th   FB: Suwanna Sayruamyat
Website: www.eatecon.com   FB Page: EatEcon
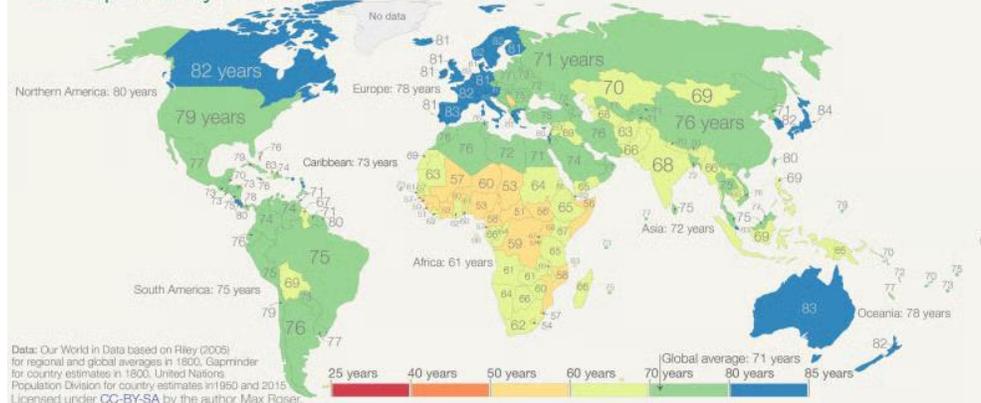
Max Roser (2018) - "Twice as long — life expectancy around the world" Published online at OurWorldinData.org. Retrieved from: 'https://ourworldindata.org/life-expectancy-globally' [Online Resource]

https://ourworldindata.org/life-expectancy-globally

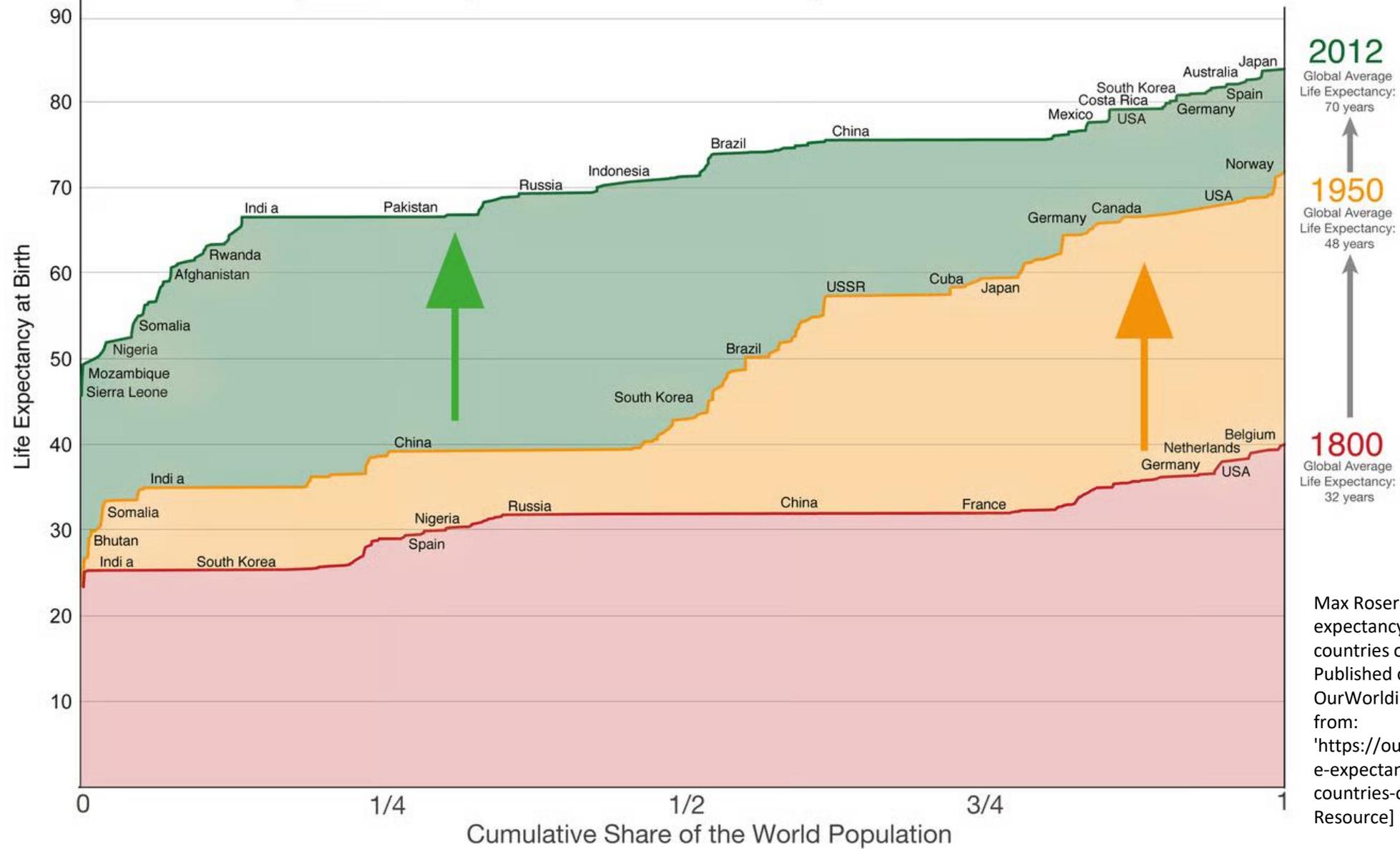# Life Expectancy of the World Population in 1800, 1950 and 2012

Countries are ordered along the x-axis ascending by the life expectancy of the population. Data for almost all countries is shown in this chart, but not all data points are labelled with the country name.
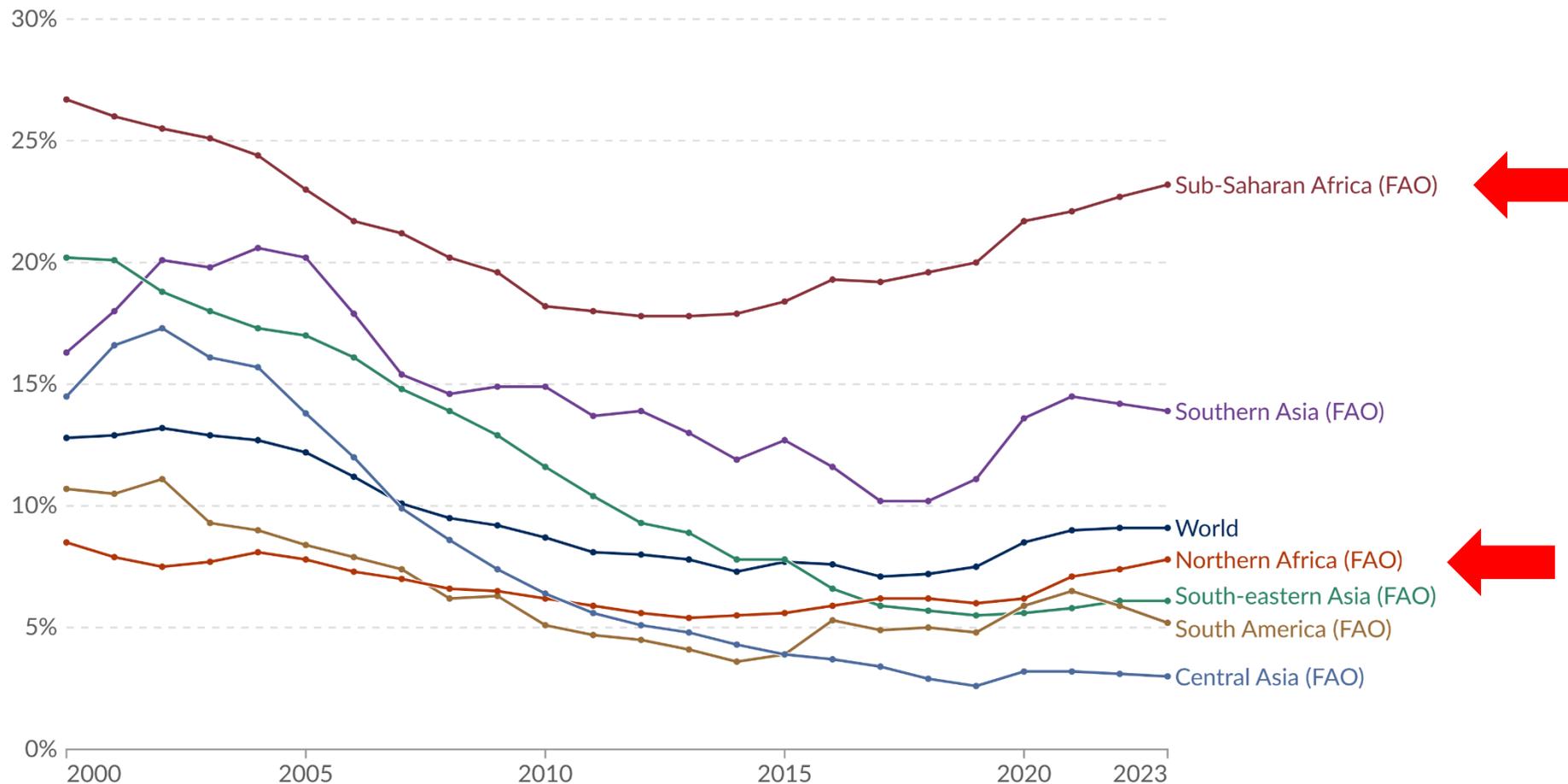
Max Roser (2015) - "Life expectancy increased in all countries of the world" Published online at OurWorldinData.org. Retrieved from: 'https://ourworldindata.org/life-expectancy-increased-in-all-countries-of-the-world' [Online Resource]

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Share of people who are undernourished

Share of the population whose daily food intake does not provide enough energy to maintain a normal, active, and healthy life.

Sub-Saharan Africa (FAO)

Southern Asia (FAO)

World

Northern Africa (FAO)

South-eastern Asia (FAO)

South America (FAO)

Central Asia (FAO)

Data source: Food and Agriculture Organization of the United Nations (2025)   OurWorldinData.org/hunger-and-undernourishment | CC BY

Note: The FAO reports all values below 2.5% as "<2.5%" due to high uncertainty at very low levels of undernourishment.

Number of deaths by cause, World, 2019

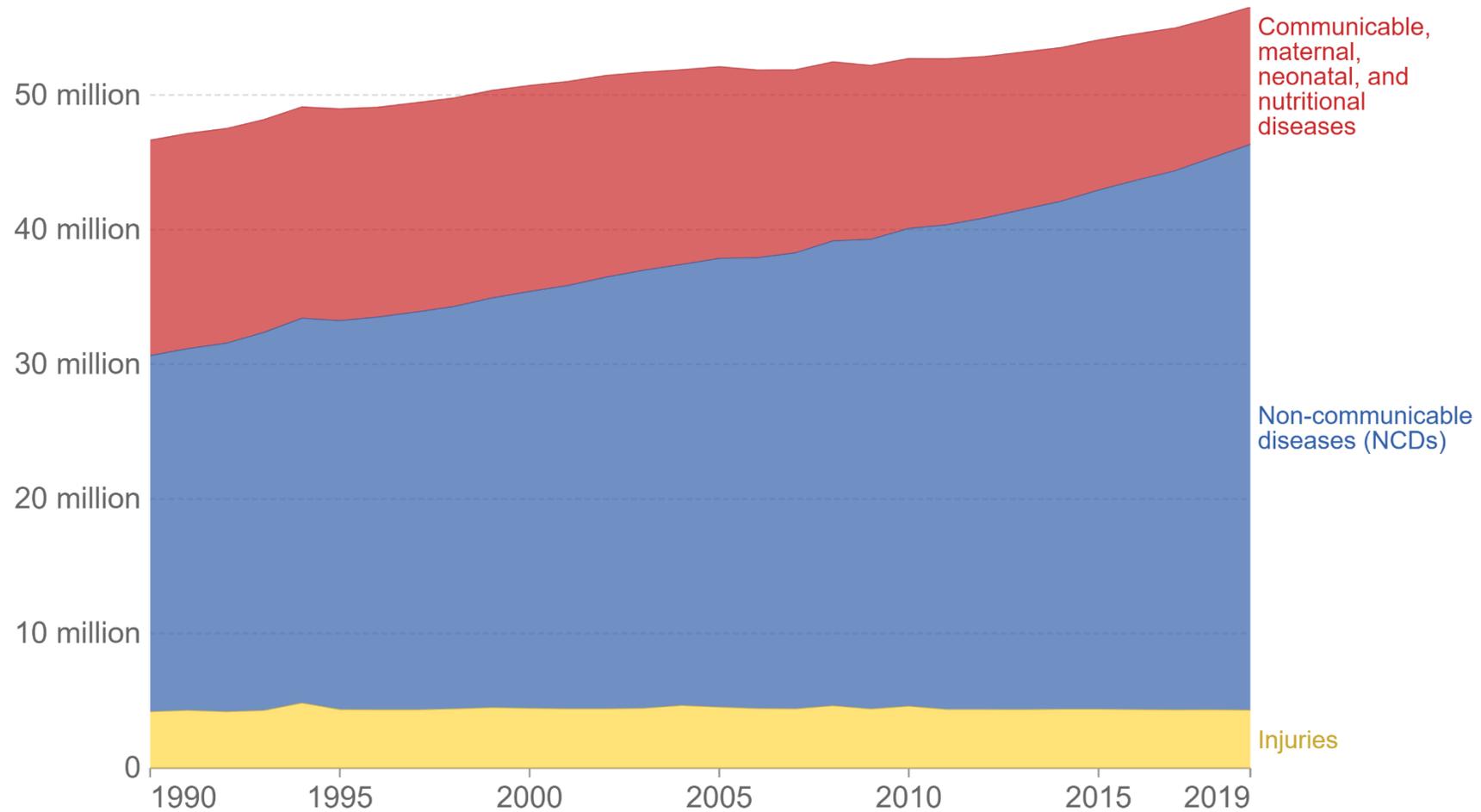| Cause	Deaths
Cardiovascular diseases	18.56 million
Cancers	10.08 million
Respiratory diseases	3.97 million
Digestive diseases	2.56 million
Lower respiratory infections	2.49 million
Neonatal disorders	1.88 million
Dementia	1.62 million
Diabetes	1.55 million
Diarrheal diseases	1.53 million
Liver diseases	1.47 million
Kidney diseases	1.43 million
Road injuries	1.2 million
Tuberculosis	1.18 million
HIV/AIDS	863,837
Suicide	759,028
Malaria	643,381
Homicide	415,180
Parkinson's disease	362,907
Nutritional deficiencies	251,577
Drowning	237,242
Meningitis	236,222
Protein-energy malnutrition	212,242
Maternal disorders	196,471
Alcohol use disorders	168,015
Drug use disorders	128,083
Fire	111,292
Hepatitis	79,176
Poisonings	77,162
Conflict	62,985
Heat (hot and cold exposure)	47,461
Natural disasters	6,076

Source: IHME, Global Burden of Disease (2019)

OurWorldInData.org/causes-of-death • CC BY

Deaths by cause, World, 1990 to 2019

Non-communicable diseases (NCDs) include cardiovascular disease, cancers, diabetes and respiratory disease. Injuries include road accidents, homicides, conflict deaths, drowning, fire-related accidents, natural disasters and suicides.
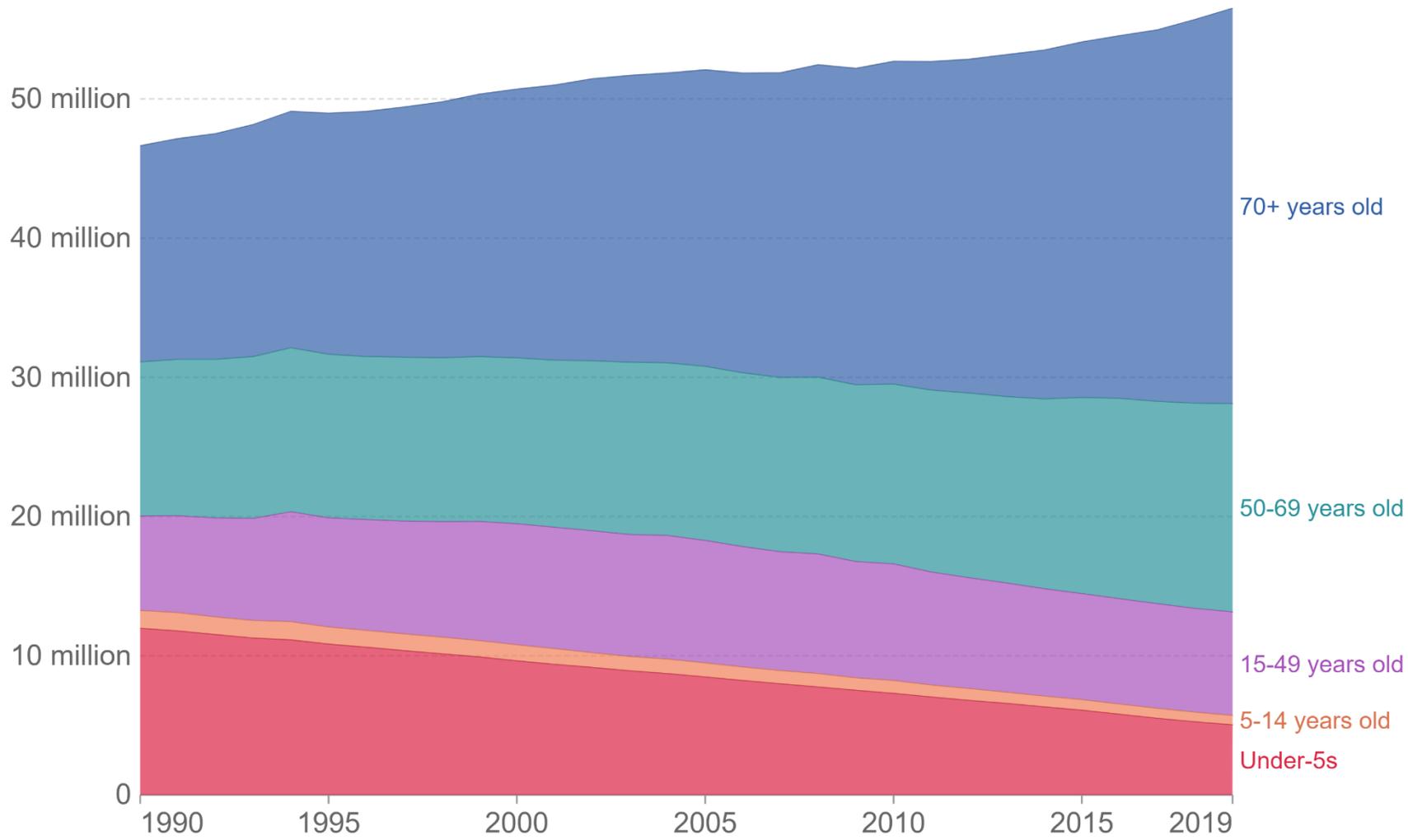

Source: IHME, Global Burden of Disease (2019)

OurWorldInData.org/causes-of-death • CC BY

Deaths by age, World, 1990 to 2019

Total annual number of deaths from all causes, broken down by broad age categories.

70+ years old

50-69 years old

15-49 years old

5-14 years old

Under-5s

50 million

40 million

30 million

20 million

10 million
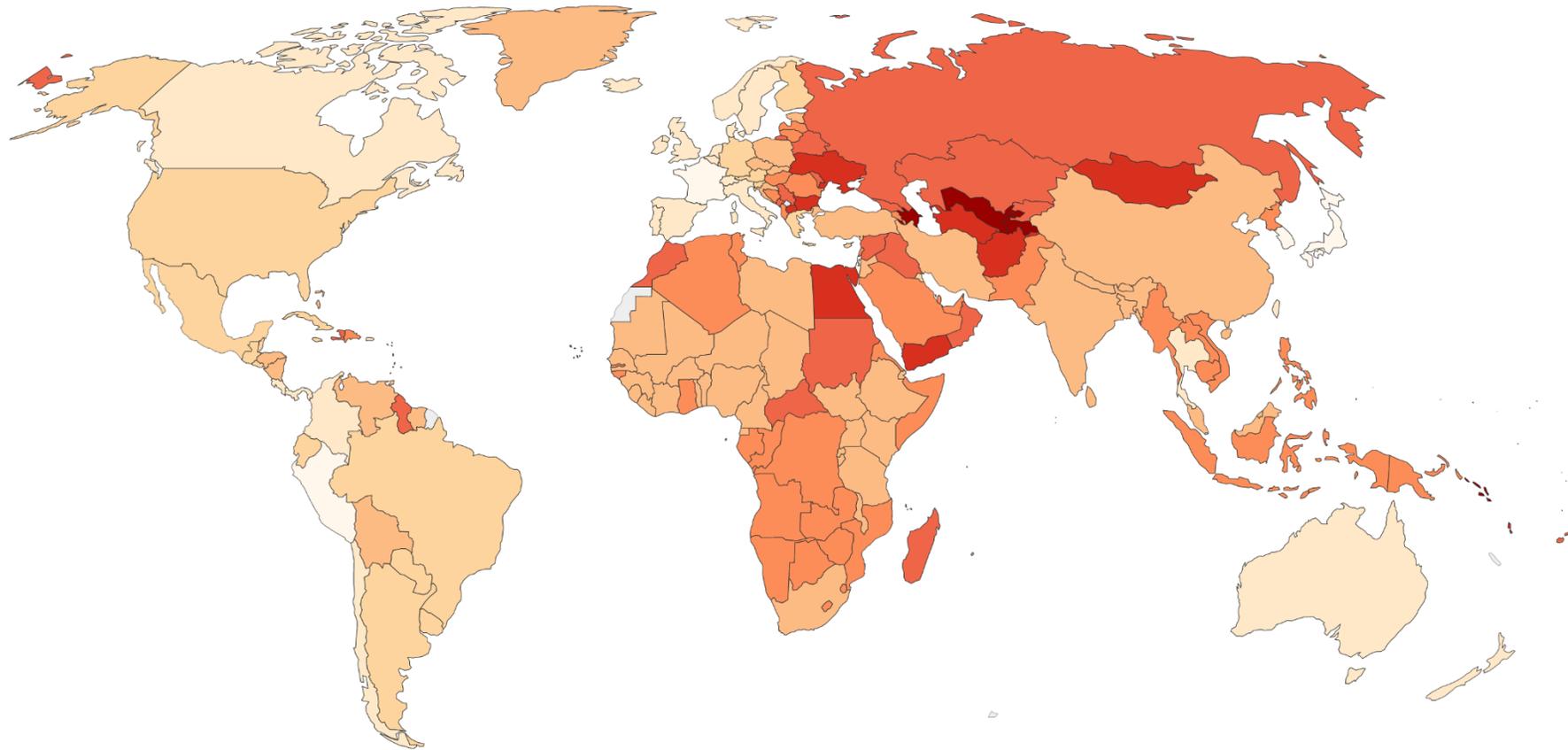
0

1990   1995   2000   2005   2010   2015   2019

Source: IHME, Global Burden of Disease (2019)

OurWorldInData.org/ • CC BY

Death rate from cardiovascular disease, 2019

The annual number of deaths from cardiovascular diseases per 100,000 people.

No data   0   100   150   200   300   400   500   600

Source: IHME, Global Burden of Disease (2019)

OurWorldInData.org/causes-of-death • CC BY

Note: To allow comparisons between countries and over time this metric is age-standardized.

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Death rate from cancer, 2019

The annual number of deaths from all cancers per 100,000 people.
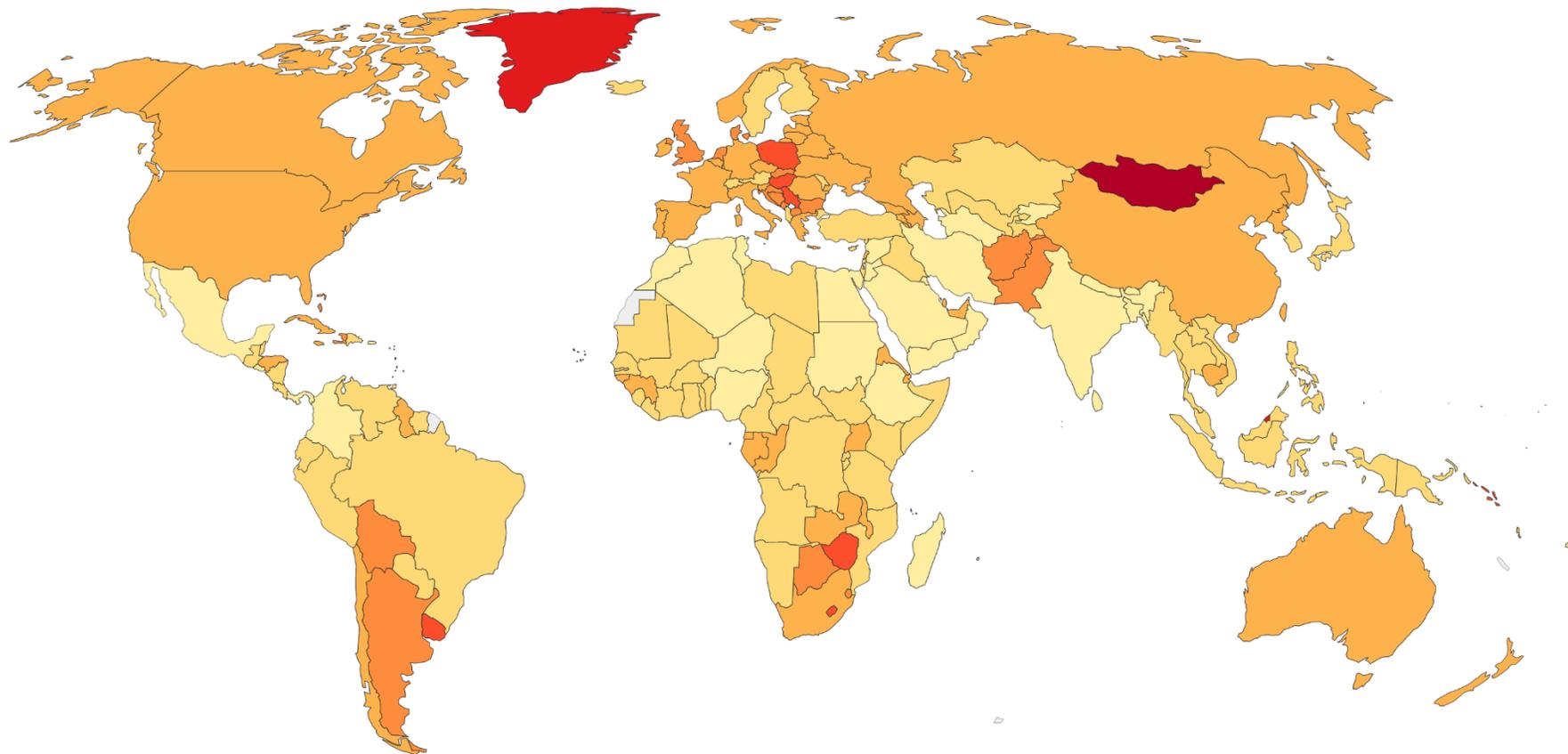
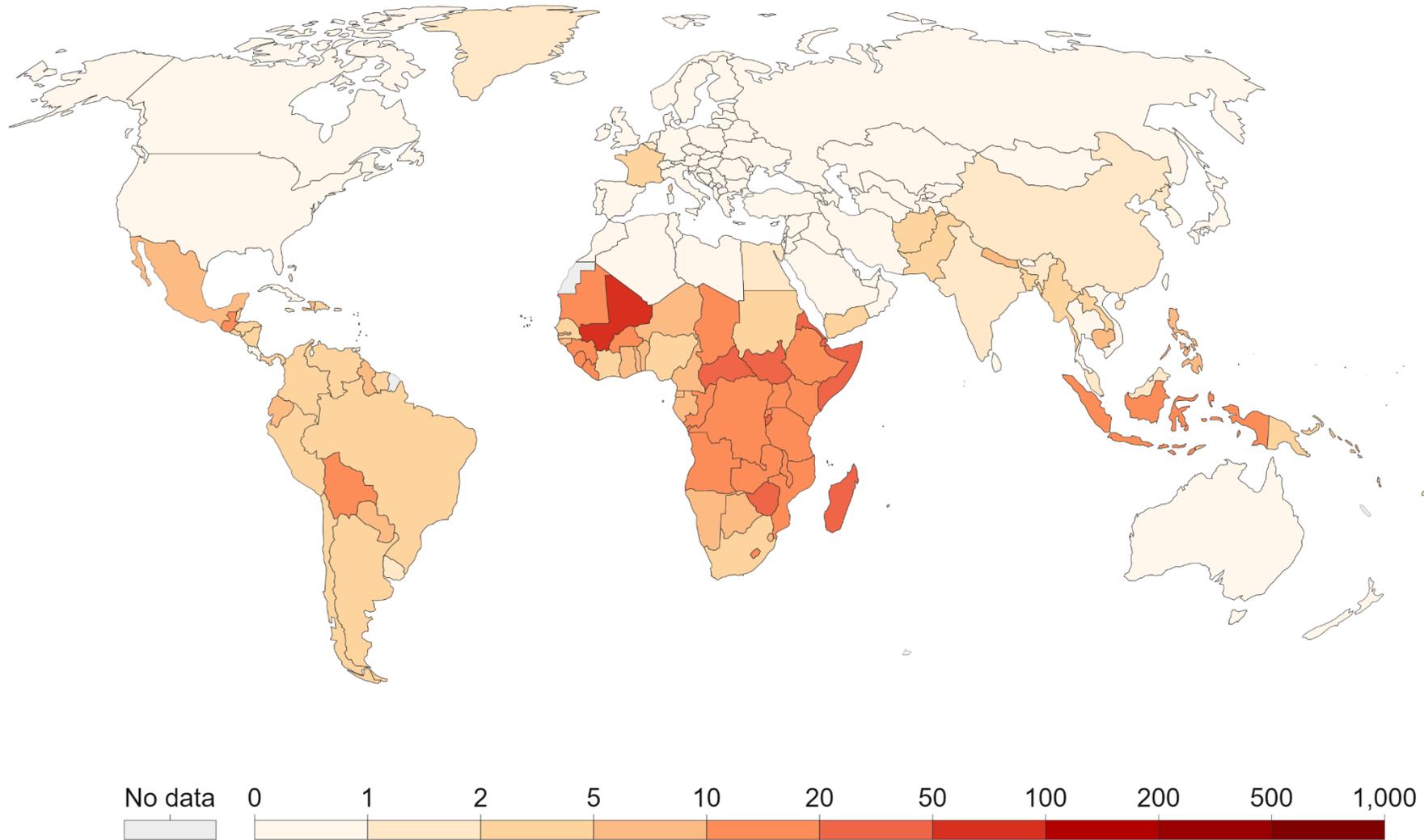| No data	0	50	100	125	150	175	200	250	500

OurWorldInData.org/cancer • CC BY

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Death rate from malnutrition, 2019

Deaths from protein-energy malnutrition per 100,000 people.

| No data | 0 | 1 | 2 | 5 | 10 | 20 | 50 | 100 | 200 | 500 | 1,000 |

Source: IHME, Global Burden of Disease (2019)

OurWorldInData.org/hunger-and-undernourishment • CC BY

Note: To allow comparisons between countries and over time this metric is age-standardized.

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The UN General Assembly will convene a summit of world leaders in September 2011 addressing chronic conditions

"<mark>Cancer, diabetes, and heart diseases are no longer the diseases of the wealthy</mark>. Today, they hamper the people and the economies of the poorest populations even more than infectious diseases. This represents a public health emergency in slow motion."
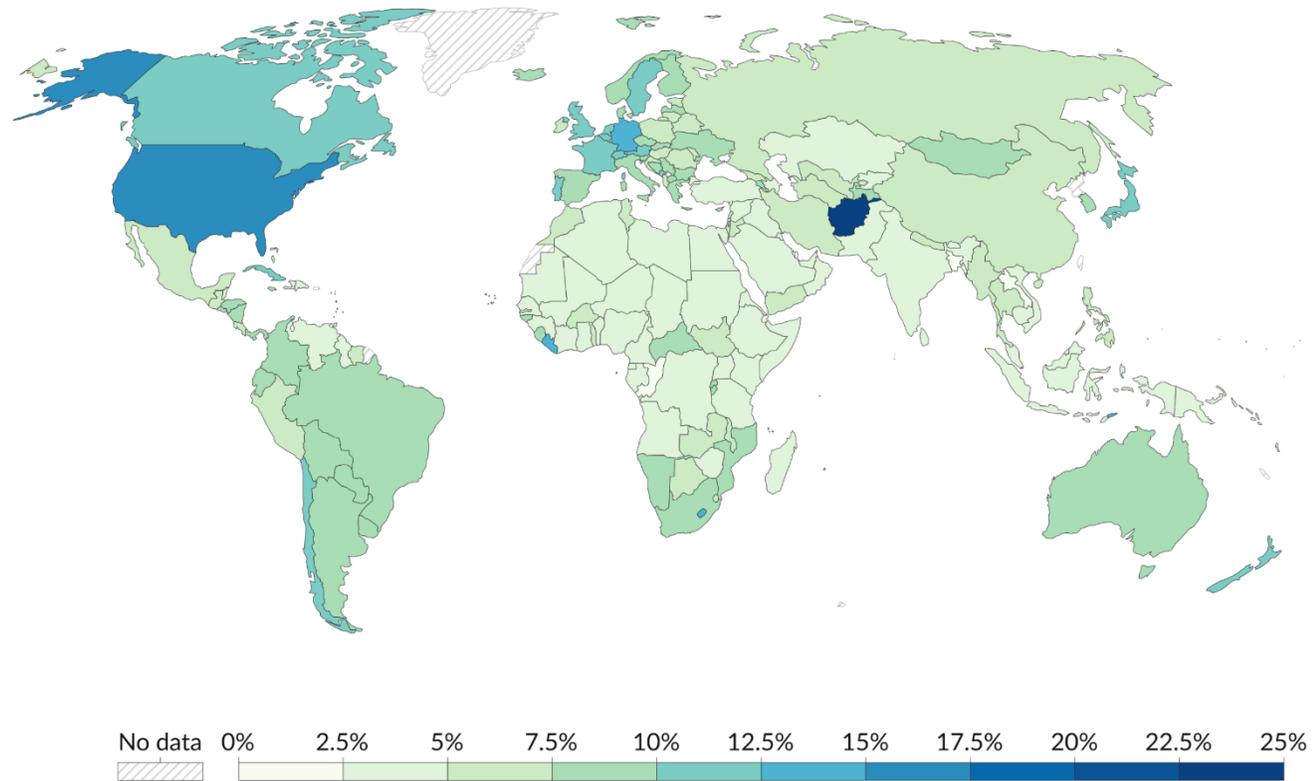
- *UN Secretary Ban Ki-Moon (2011)*

UN Secretary Ban Ki-Moon

https://www.oecd.org/els/health-systems/48245231.pdf

Total healthcare spending as a share of GDP, 2022

Total healthcare expenditure as the share of national gross domestic product[1] (GDP).
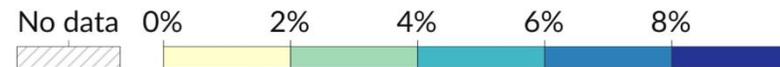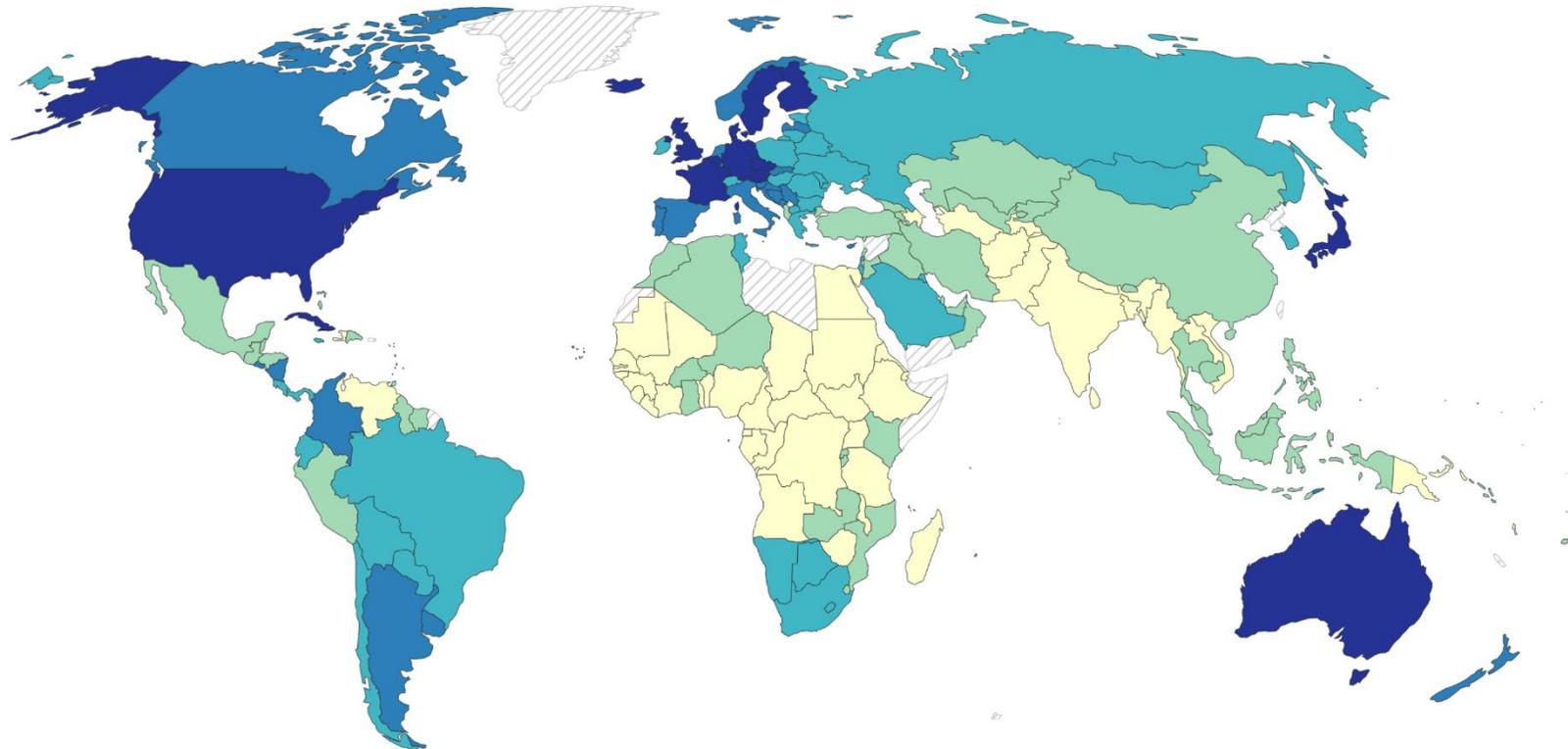

Data source: World Health Organization - Global Health Observatory (2025)

OurWorldinData.org/financing-healthcare | CC BY

1. Gross domestic product Gross domestic product (GDP) is a measure of a country's economic performance. It represents the total monetary value of all final goods and services produced within its borders over a specific time period, typically annually or quarterly.
GDP includes consumption, government spending, investments, and net exports (exports minus imports). It can be measured in current prices (nominal GDP) or adjusted for inflation to reflect GDP in constant prices (real GDP).
GDP is used to gauge the health of an economy, with increases indicating growth and decreases signaling contraction. Policymakers, economists, and analysts use GDP to make informed decisions, track economic trends, and make comparisons between countries.

Public healthcare spending as a share of GDP, 2022

Domestic general government[1] expenditure on health from domestic sources, expressed as a share of GDP.

No data   0%   2%   4%   6%   8%

Data source: World Health Organization Global Health Expenditure Database, via World Bank (2025)

OurWorldinData.org/financing-healthcare | CC BY

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1. General government The general government refers to all levels of government: central (or federal), state (or regional), and local, as well as social security funds. It represents the broadest government level used in international comparisons of public finances.

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Coverage of essential health services, 2021

Coverage of essential health services is measured as an index on a scale of 0 to 100 (where higher is better). This index is based on risk-standardized death rates – which give a measure of healthcare access and quality – and whether common interventions are carried out.


No data   0   20   40   60   80   100
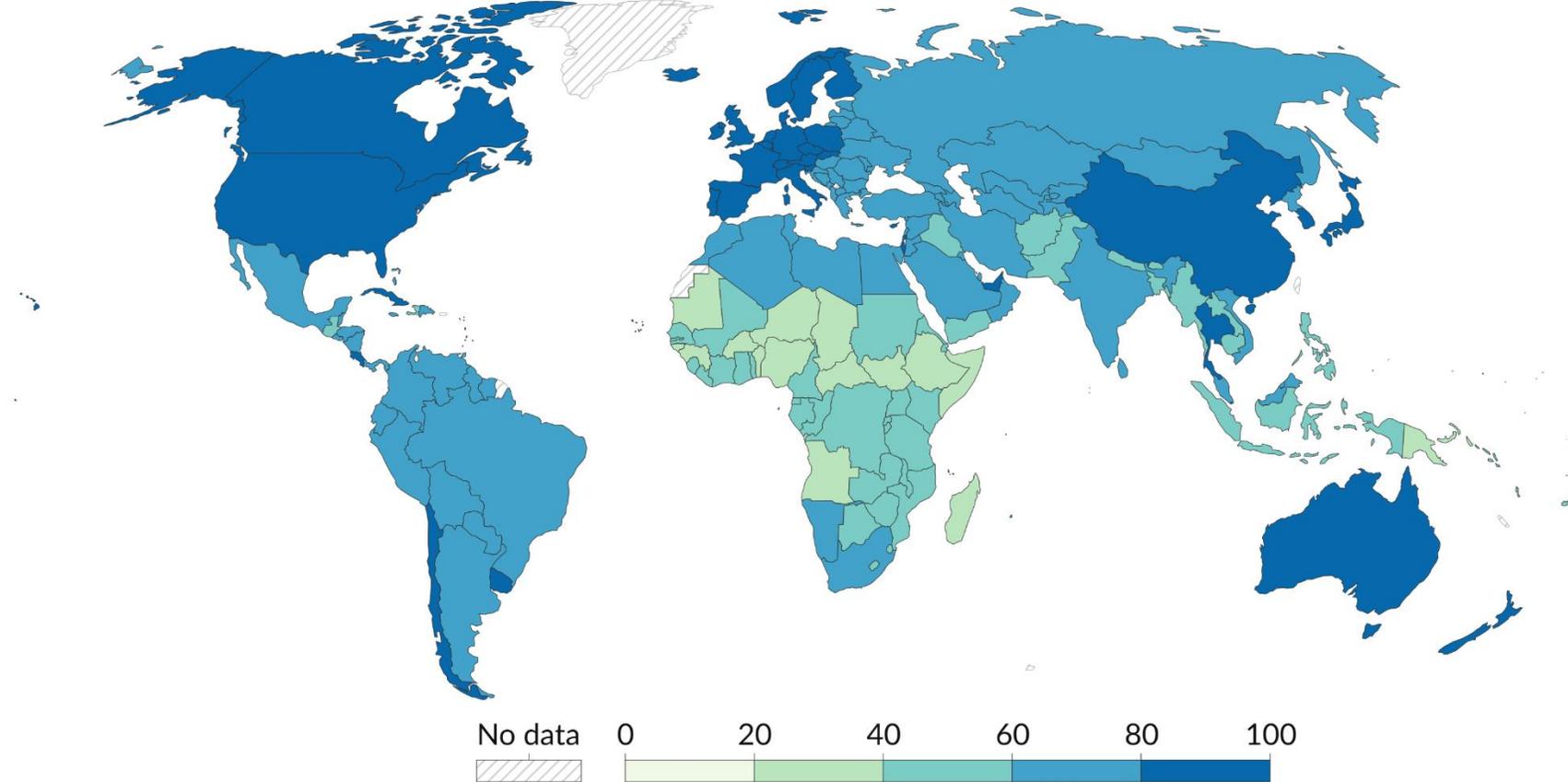
Data source: Global Health Observatory, World Health Organization, via World Bank (2025)

Note: The healthcare index used to assess coverage of essential health services is based on a range of health quality and access indicators and risk-standardized death rates which give a measure of healthcare access and quality. This definition acknowledges that countries provide a wide range of services for health promotion, prevention, treatment, and care, including rehabilitation and palliation, and that tracer indicators should be selected to represent overall coverage of essential services.

OurWorldinData.org/financing-healthcare | CC BY

The Universal Health Coverage (UHC) Service Coverage Index, 2021

The Universal Health Coverage (UHC) Service Coverage Index is measured on a scale from 0 (worst) to 100 (best) based on the average coverage of essential services including reproductive, maternal, newborn and child health, infectious diseases, non-communicable diseases and service capacity and access.

No data   0   10   20   30   40   50   60   70   80   90   100

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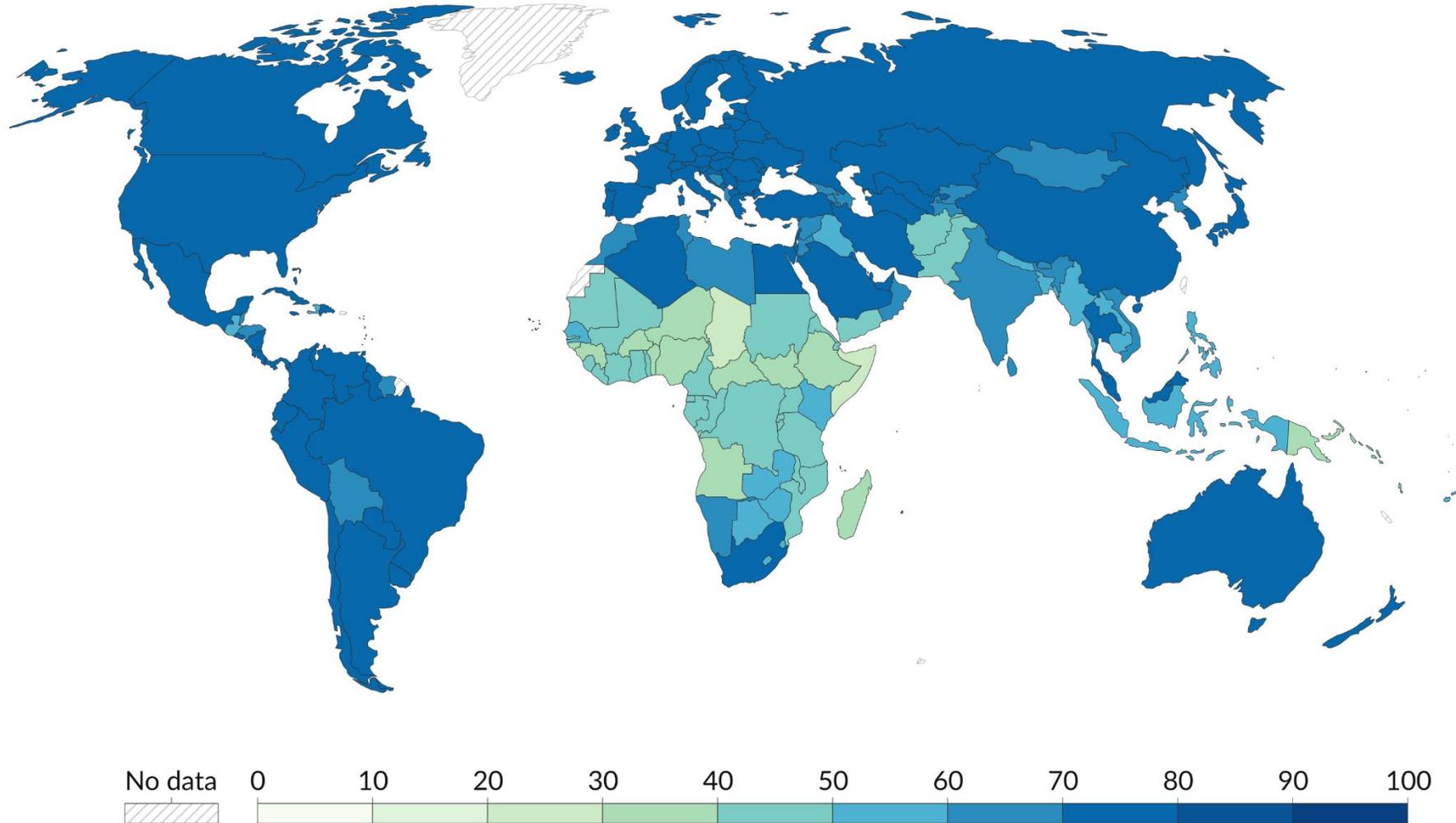
Number of deaths by risk factor, World, 2019

Total annual number of deaths by risk factor, measured across all age groups and both sexes.

| Risk factor	Deaths
High blood pressure	10.85 million
Smoking	7.69 million
Air pollution (outdoor & indoor)	6.67 million
High blood sugar	6.5 million
Obesity	5.02 million
Outdoor air pollution	4.51 million
Alcohol use	2.44 million
Indoor air pollution	2.31 million
Diet high in sodium	1.89 million
Diet low in whole grains	1.84 million
Low birth weight	1.7 million
Secondhand smoke	1.3 million
Unsafe water source	1.23 million
Diet low in fruits	1.05 million
Child wasting	993,046
Unsafe sex	984,366
Low physical activity	831,502
Unsafe sanitation	756,585
No access to handwashing facility	627,919
Diet low in nuts and seeds	575,139
Diet low in vegetables	529,381
Drug use	494,492
Low bone mineral density	437,884
Child stunting	164,237
Non-exclusive breastfeeding	139,732
Iron deficiency	42,349
Vitamin A deficiency	23,850
Discontinued breastfeeding	7,788

Source: IHME, Global Burden of Disease (2019)

OurWorldInData.org/causes-of-death • CC BY

Deaths due to high blood sugar, 2021

Estimated annual number of deaths attributed to high blood sugar[1].

No data   0   10,000   30,000   100,000   300,000   1 million   3 million
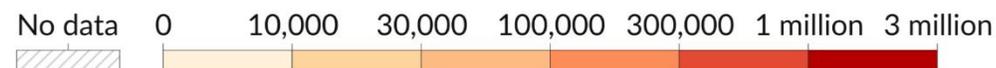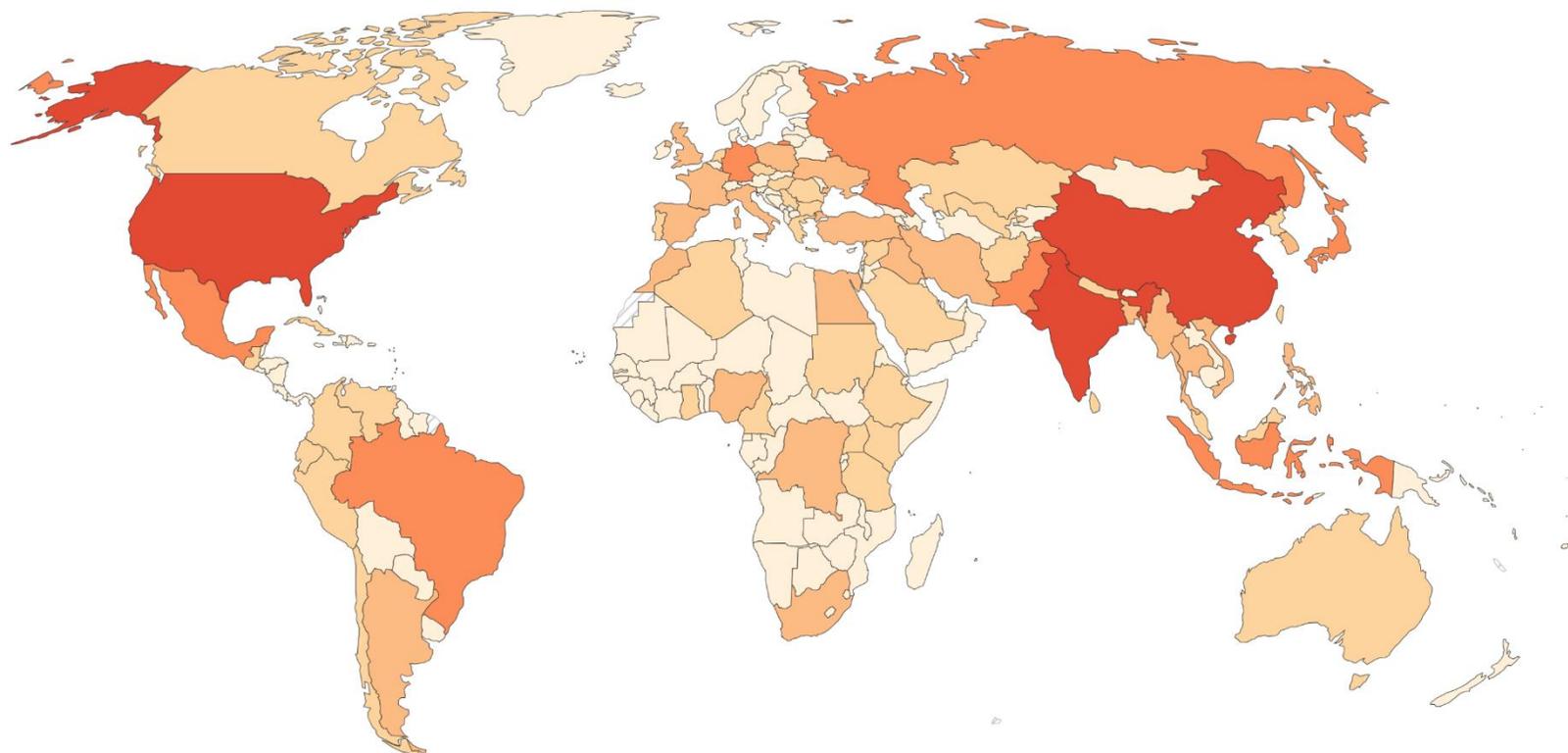
Data source: IHME, Global Burden of Disease (2024)

OurWorldinData.org/causes-of-death | CC BY

1. High blood sugar High blood sugar (hyperglycaemia) is when the level of sugar in the blood is too high. High levels of blood glucose after fasting is a risk factor for diabetes and cardiovascular diseases.

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Deaths due to obesity, 2021

Estimated annual number of deaths attributed to obesity[1].

No data 0 3,000 10,000 30,000 100,000 300,000 1 million
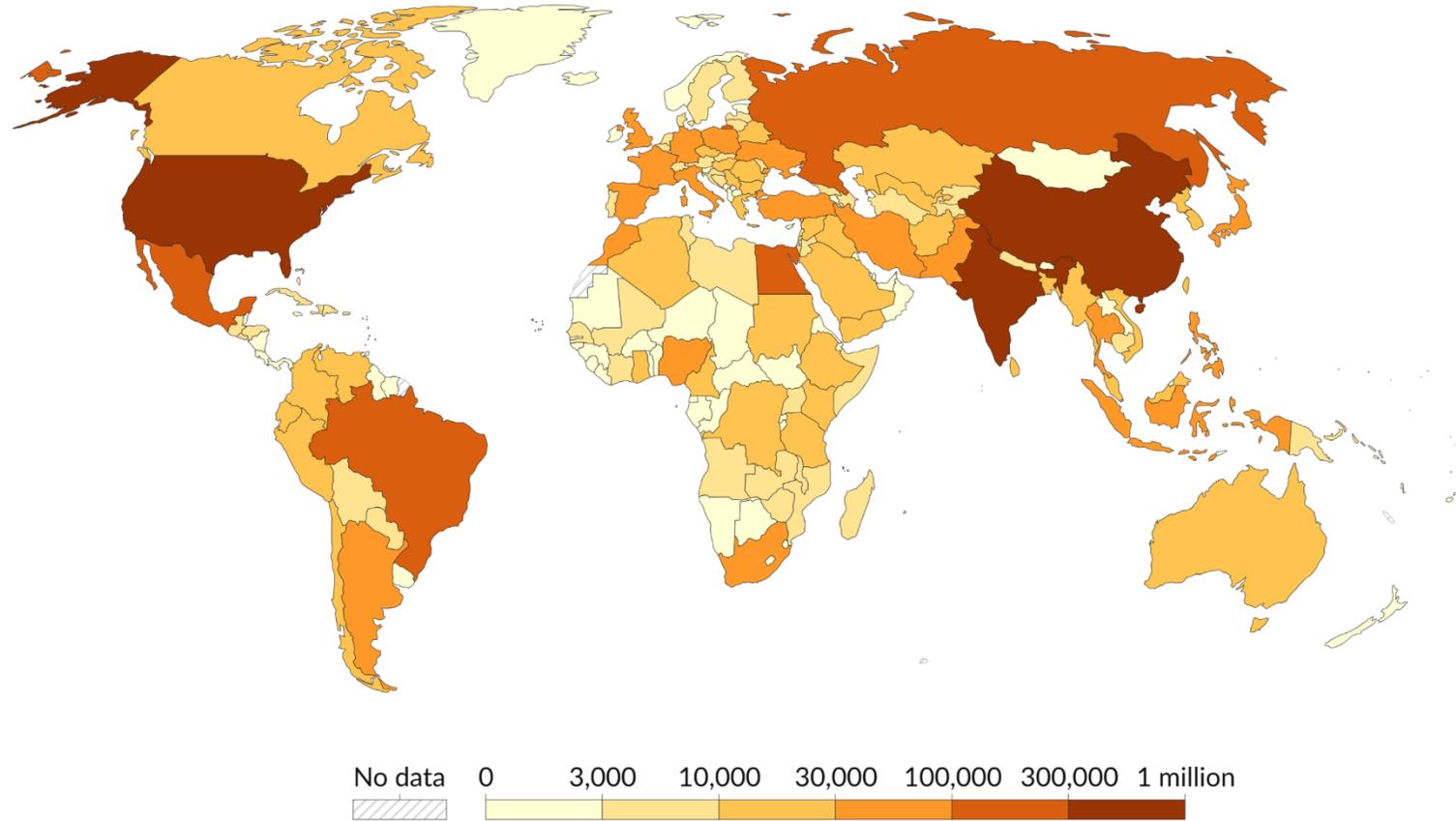
Data source: IHME, Global Burden of Disease (2024) OurWorldinData.org/obesity | CC BY

Note: Obesity is defined as having a body-mass index (BMI) ≥ 30. BMI is a person's weight (in kilograms) divided by their height (in meters) squared.

1. Obesity Obesity is defined as having a body-mass index (BMI) above 30.
A person's BMI is calculated as their weight (in kilograms) divided by their height (in meters) squared. For example, someone measuring 1.60 meters and weighing 64 kilograms has a BMI of 64 / 1.6² = 25.
Obesity increases the mortality risk of many conditions, including cardiovascular disease, gastrointestinal disorders, type 2 diabetes, joint and muscular disorders, respiratory problems, and psychological issues.

Deaths from diabetes, 2021

Estimated annual number of deaths from diabetes[1].

No data | 0   1,000   3,000   10,000   30,000   100,000
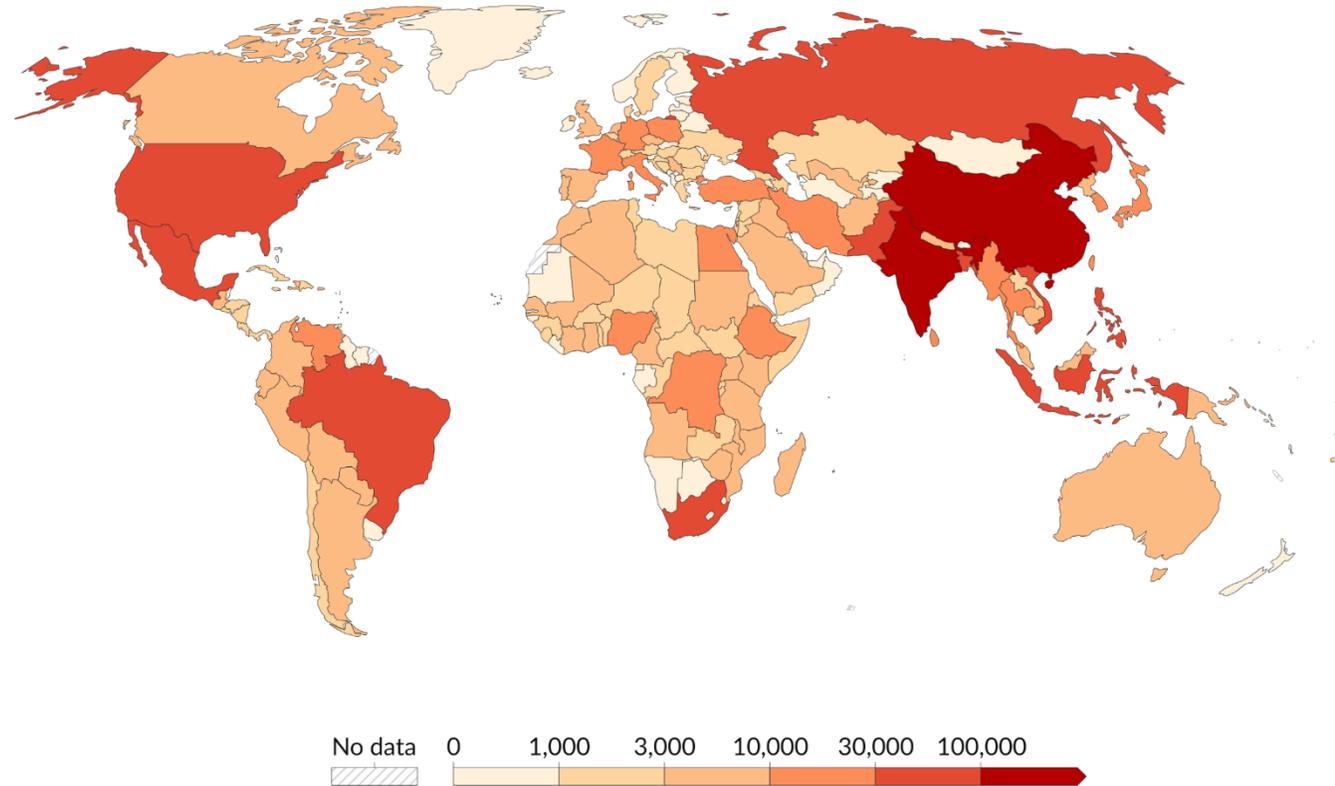
Data source: IHME, Global Burden of Disease (2024)

OurWorldinData.org/causes-of-death | CC BY

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1. Diabetes Diabetes is a medical condition characterized by elevated levels of sugar (glucose) in the blood, which is called "hyperglycemia". This happens when the body has difficulty using or producing a hormone called insulin, which helps regulate blood sugar levels. There are two main types of diabetes:

Type 1 Diabetes: In this type, the immune system mistakenly attacks and destroys the insulin-producing cells in the pancreas. As a result, people with type 1 diabetes require regular insulin injections or an insulin pump to manage their blood sugar levels. It usually starts in childhood or early adulthood and requires lifelong insulin therapy.

Type 2 Diabetes: This type is much more common, and is often linked to lifestyle factors such as obesity, poor diet, and lack of physical activity. In type 2 diabetes, the body becomes resistant to the effects of insulin, and the pancreas may not produce enough insulin to maintain normal blood sugar levels. It can often be managed through a combination of dietary changes, exercise, oral medications, and sometimes insulin injections.

Both types of diabetes can lead to high blood sugar levels, which, if not well managed, can result in various complications affecting the eyes, kidneys, nerves, and blood vessels.

Deaths from cancer, 2021

The estimated annual number of deaths from all types of cancer[1].
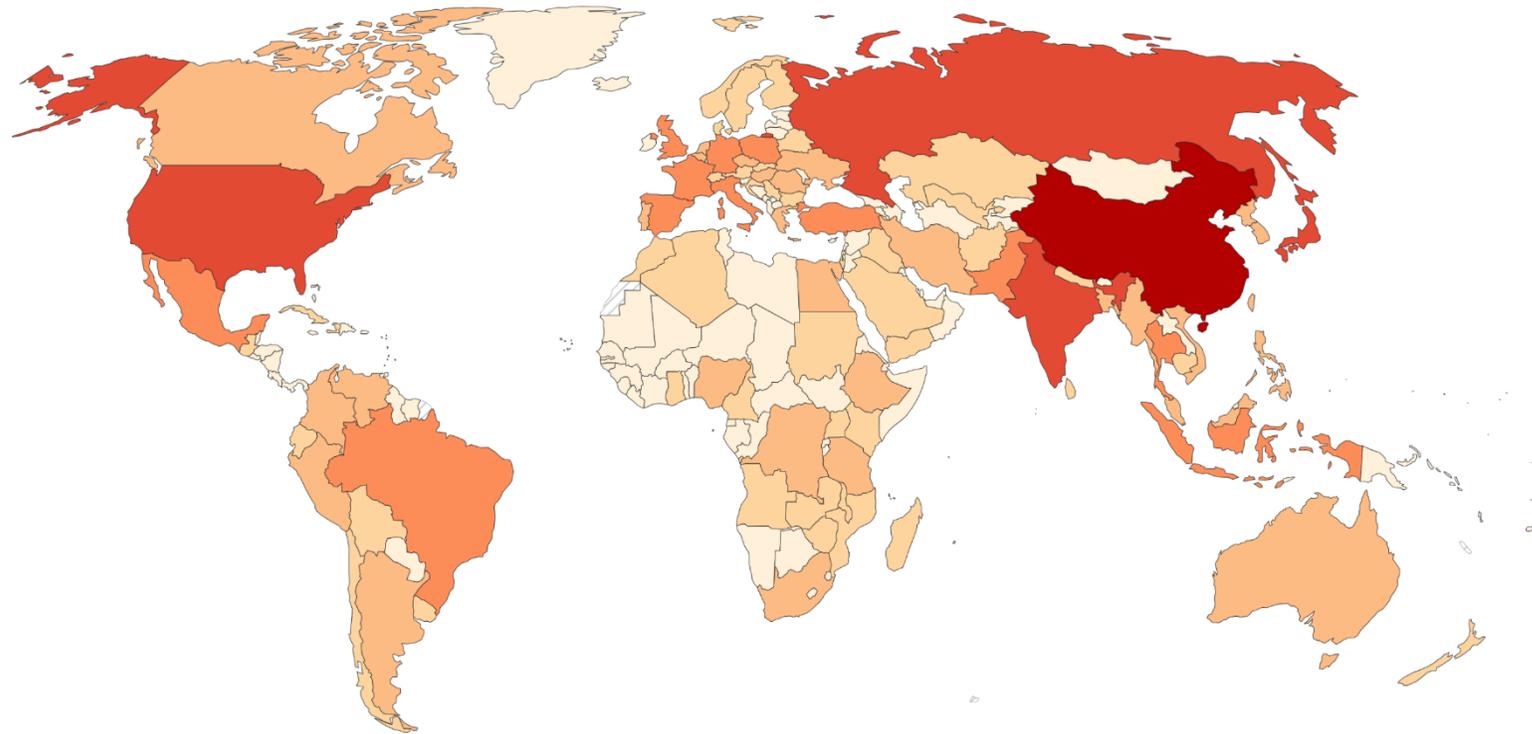
No data   0   10,000   30,000   100,000   300,000   1 million

1. Cancer Cancer describes a group of diseases in which abnormal cells in the body begin to grow and multiply uncontrollably. These cells can form lumps of tissue called tumors, which can interfere with normal bodily functions.
Cancerous cells have the potential to spread to other parts of the body (this process is called "metastasis"), disrupting normal processes and causing serious health problems.

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Number of deaths from cardiovascular diseases, 2021

Estimated annual number of deaths from cardiovascular diseases[1].

No data   0   10,000   30,000   100,000   300,000   1 million
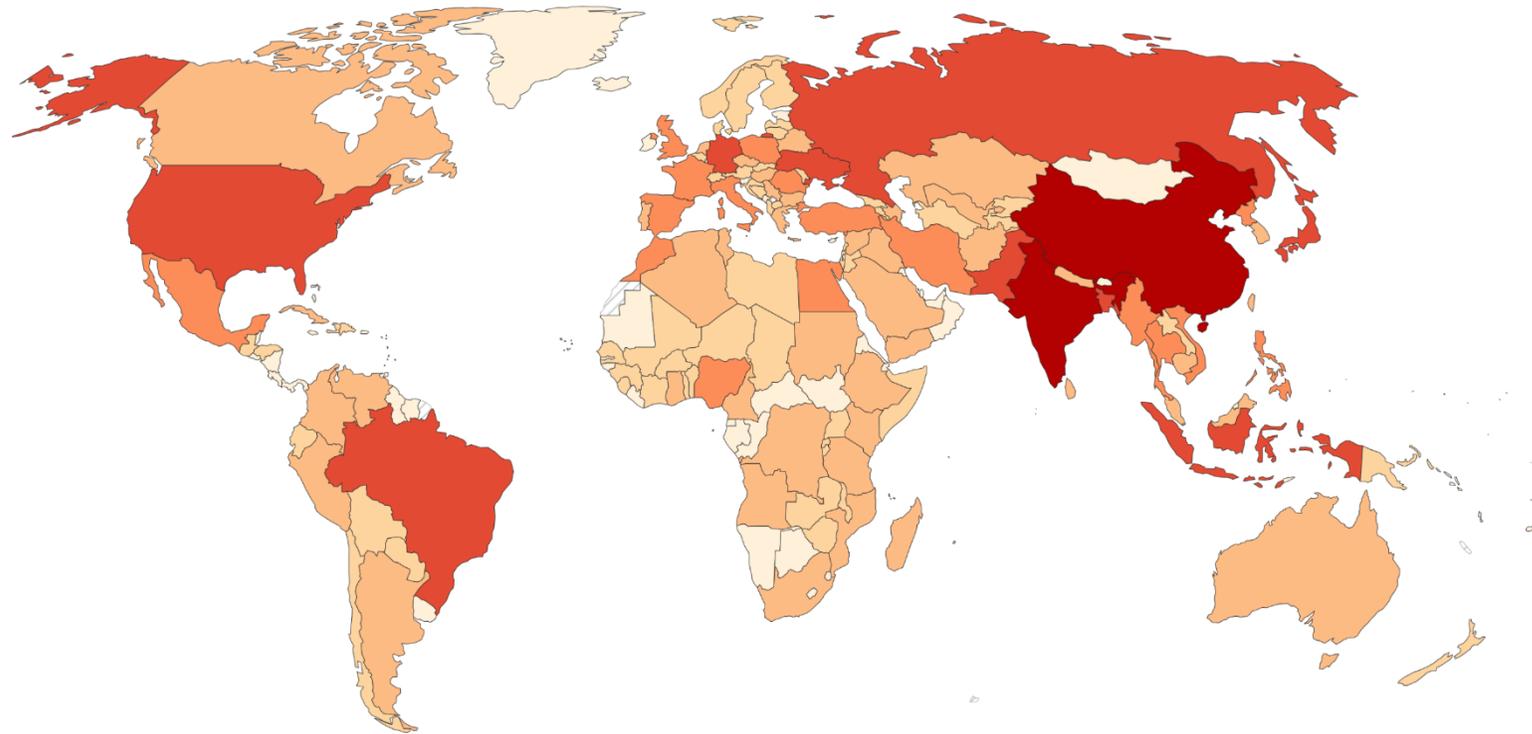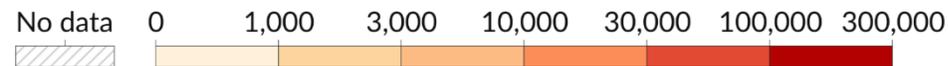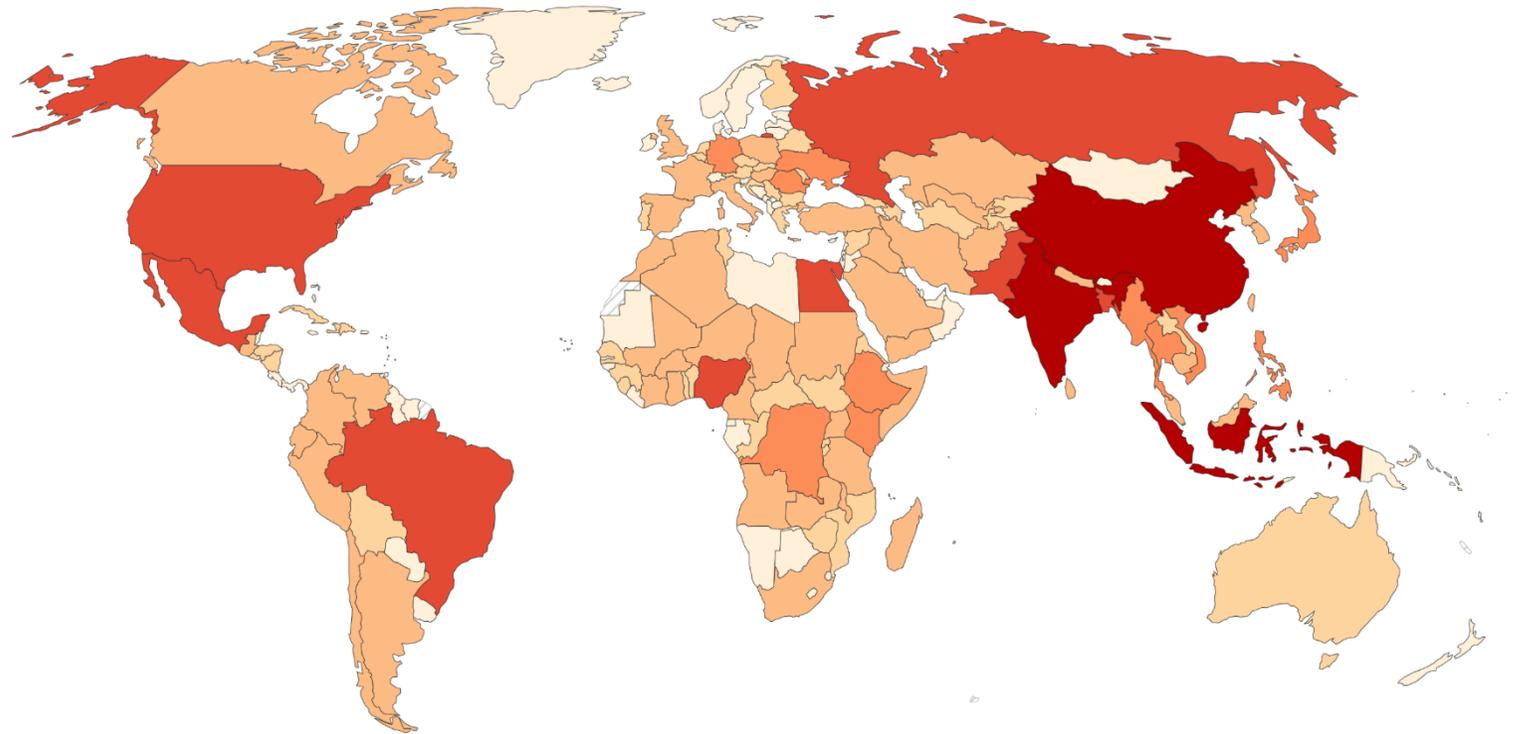
Data source: IHME, Global Burden of Disease (2024)   OurWorldinData.org/causes-of-death | CC BY

1. Cardiovascular disease Cardiovascular diseases cover all diseases of the heart and blood vessels – including heart attacks and strokes, atherosclerosis, ischemic heart disease, hypertensive diseases, cardiomyopathy, rheumatic heart disease, and more.
They tend to develop gradually with age, especially when people have risk factors like high blood pressure, smoking, alcohol use, poor diet, and air pollution.

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Deaths from liver disease, 2021

Annual number of deaths from cirrhosis and other chronic liver diseases[1].

No data   0   1,000   3,000   10,000   30,000   100,000   300,000

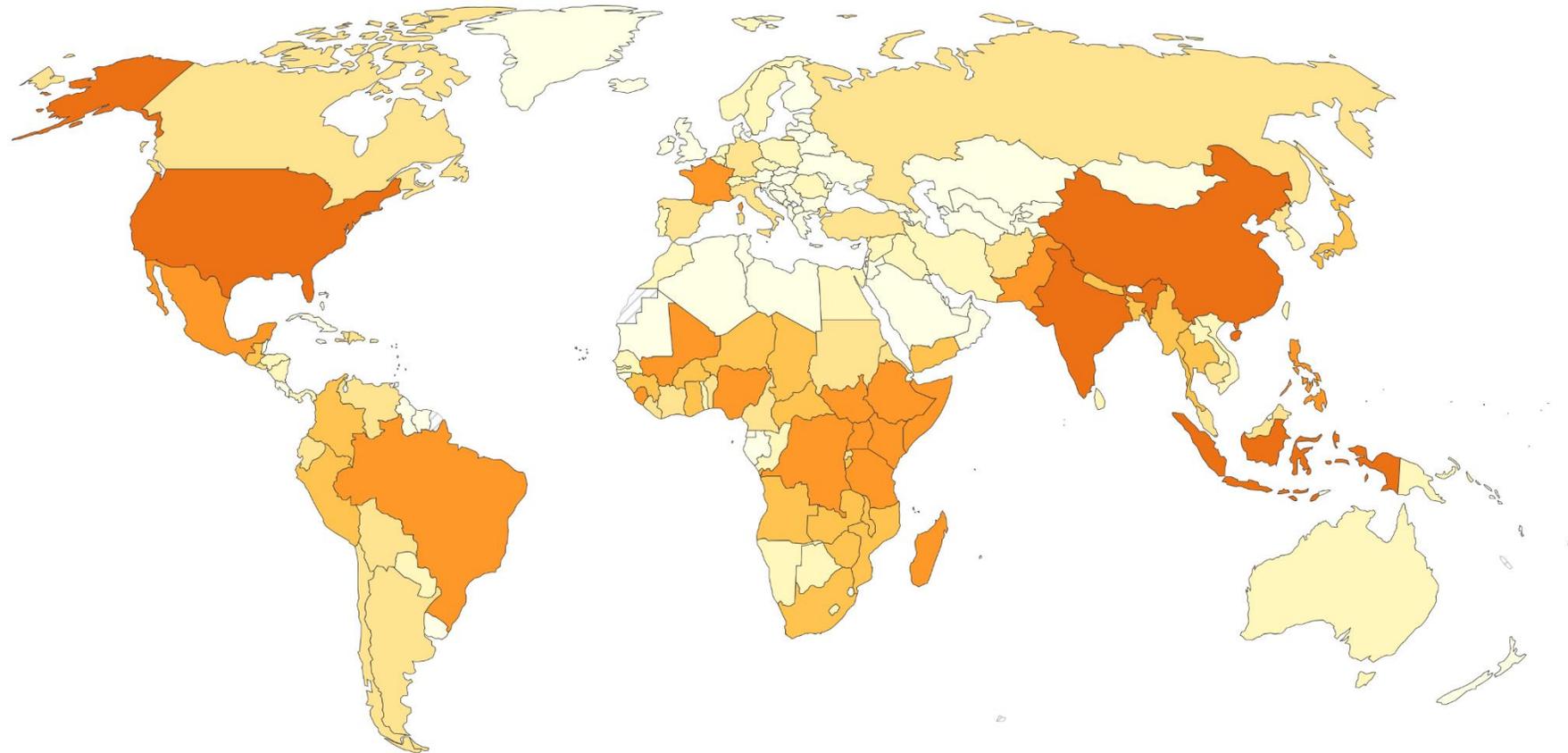**Data source:** IHME, Global Burden of Disease (2024)   OurWorldinData.org/causes-of-death | CC BY

1. Cirrhosis Cirrhosis describes the late stage of liver scarring caused by various liver diseases and conditions, such as hepatitis virus and chronic alcohol abuse.
Since the liver has many important functions – including detoxifying harmful substances in the body, producing bile for digestion, synthesizing proteins, storing vitamins and minerals, and regulating blood clotting – cirrhosis can lead to complications that can be life-threatening.

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Deaths from malnutrition, 2021

Annual number of deaths from protein-energy malnutrition.

No data 0   100   300   1,000   3,000   10,000   30,000   100,000 300,000

OurWorldinData.org/hunger-and-undernourishment | CC BY

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Share of adults that are overweight or obese, 2016

A person is defined as overweight if they have a body-mass index (BMI) equal to or greater than 25. BMI is a person's weight in kilograms divided by his height in metres squared.

Hannah Ritchie and Max Roser (2017) - "Obesity". Published online at OurWorldInData.org. Retrieved from: 'https://ourworldindata.org/obesity' [Online Resource]

No data   0%   10%   20%   30%   40%   50%   60%   70%   80%   90%

Share of children that are overweight or obese, 2016

Share of children under five years old that are defined as overweight or obese. A child is classified as overweight if their weight-for-height is more than two standard deviations from the median of the World Health Organization (WHO) Child Growth Standards.
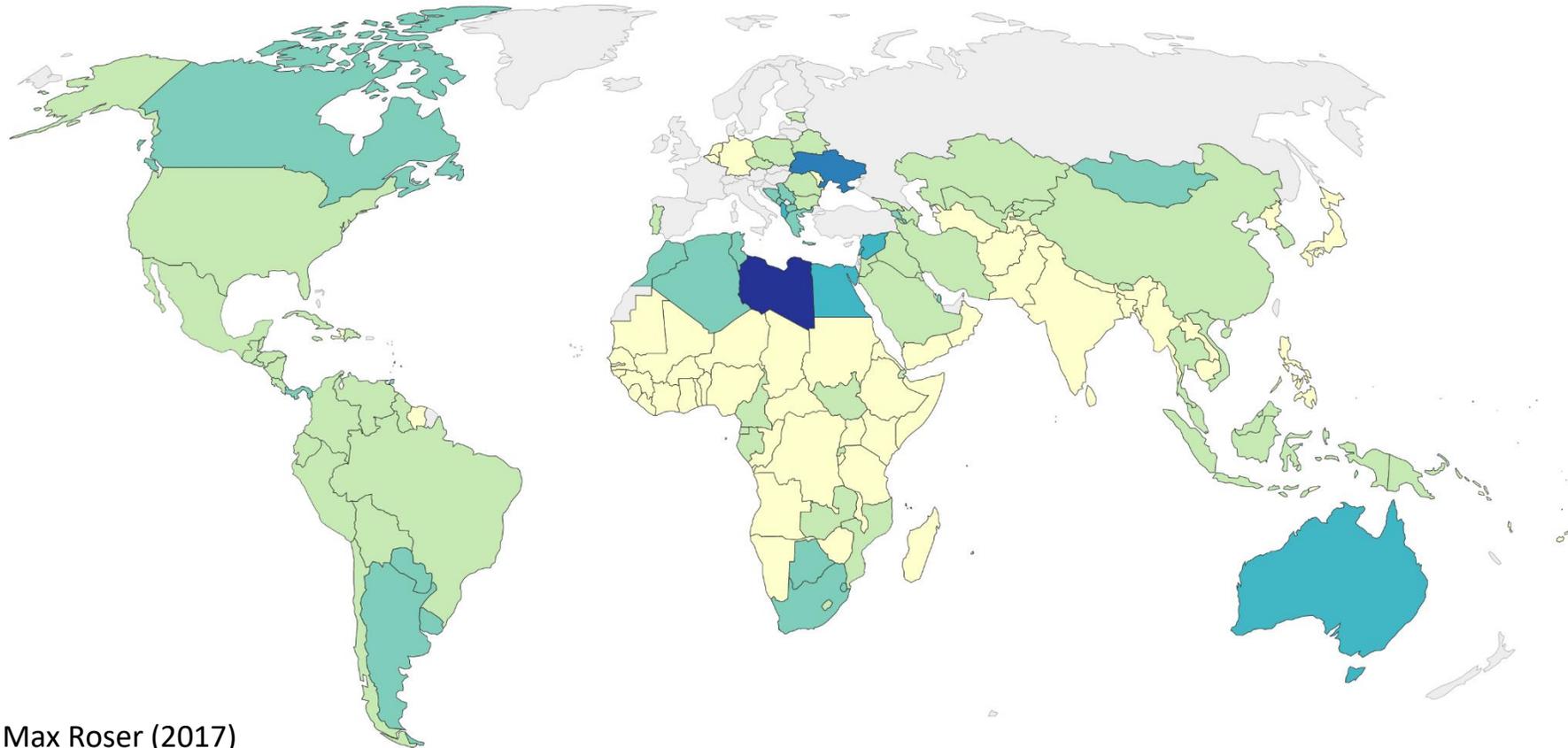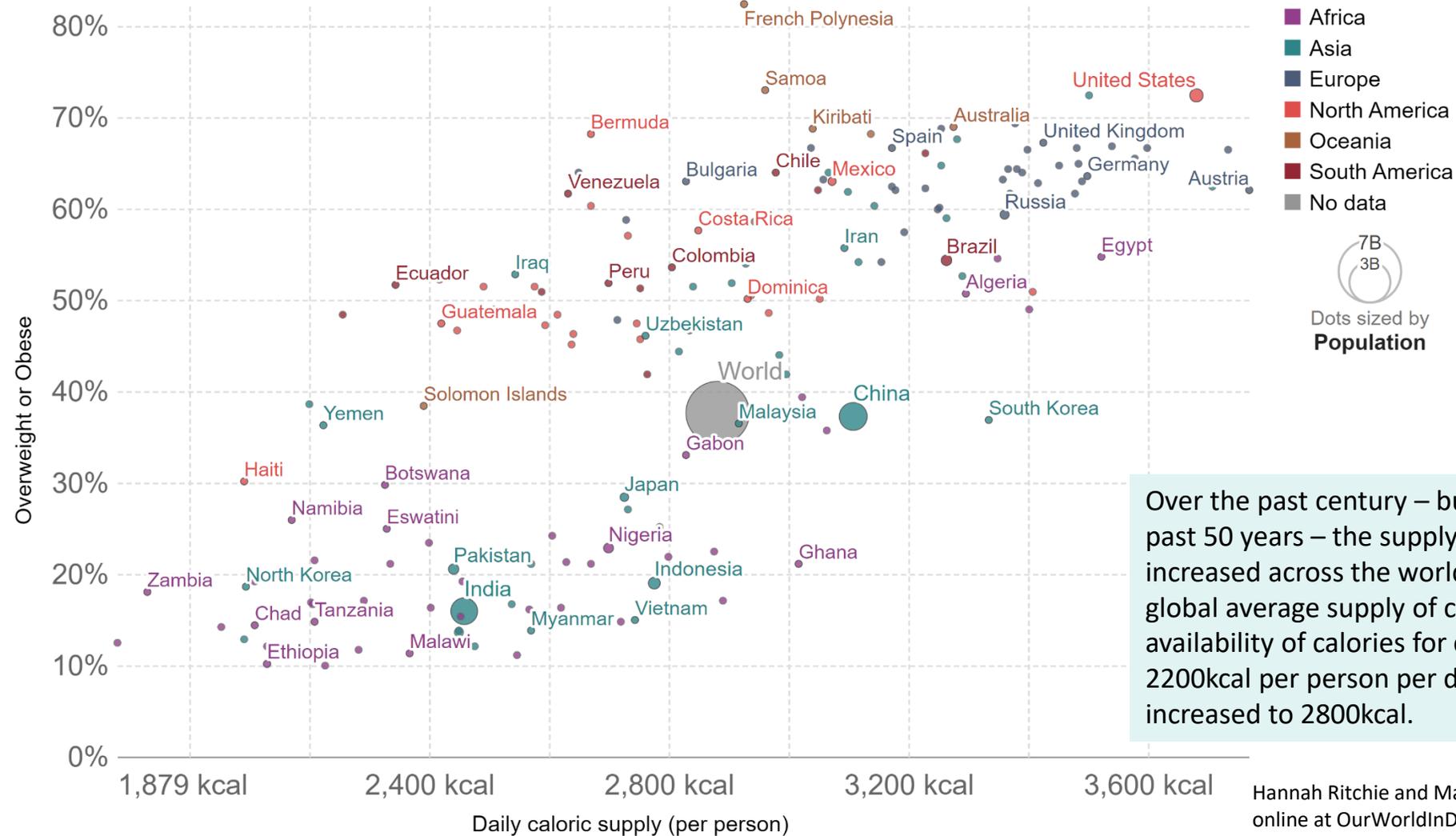

Hannah Ritchie and Max Roser (2017) - "Obesity". Published online at OurWorldInData.org. Retrieved from: 'https://ourworldindata.org/obesity' [Online Resource]

No data   0   5   10   15   20   25   30

Share of adult men overweight or obese vs. daily supply of calories, 2013

Being overweight or obese is defined by a body mass index (BMI) greater than 25.
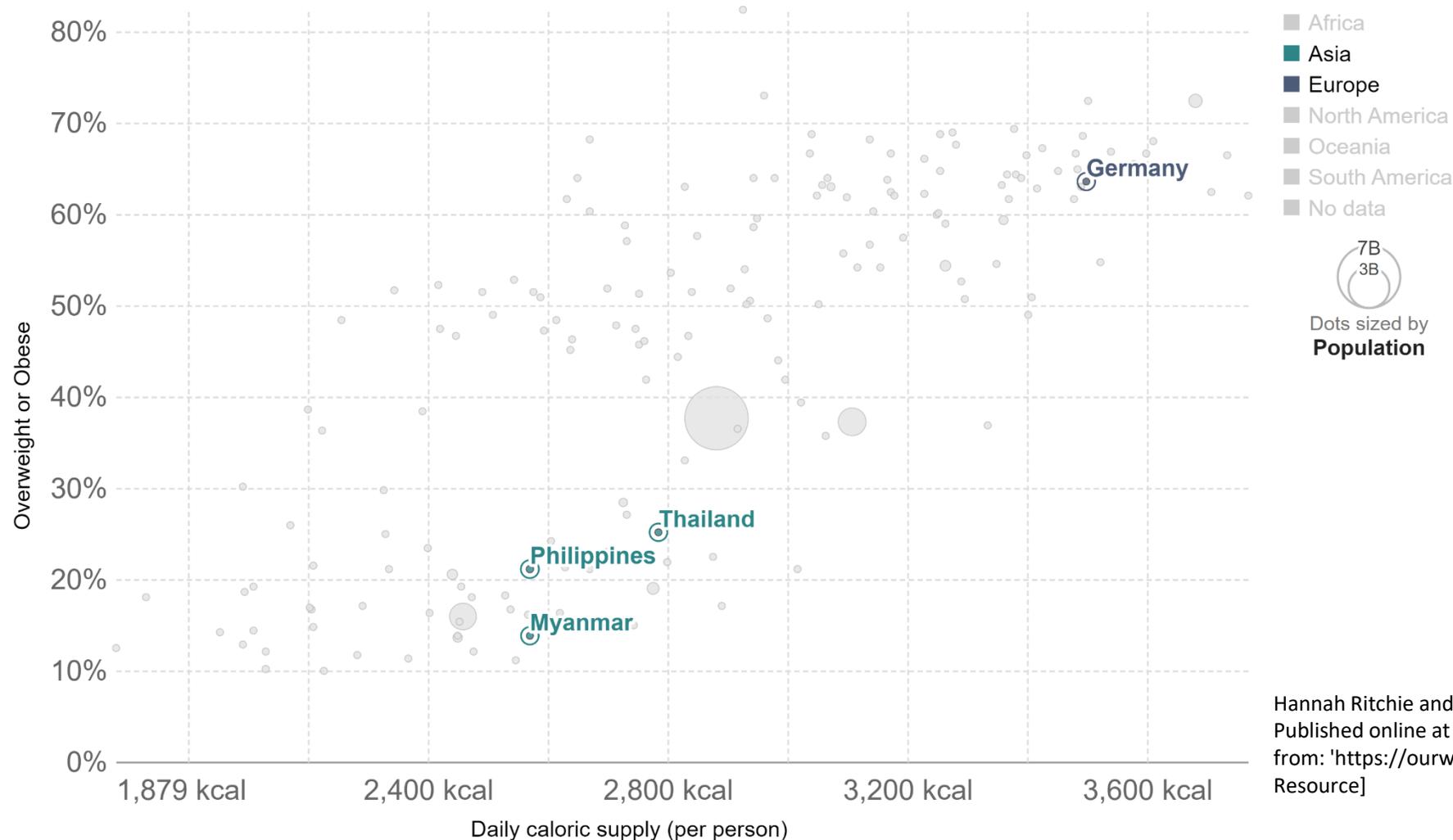
Over the past century – but particularly over the past 50 years – the supply of calories has increased across the world. In the 1960s, the global average supply of calories (that is, the availability of calories for consumers to eat) was 2200kcal per person per day. By 2013 this had increased to 2800kcal.

Hannah Ritchie and Max Roser (2017) - "Obesity". Published online at OurWorldInData.org. Retrieved from: 'https://ourworldindata.org/obesity' [Online Resource]

Source: NCDRisC and FAOstat

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Share of adult men overweight or obese vs. daily supply of calories, 2013

Being overweight or obese is defined by a body mass index (BMI) greater than 25.

Legend:
- Africa
- Asia
- Europe
- North America
- Oceania
- South America
- No data

Dots sized by **Population** (7B, 3B)

Labeled points: Germany, Thailand, Philippines, Myanmar

Source: NCDRisC and FAOstat

Hannah Ritchie and Max Roser (2017) - "Obesity". Published online at OurWorldInData.org. Retrieved from: 'https://ourworldindata.org/obesity' [Online Resource]

Activity Goal:

"To understand the relationship between eating behaviors,

economic concepts, and health outcomes, using the

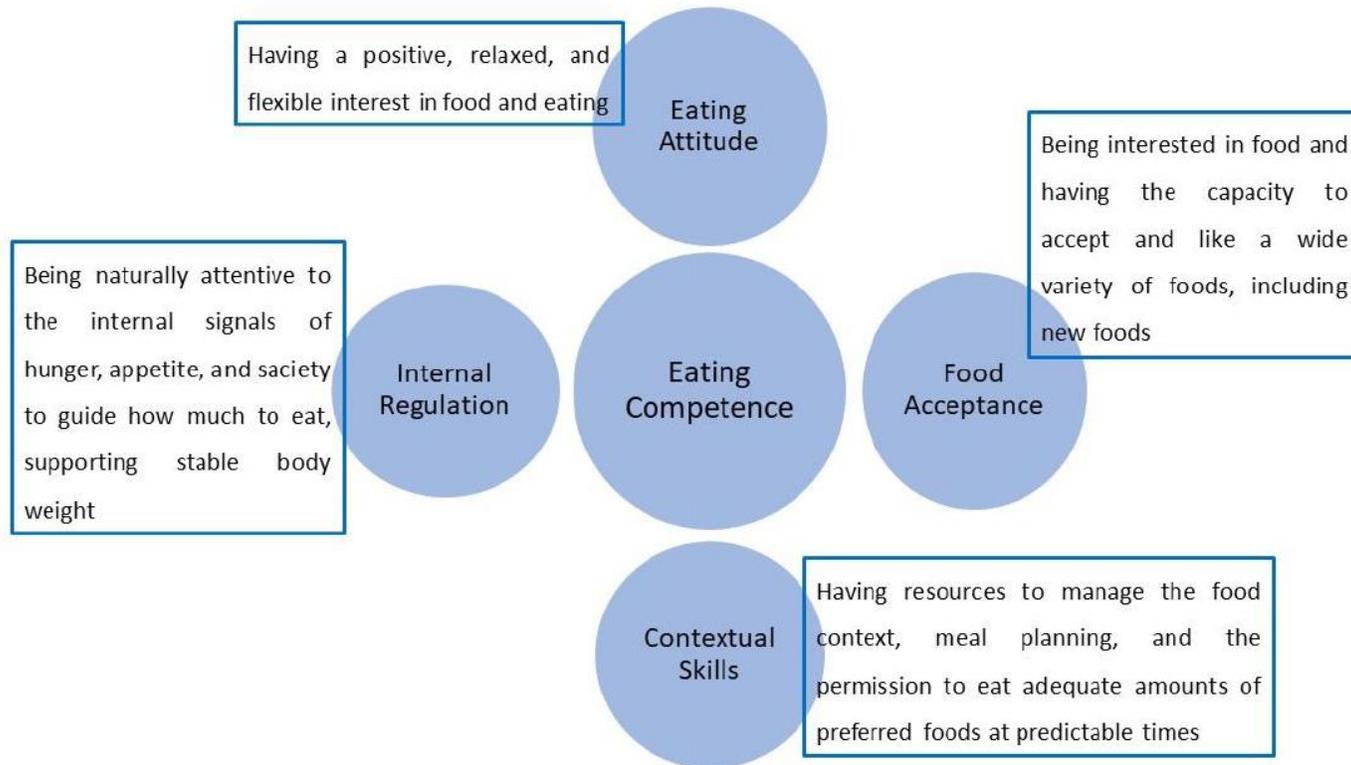concept of Eating Competence (EC) as a core framework."

Having a positive, relaxed, and flexible interest in food and eating

Being interested in food and having the capacity to accept and like a wide variety of foods, including new foods

Being naturally attentive to the internal signals of hunger, appetite, and society to guide how much to eat, supporting stable body weight

Eating Attitude

Internal Regulation

Eating Competence

Food Acceptance

Contextual Skills

Having resources to manage the food context, meal planning, and the permission to eat adequate amounts of preferred foods at predictable times

Figure 1. The four components of Eating Competence.

Source: de Queiroz, F. L. N., Raposo, A., Han, H., Nader, M., Ariza-Montes, A., & Zandonadi, R. P. (2022). Eating Competence, Food Consumption and Health Outcomes: An Overview. International Journal of Environmental Research and Public Health, 19(8), 4484. https://doi.org/10.3390/ijerph19084484

From the article, **eating competence (EC)** is not about restricting food quantity or type, but about understanding eating behavior in a broader context. It consists of four key components:

1. **Eating Attitude**: A positive feeling or attitude towards food.

2. **Food Acceptance**: Openness to trying and accepting a variety of foods.

3. **Internal Regulation**: The ability to perceive the body's hunger and fullness cues.

4. **Contextual Skills**: The ability to manage contexts related to food, such as meal planning and cooking.

Activity:
- Thinking about your own perceived level of "Eating Competence" and the factors that influence your eating behavior.

- Analyzing how economic factors (e.g., food prices, consumer income, food industry marketing, or government policies) impact EC component and examine how these impacts lead to specific health outcomes

- What essential eating behaviours should be implemented as techniques for boosting health and preventing various diseases to enhance individuals' dietary habits in daily life?

Food-related chronic diseases

- Too much fat, sugar, and sodium, and too little fibre raise risk for:
  - Hypertension
  - Cardiovascular diseases
  - Breast, colon, rectum, and prostate cancer
  - Obesity
- Obesity is a risk factor for a wide range of diseases from diabetes and cancer to musculoskeletal impairments.

https://www.fda.gov/news-events/fda-voices/improving-nutrition-turn-tide-diet-related-chronic-disease

Etilé, F. (2011). Food consumption and health. *Oxford Handbook of the Economics of Food consumption and Policy*, 716-746.

Food-related chronic diseases

The multifactorial etiology of food-related chronic diseases: Economic aspects

Socioeconomics determinants

- Income
- Education

Vlismas, K., Stavrinos, V., & Panagiotakos, D. B. (2009). Socio-economic status, dietary habits and health-related outcomes in various parts of the world: a review. Cent Eur J Public Health, 17(2), 55-63.

Environmental influences

- Food packaging
- Marketing strategies for unhealthy foods
- Food prices: processed vs fresh food

Perez-Ferrer, C., Auchincloss, A. H., de Menezes, M. C., Kroker-Lobos, M. F., de Oliveira Cardoso, L., & Barrientos-Gutierrez, T. (2019). The food environment in Latin America: A systematic review with a focus on environments relevant to obesity and related chronic diseases. *Public health nutrition*, *22*(18), 3447-3464.

Genetic factors
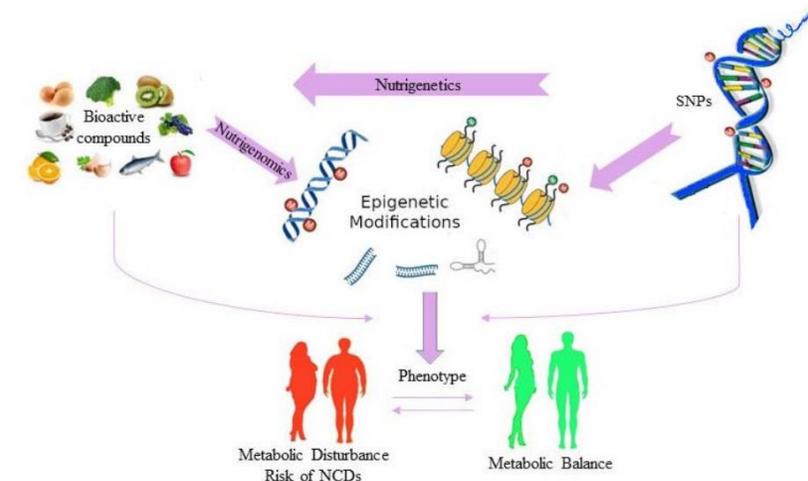
Figure 1. Interactions among genes, diet and human health.

Franzago, M., Santurbano, D., Vitacolonna, E., & Stuppia, L. (2020). Genes and diet in the prevention of chronic diseases in future generations. *International journal of molecular sciences*, *21*(7), 2633.
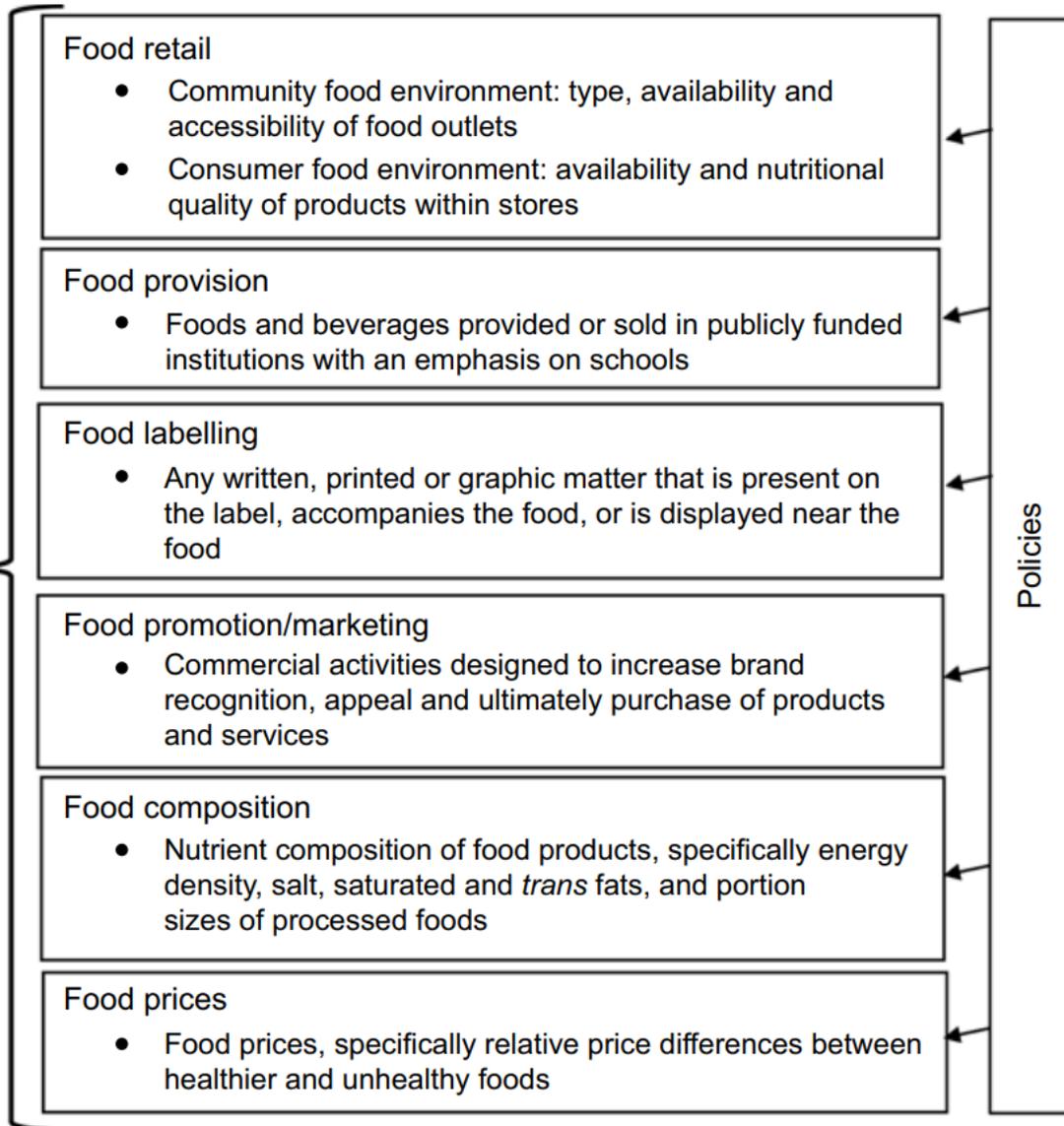
Food environment

Fig. 1 Conceptual food environment framework adapted from INFORMAS (International Network for Food and Obesity/noncommunicable diseases Research, Monitoring and Action Support) for the current systematic review of food environments relevant to obesity and related chronic diseases in Latin America

Perez-Ferrer, C., Auchincloss, A. H., de Menezes, M. C., Kroker-Lobos, M. F., de Oliveira Cardoso, L., & Barrientos-Gutierrez, T. (2019). The food environment in Latin America: A systematic review with a focus on environments relevant to obesity and related chronic diseases. *Public health nutrition*, *22*(18), 3447-3464.

Exposome—internal factors and external environmental factors role in health and disease. The totality of exposure from conception throughout the life course leads to multiple physiological changes in every individual. Internal exposures such as lipid peroxidation, oxidative stress, DNA damage, alterations in gut microbiome, and inflammation collectively plays a major role in health and chronic diseases
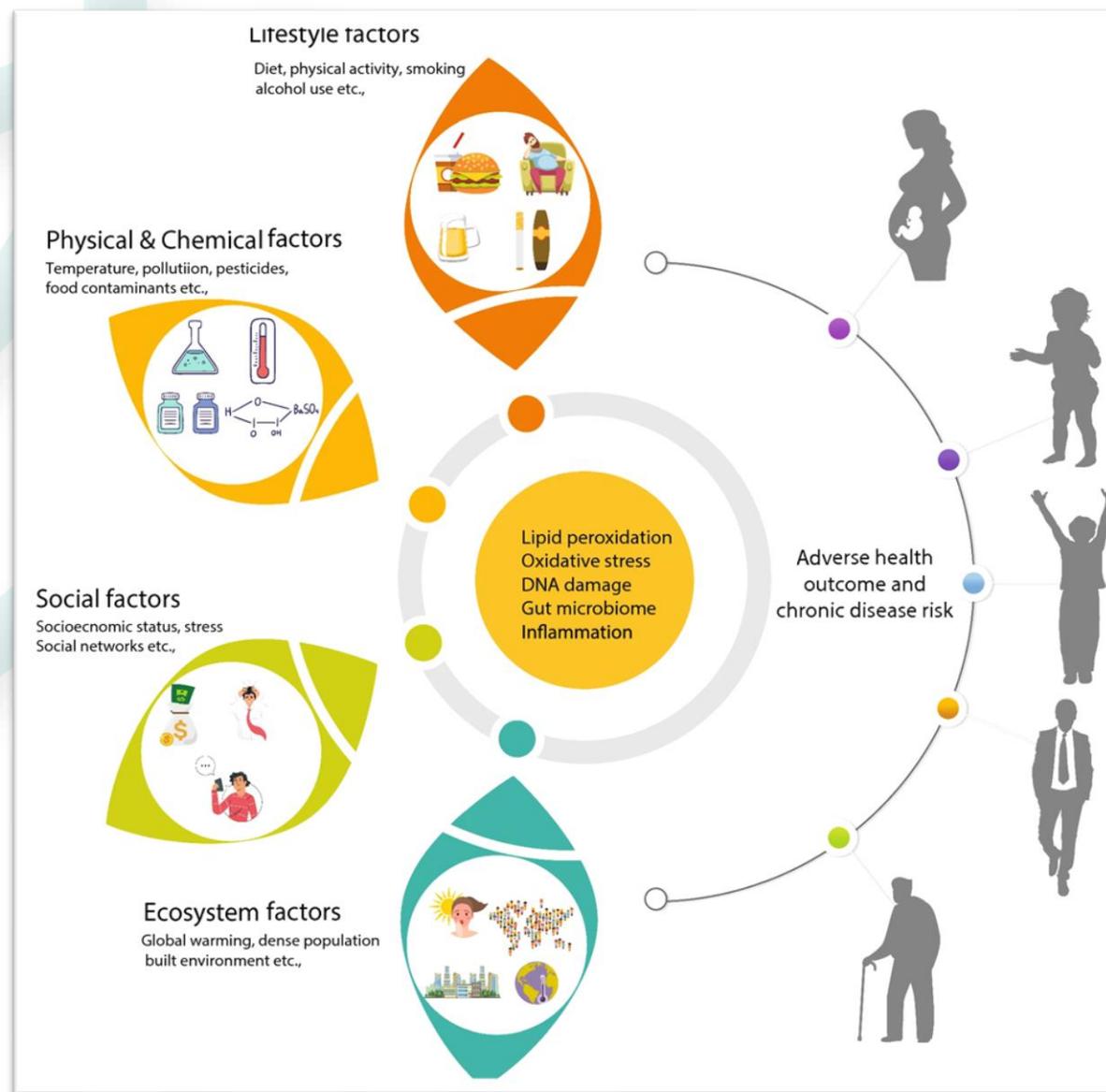
Subramanian, M., Wojtusciszyn, A., Favre, L., Boughorbel, S., Shan, J., Letaief, K. B., ... & Chouchane, L. (2020). Precision medicine in the era of artificial intelligence: implications in chronic disease management. *Journal of translational medicine*, *18*(1), 1-12.

Economic consequences of food-related chronic disease

## Direct costs

Medical costs
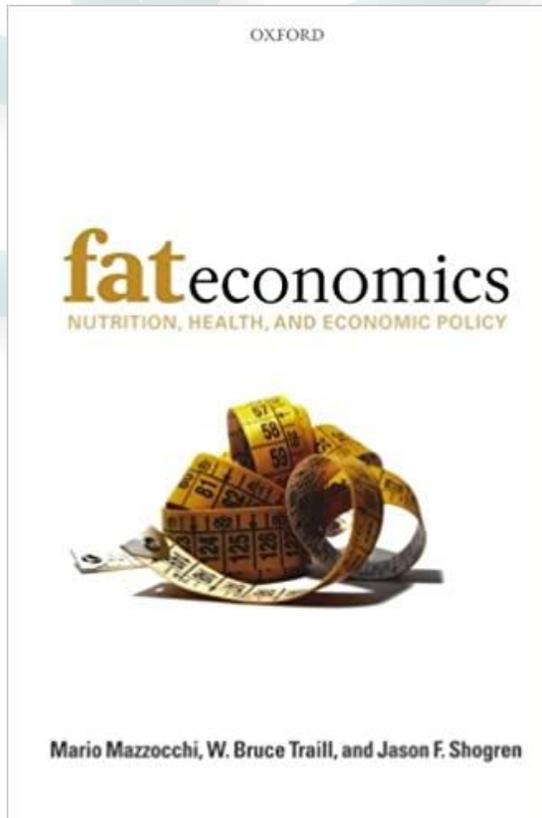
Indirect costs

Human capital costs

- Economics burden of illness estimated the indirect costs in monetary value of lost production due to illness, injury, and mortality (premature health)

- Oswald, A. J., & Powdthavee, N. (2007). Obesity, unhappiness, and the challenge of affluence: Theory and evidence. *Available at SSRN 981703*.
- Chang, H. H., & Nayga, R. M. (2010). Childhood obesity and unhappiness: The influence of soft drinks and fast food consumption. *Journal of Happiness Studies*, *11*(3), 261-275.
- Godoy-Izquierdo, D., Lara, R., Ogallar, A., Rodríguez-Tadeo, A., Ramírez, M. J., Navarrón, E., & Arbinaga, F. (2021). Psychosocial and diet-related lifestyle clusters in overweight and obesity. *International Journal of Environmental Research and Public Health*, *18*(12), 6461.

Healthcare Expenditure vs. GDP, 2019

Current healthcare expenditure per capita and GDP per capita are measured in current international-$, which adjusts for price differences between countries
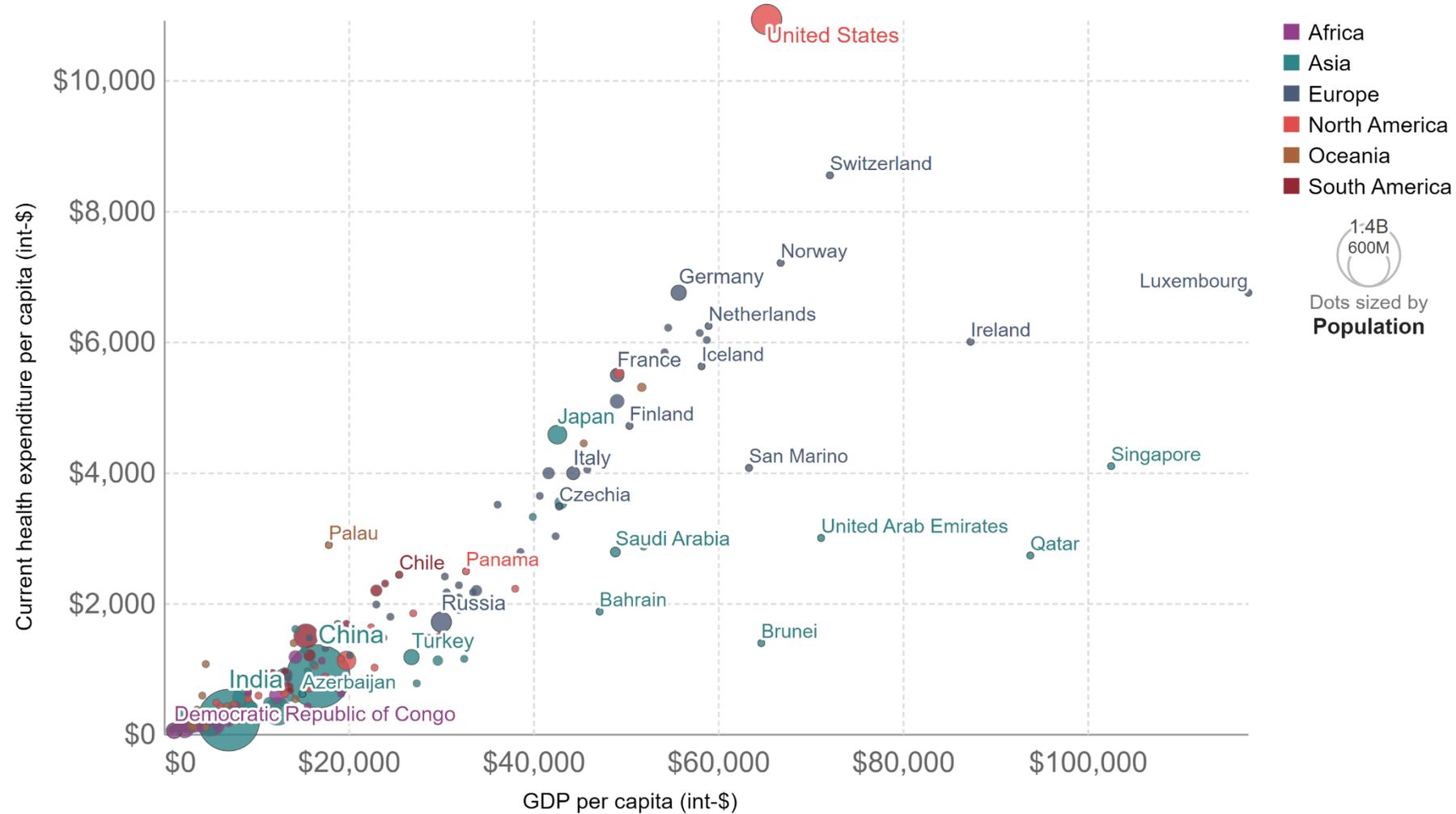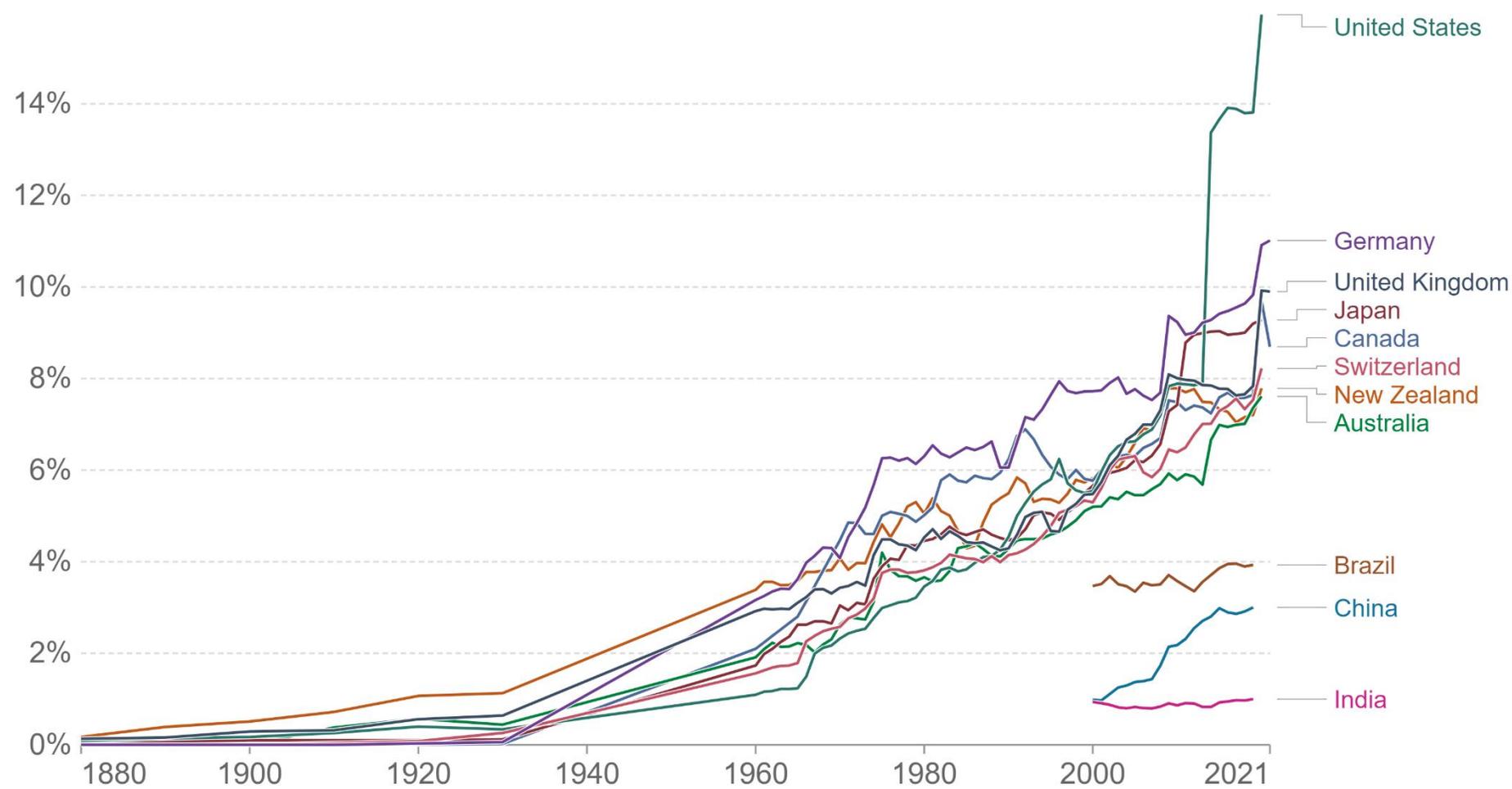
Source: Data compiled from multiple sources by World Bank

OurWorldInData.org/financing-healthcare • CC BY

Government health expenditure as a share of GDP, 1880 to 2021

This metric captures spending on government funded health care systems and social health insurance, as well as compulsory health insurance
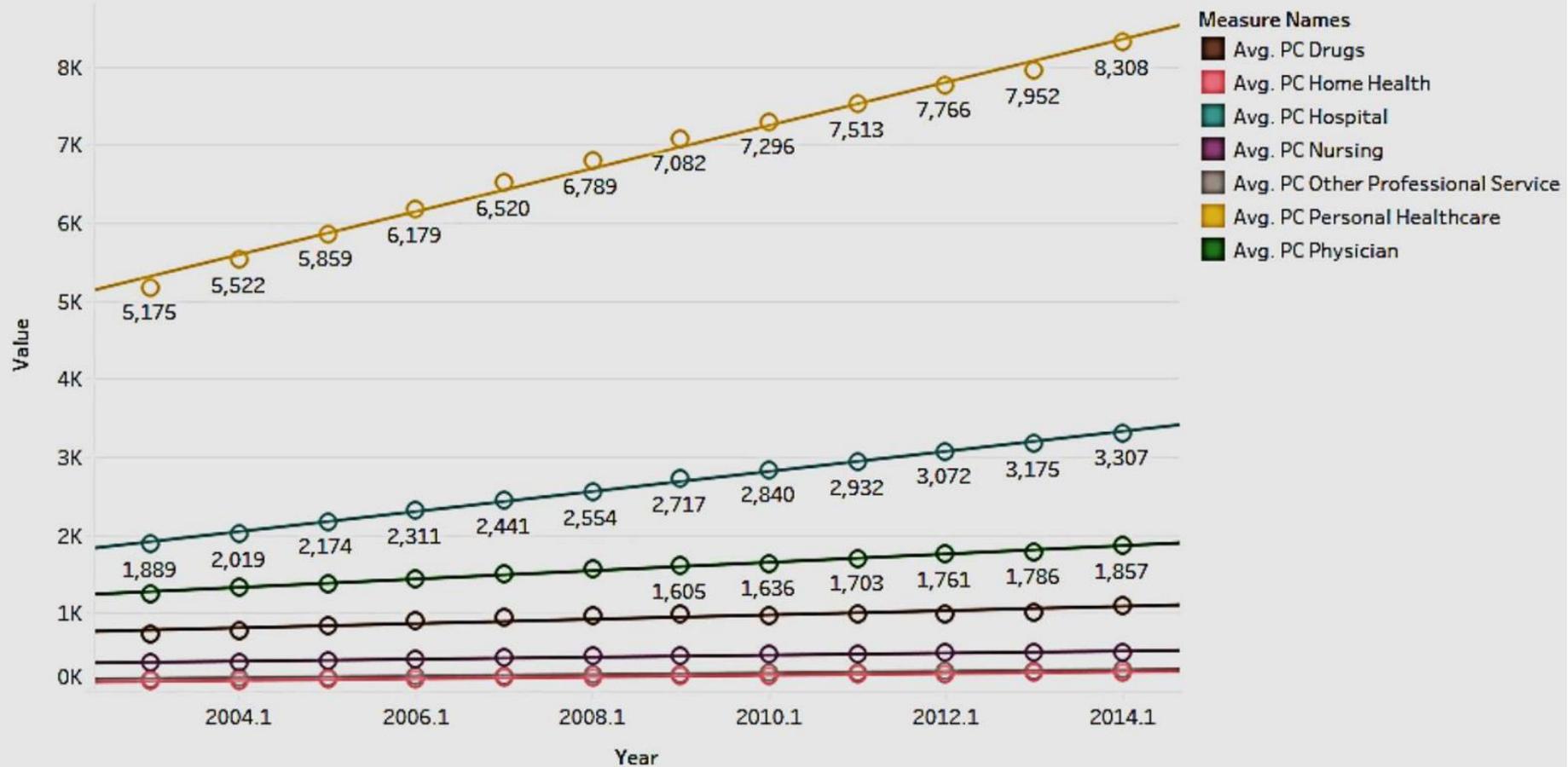
Suwanna Sayruamyat

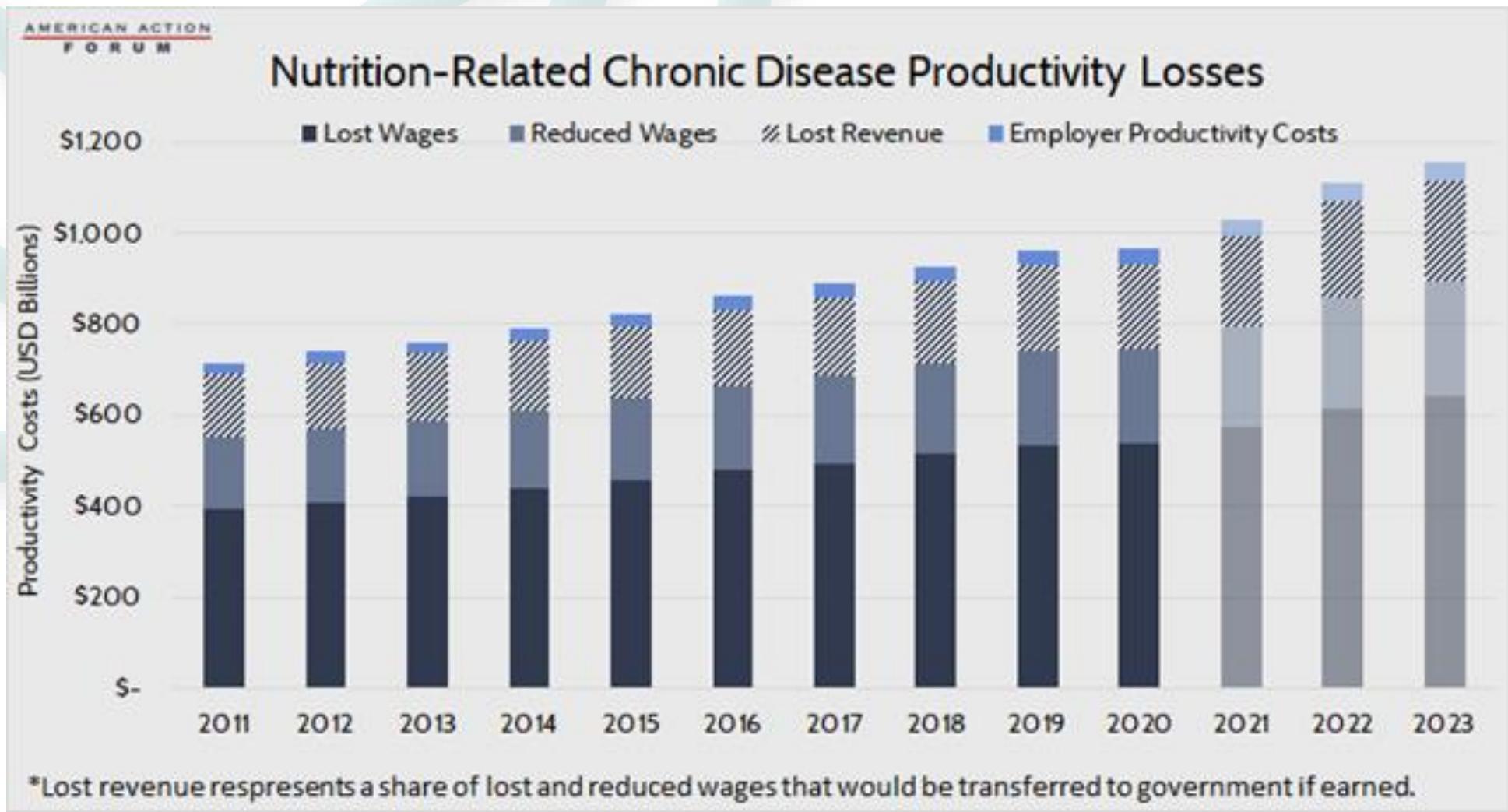Distribution of Various Types of Healthcare Expenditure Across Years

Raghupathi V, Raghupathi W. Healthcare Expenditure and Economic Performance: Insights From the United States Data. Front Public Health. 2020 May 13;8:156. doi: 10.3389/fpubh.2020.00156. PMID: 32478027; PMCID: PMC7237575.

Direct Health Care Costs
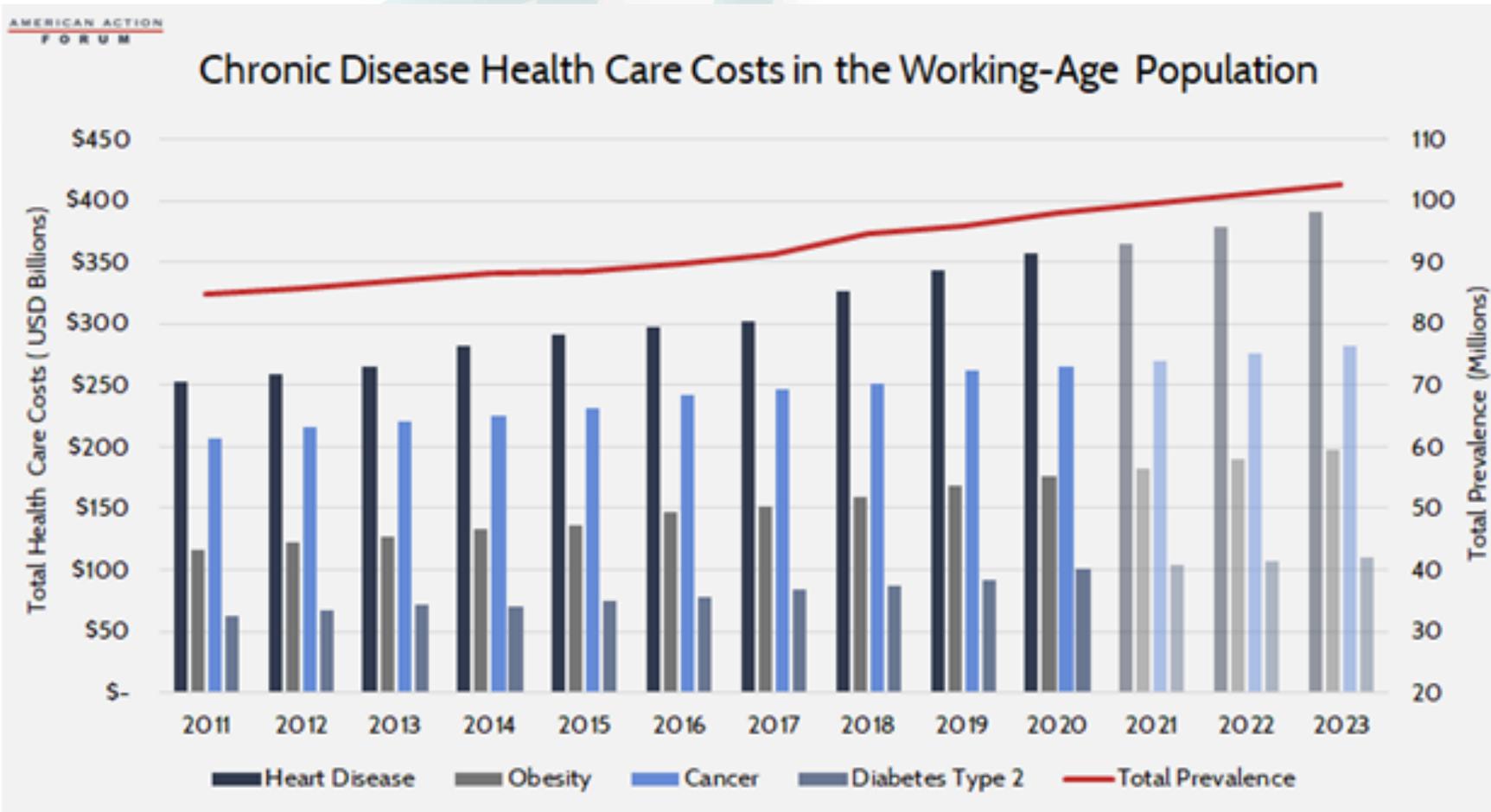
Chronic Disease Health Care Costs in the Working-Age Population

https://www.americanactionforum.org/research/the-economic-costs-of-poor-nutrition/

Read more: https://www.americanactionforum.org/research/the-economic-costs-of-poor-nutrition/#ixzz7dcWmG9Zd
Follow us: @AAF on Twitter

Body Mass Index : BMI

$$BMI = \frac{Weight\ in\ kg}{Height\ in\ m^2}$$

For Asian people
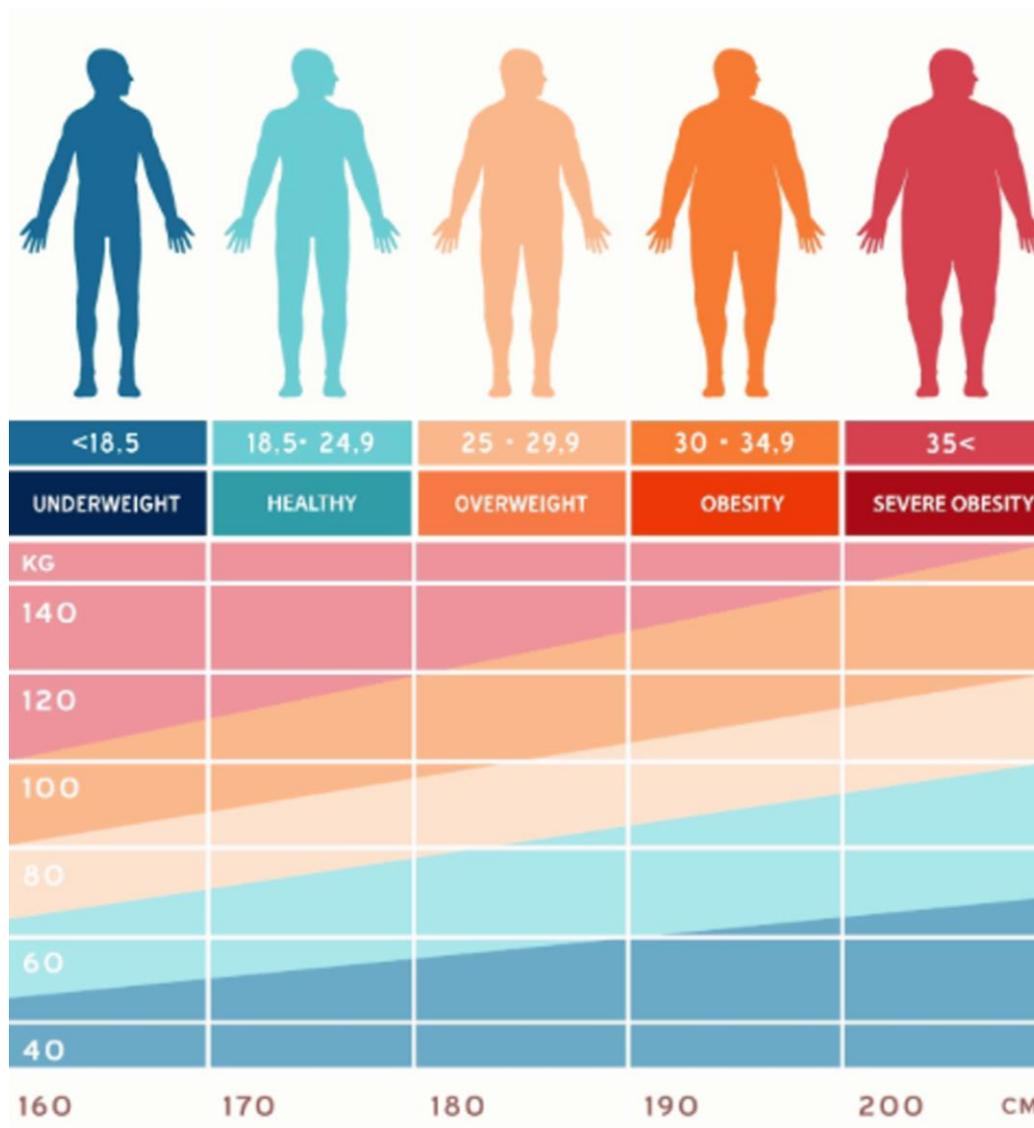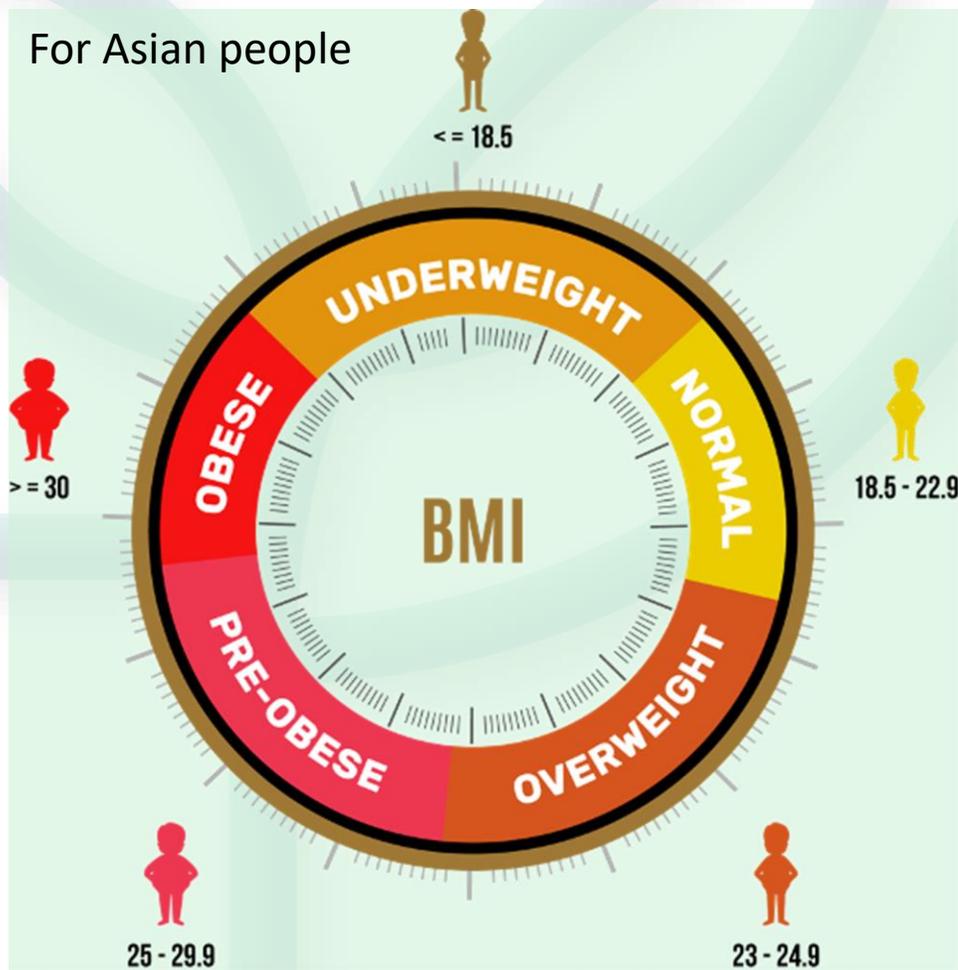
What are Causes of OBESITY?

Green revolution

Photo by Jinomono Media on Unsplash

Food marketing

The food industry spent a total of 15 billion dollars in 2014 on all food, beverage and restaurant marketing in the United States.

The food industry spent $1.8 billion in 2009 on marketing aimed specifically at children.

$1.8 billion
Spent per year on marketing aimed at children & teens

- <1% fruits & vegetables
- 9% other foods
- 40% fast food
- 51% sugary drinks, sugar cereals, sweets & snacks

https://www.obesityaction.org/community/article-library/food-marketing-to-children-a-wolf-in-sheeps-clothing/
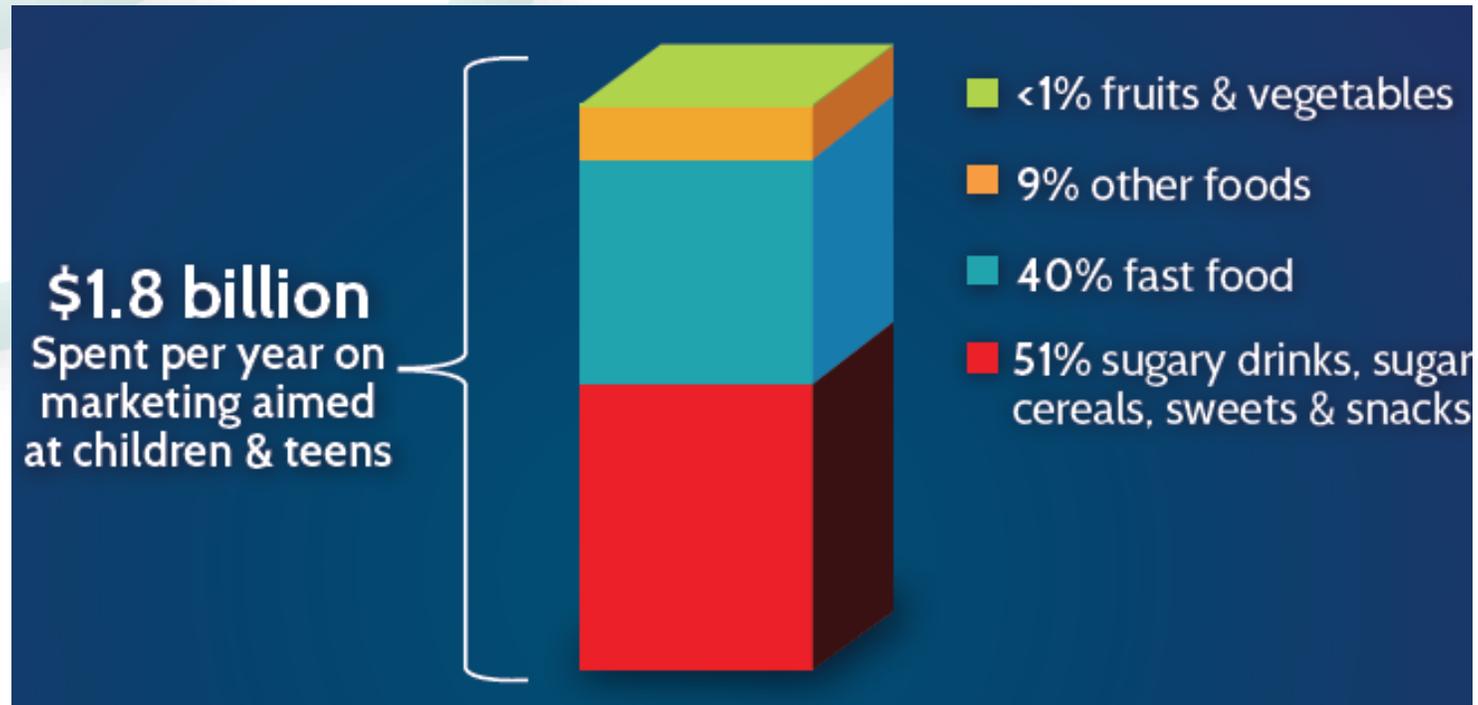
- Age

- Gender

- Ethnicity

- Education

- Income

- Marriage

Photo by National Cancer Institute on Unsplash

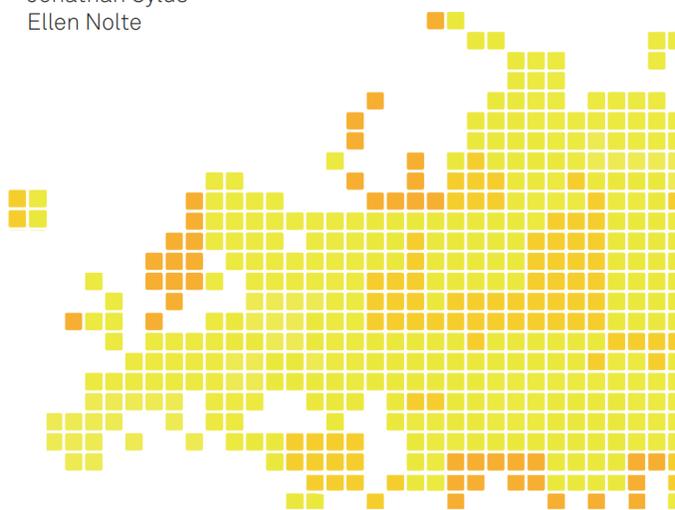# Low physical activities

Assessing the economic costs of unhealthy diets and low physical activity

47

Health Policy Series

An evidence review and proposed framework

Christine Joy Candari
Jonathan Cylus
Ellen Nolte

Box 2 *Examples of moderate-intensity and vigorous-intensity physical activity*

One MET is equivalent to an energy consumption of 1 kilocalorie per kilogram of bodyweight per hour (i.e. energy cost of sitting quietly).

Examples of moderate-intensity physical activity
Equivalent to approximately 3–6 METs; requires a moderate amount of effort and noticeably accelerates the heart rate

Examples of vigorous-intensity physical activity
Equivalent to approximately >6 METs; requires a large amount of effort and causes rapid breathing and a substantial increase in heart rate

- Brisk walking
- Dancing
- Gardening
- Housework and domestic chores
- Traditional hunting and gathering
- Active involvement in games and sports with children/walking domestic animals
- General building tasks (e.g. roofing, thatching, painting)
- Carrying/moving moderate loads (<20kg)

- Running
- Walking/climbing briskly up a hill
- Fast cycling
- Aerobics
- Fast swimming
- Competitive sports and games (e.g. traditional games, football, volleyball, hockey, basketball)
- Heavy shovelling or digging ditches
- Carrying/moving heavy loads (>20kg)

Source: World Health Organization, 2004.

https://www.euro.who.int/__data/assets/pdf_file/0004/342166/Unhealthy-Diets-ePDF-v1.pdf

Figure 1 *Relationship between unhealthy diets and low physical activity with type 2 diabetes and associated costs*
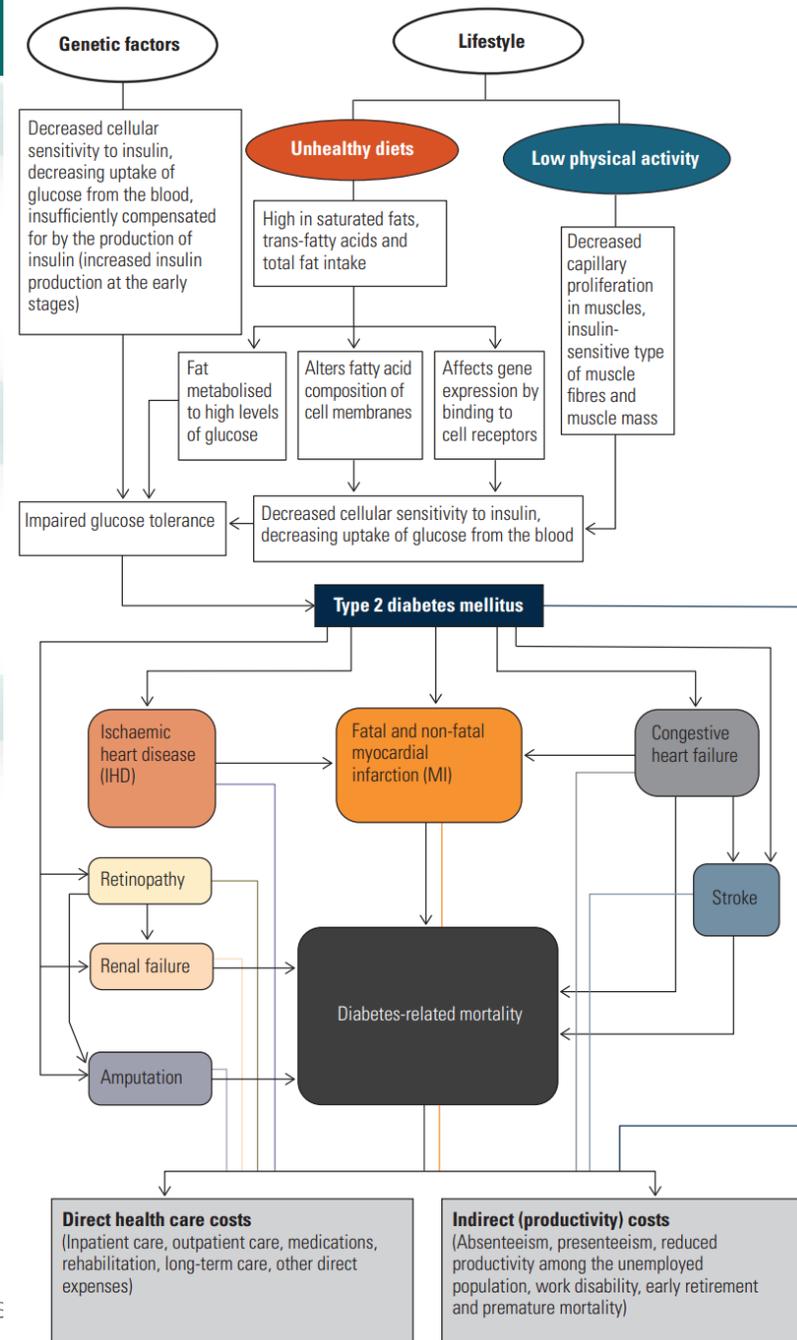
¹ Source: AON Hewitt Health Survey 2014

Employment

- Employment and working condition provide financial security, social status, personal development, and health-promoting attributes reflecting the quality of life.
- Moreover, employment factors do not only contribute to obesity in adulthood but they also influence childhood obesity levels
- The more extended the working hours of the mother, the more likely it is that her children will be overweight.

https://www.euro.who.int/__data/assets/pdf_file/0004/342166/Unhealthy-Diets-ePDF-v1.pdf

Table 11 *Estimated diabetic complication-related costs in 2020 attributable to unhealthy diets and low physical activity patterns in 2015 in France, Germany, Italy, Spain and the United Kingdom*

	Estimated number of incident cases of diabetes-related complications in 2020 attributable to the risk factor		Estimated complication-related total health care cost in 2020 (€)		
	Unhealthy diets	Low physical activity	Unhealthy diets	Low physical activity	Total cost
France	181	302	2 646 685	4 411 142	7 057 827
Germany	193	386	3 910 441	7 821 688	11 732 129
Italy	60	422	492 429	3 447 004	3 939 433
Spain	43	255	516 414	3 099 453	3 615 867
United Kingdom	94	330	1 874 299	6 560 047	8 434 347

https://www.euro.who.int/__data/assets/pdf_file/0004/342166/Unhealthy-Diets-ePDF-v1.pdf

Causes of obesity : Food price

The cost of healthy food such as fruits and vegetables is higher than less nutritious, energy-dense food.

Transformations in the retail environment are accompanied by increased use of food advertising and promotional strategies to encourage consumers to buy more industrialized food products, including ultra-processed foods that are high in sugars, fats and salt. this results in increased exposure to obesogenic diets.

Burger $0.99

Salad $4.99

Some SUPER Heroes are Called
FRIDAY IS FREEDAY

Carl's Jr.

BUY 1 GET 1

SUPER BEEF BAC + CHILI CHEESE BURGER

Follow us on 🅕 📷 @CarlsJrIndonesia or 🐦 CarlsJrID to get this promo. Applies every Friday of April 2018, for dine-in, takeaway and deliveries thru GoFood. Cannot be combined with other promos.

Food desert

- A food desert is an area that has limited access to affordable and nutritious food. In contrast, an area with greater access to supermarkets and vegetable shops with fresh foods may be called a food oasis.

- Allcott et al. (2019) published in The Quarterly Journal of Economics cast doubt on the notion that exposing poor neighbourhoods to healthy groceries reduces nutritional inequality.
  - The study found "that exposing low-income households to the same products and prices available to high-income households reduces nutritional inequality by only about 10 percent, while the remaining 90 percent is driven by differences in demand.

Allcott, Hunt; Diamond, Rebecca; Dubé, Jean-Pierre; Handbury, Jessie; Rahkovsky, Ilya; Schnell, Molly (May 20, 2019). "Food Deserts and the Causes of Nutritional Inequality". The Quarterly Journal of Economics. 134 (4): 1793–1844. doi:10.1093/qje/qjz015. ISSN 0033-5533.


A typical urban corner shop. All of the food visible is relatively imperishable: dried, processed, and tinned products, which may have a lower vitamin and nutritional content than fresher produce.

https://en.wikipedia.org/wiki/Food_desert

Singpass: Buying booze from retailer Cellarbration's vending machines

Options include The Singleton 12 Years Old Single Malt Scotch Whisky ($62), Mortlach 20 Years Old Single Malt Scotch Whisky ($265), Rossl Bier ($4.20) and San Miguel beer ($4). Prices are the same as in-store and online ones.
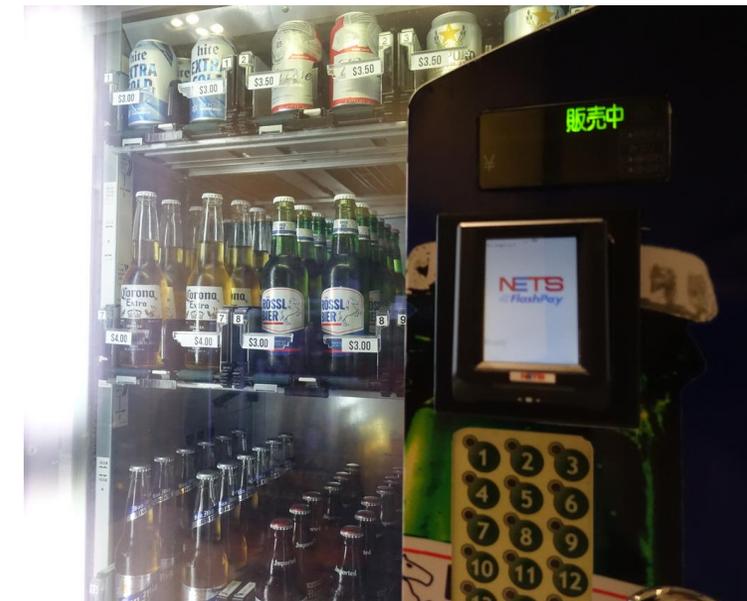
https://www.straitstimes.com/life/food/use-singpass-to-buy-booze-from-retailer-cellarbrations-vending-machines?fbclid=IwAR2FdfoOHS0v7gfF89dWefW8Y8Is4erxeOuHjOmPt0jEWD_24mqo8urH_60

https://www.straitstimes.com/tech/tech-news/singpass-transactions-doubled-in-2020-with-more-people-going-digital-during-pandemic

The creation of an exogenous obesogenic environment

Food industry is to blame for making unhealthy foods and persuading us via marketing to eat them, or provide super-sized.

Government is to blame for subsidizing farmers to produce unhealthy industrialized foods.

Although, supermarkets or fresh markets are likely to be nearby selling fresh fruit and vegetables and all the other ingredients for a delicious home-cooked meal. The home-cooked meal might cost more and take more time, and people might choose to eat the unhealthy option and use their money and time on other things.

Drivers of food systems

Causes of obesity : Culture and society
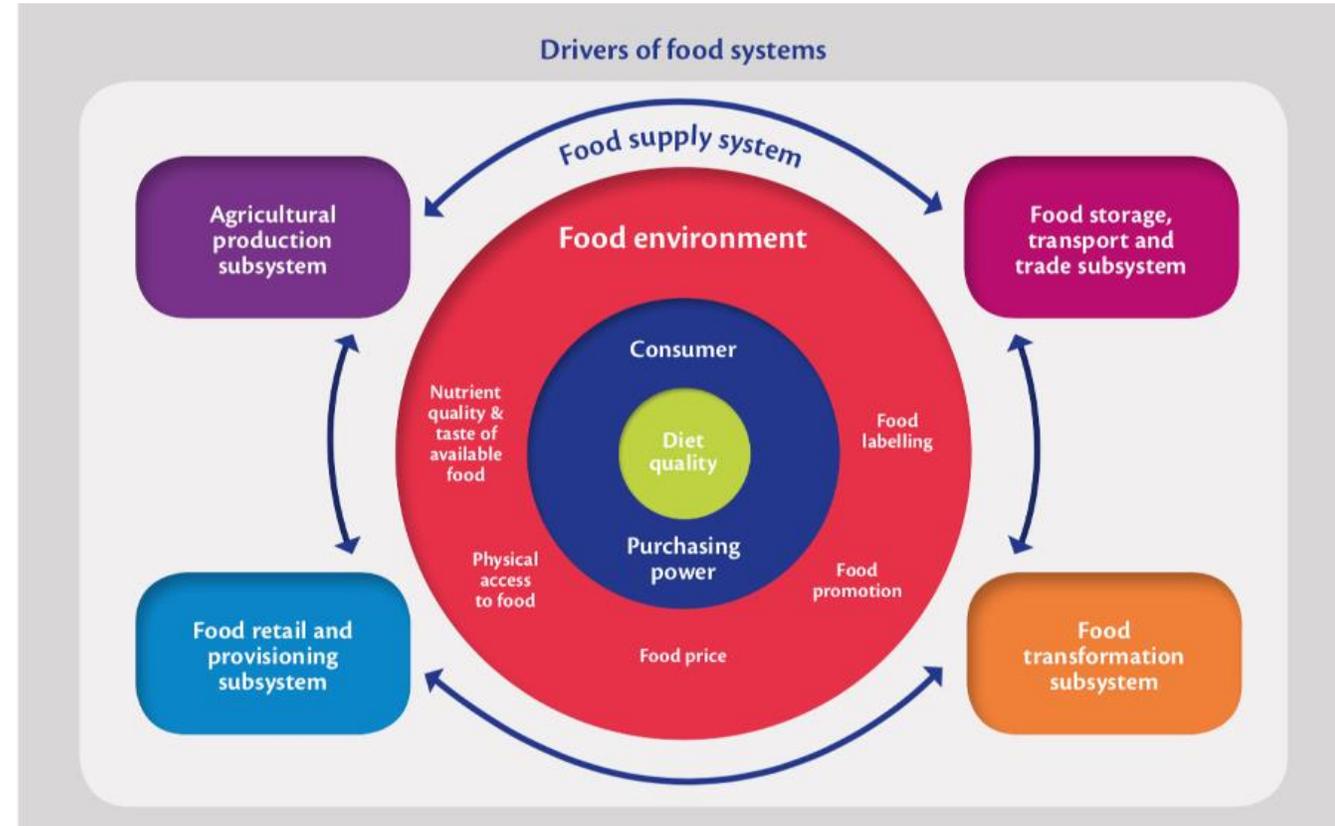
Culture and society are essential in shaping a person's diet. Unfortunately, as a society where **cheap is good and fast is better**, we've welcomed super-sized, low-cost fast food that has paved the way for a massive increase in the rate of obesity.

Causes of obesity : others

Genetic factors

- Prader-willi syndrome
- Other syndromes
- Leptin deficiency
- Other defects and deficiencies

Drugs

Mental & physical disability

- **Mental** e.g. Schizophrenia, Downs syndrome, Mental illness, Learning disabilities and eating disorder
- **Physical Disability**
- Greatly reduced activity levels (e.g. wheelchair bound) form physical impairments or age (combination of difficulties in regulating food intake & energy output)

Physiological factors

- Energy intake (More than is needed)
- Energy expenditure
- Thrifty gene
- Ethnic tendencies especially adopted western lifestyle

Environmental factors

- Advertising and marketing of high density foods and soft drinks
- Social deprivation
- Lifestyle changes

Endocrine disease e.g.

- hyperthyroidism,
- hypothyroidism,
- cushing syndrome,
- Growth hormone deficiency,
- polycystic

Behavioural factors

- Eating high calorie food
- High fat diets
- Snacking
- Alcohol drinking
- Smoking
- Sedentary lifestyle
- Pregnancy

Food-related chronic diseases

- Each year, more than a million Americans die from diet-related diseases like cardiovascular disease, diabetes and certain forms of cancers.

- In 2020 alone, an estimated 800,000 people died from cardiovascular disease, an even greater number than the horrific toll of COVID-19 during that same year.

- obesity, which is both a disease and a condition that increases the risk for other diet-related chronic diseases, has increased to historic levels in children and adults during the COVID-19 pandemic.

- Improving nutrition can turn the tide on the unacceptably high rates of diet-related diseases and deaths in the U.S., saving lives, improving quality of life, and reducing health care costs.

    - To help consumers make better food choices, the FDA is ramping up its food labelling and broader nutrition education efforts

Susan T. Mayne, Ph.D.

https://www.fda.gov/news-events/fda-voices/improving-nutrition-turn-tide-diet-related-chronic-disease

Banterle, A., & Cavaliere, A. (2014). Is there a relationship between product attributes, nutrition labels and excess weight? Evidence from an Italian region. *Food Policy*, *49*, 241-249.

Nutrition claim:
- Low fat
- Low energy
- Low sodium
- High fire-vitamin
- Light

Product quality attributes:
- Origin of products
- Traceability
- Quality certification
- Nutritional properties

Product marketing attributes:
- Price
- Brand
- Flavour

Table 5
Ordered regression model: marginal effects.

	Normal weight	Slightly overweight	Seriously overweight	Obese
Age	−0.088***	0.044***	0.024***	0.021***
Gender	0.200***	−0.098***	−0.054***	−0.048***
Education	0.070***	−0.035***	−0.018***	−0.016**
Income	0.014	−0.007	−0.004	−0.003
Household size	−0.056***	0.028***	0.015***	0.013***
Physical activity	0.112***	−0.055***	−0.030***	−0.026***
Smoking behaviour	−0.068**	0.033***	0.018*	0.016***
Food knowledge	0.021*	−0.011*	−0.006**	−0.005*
Nutritional fact	0.003	−0.001	−0.001	−0.001
Use of nutritional label information	0.016	−0.008	−0.004	−0.004
Nutrition claims (F_1)	−0.026***	0.013***	0.007*	0.006***
Product quality attributes (F_2)	0.032	−0.016	−0.008	−0.007
Product marketing attributes (F_3)	0.016***	−0.008***	−0.004**	−0.004***