Institute for Health
Metrics and Evaluation

Understanding the Burden of Disease by 2050

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Outline

- **IHME**
- Global Burden of Disease
- Future threats
- US burden
- Kuwait Burden
- Conclusions

IHME is an academic center of excellence in health measurement, based at the University of Washington

Our mission is to provide comprehensive health data and analytics to improve decision-making that will lead to health equity.

- Worldwide coverage, of 200+ countries and 900+ subnational areas
- Our data are widely used to make decisions about health by governments, health care funders, and life sciences companies.

IHME resources at-a-glance:

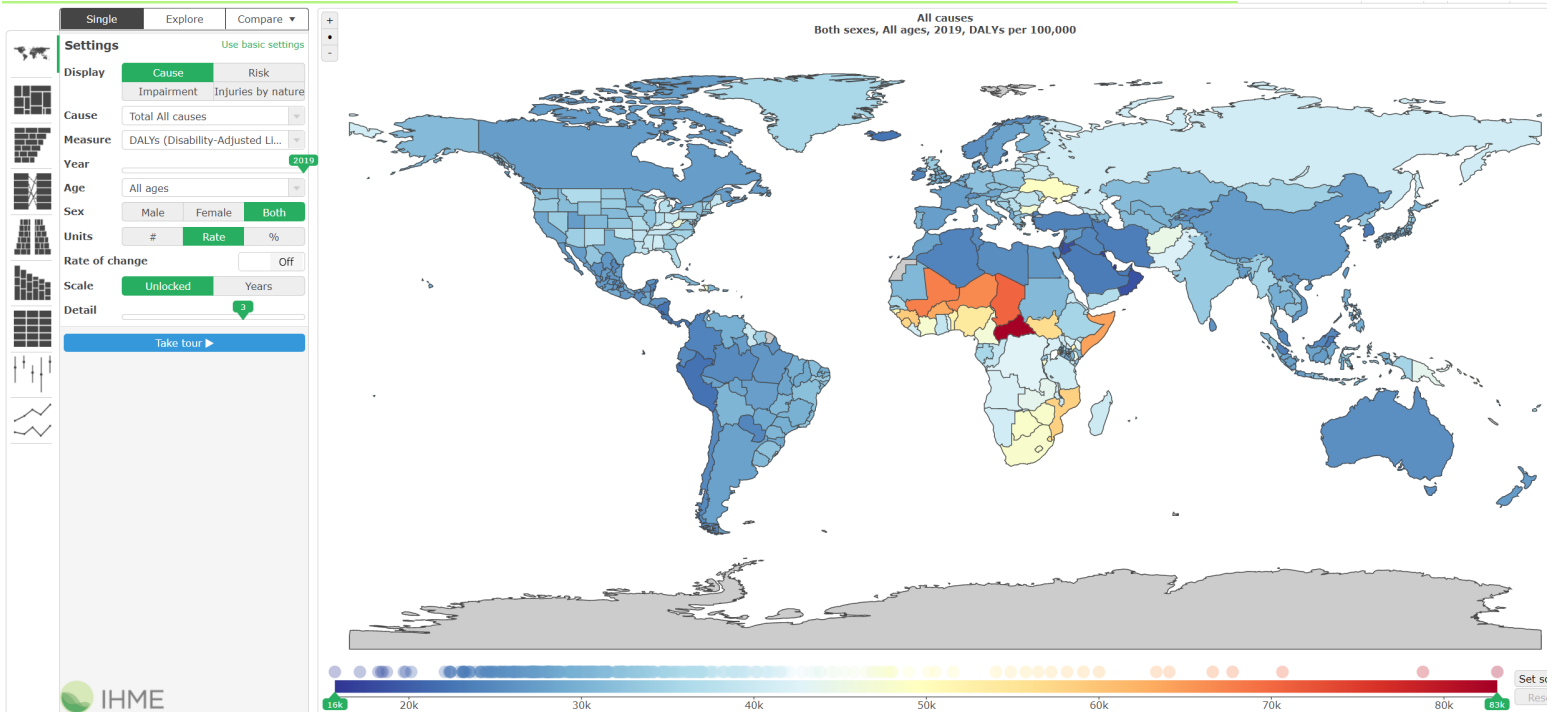
- 450+ full-time professionals in Seattle, USA, including 30 full-time faculty and a 30-member scientific council
- 13,500+ collaborators
- 200,000+ input data sources
- State-of-the-art tools for search, analysis, and data visualization

IHME partners with hundreds of organizations

IHME believes that everyone deserves a long life in full health and works to achieve that goal.

Institute for Health Metrics and Evaluation: Mission

- Answer three critical questions:
  1. What are the world's major health problems?
  2. How well is society addressing these problems?
  3. How do we best dedicate resources to maximize health improvement?



http://www.healthdata.org/gbd/data-visualizations

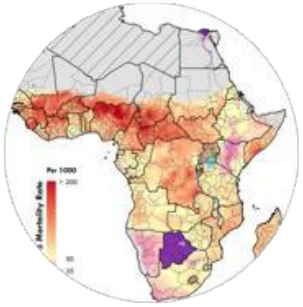
IHME's research

Global Burden of Disease

The Global Burden of Disease (GBD) provides a comprehensive and comparable picture of mortality and disability across countries, time, age, and sex. It quantifies health loss from hundreds of diseases, injuries, and risk factors, so that health systems can be improved and disparities eliminated.

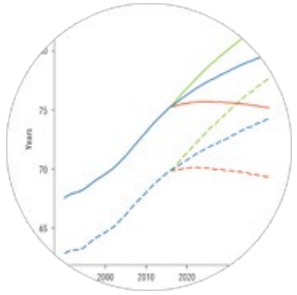
Financing Global Health

IHME reports patterns of global health financing flows from 1990 to 2050 with development assistance for health (DAH) levels and changes over time by source, channel, recipient region, and health focus and program area. DAH disbursed or received by population, disability-adjusted life years, gross domestic product, and government health spending are available.



Local and Small Area Estimation (LSAE)

The Local and SmallArea Estimation (LSAE) project produces estimates of selected health outcomes and related measures at a more granular resolution, measuring health outcomes and related measures that cover entire continents, combining local detail with broad coverage.



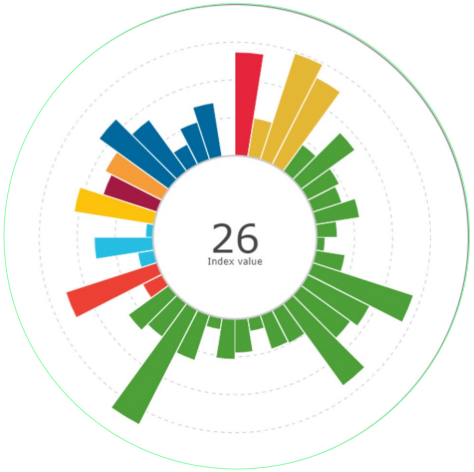
Future Health Scenarios

Forecasts the global burden of disease, using GBD estimates of more than 370 diseases and injuries, more than 80 risk factors, sociodemographic indicators and other drivers of health. These forecasts provide policymakers, donors, researchers and the general public with high-quality forecasts and custom scenarios in order to assess the impact of new policies, interventions or technologies on health.

Antimicrobial Resistance

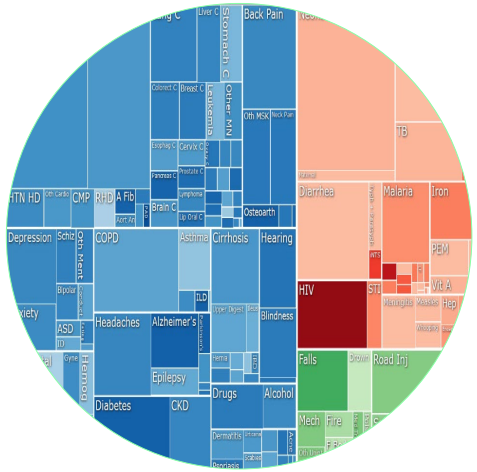
IHME conducts research on AMR as part of a global initiative called the Global Research on Antimicrobial Resistance (GRAM) Project. We estimated deaths and disability-adjusted life years associated with and attributable to bacterial AMR for 23 pathogens and 88 pathogen-drug combinations in 204 countries and territories.

IHME data track progress toward SDGs, socio-demographic impact on burden, Human Capital Index, and Health access and quality



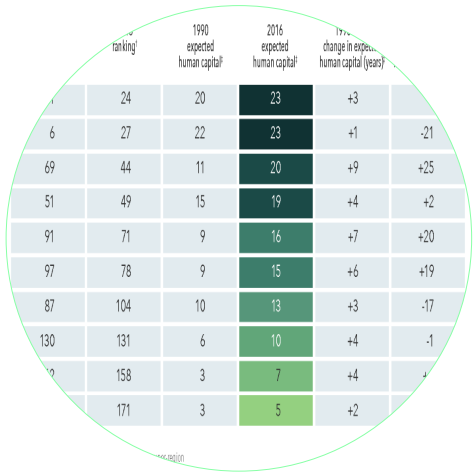
Progress toward achieving the Sustainable Development Goals

IHME measures progress toward achieving the United Nations Sustainable Development Goals (SDGs) for 195 countries and territories toward 41 health-related SDG indicators and where they might stand in 2030 on the basis of past trends.



Measure geographies on a spectrum of development

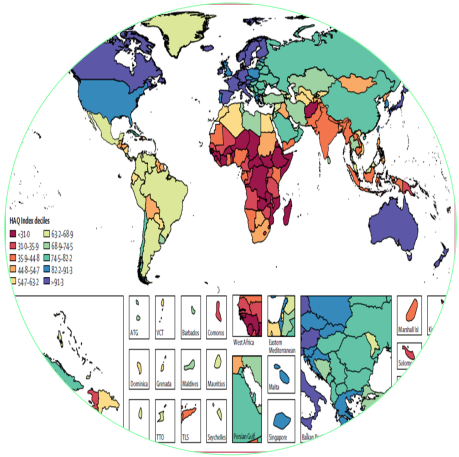
IHME's SDI summary measure identifies a geography's socio-demographic development. SDI contains an interpretable scale: zero represents the lowest income per capita, lowest educational attainment, and highest total fertility rate. SDI values are available for GBD geographies and groupings.



ranking	1990 expected human capital	2016 expected human capital	change in expected human capital (years)	
	24	20	23	+3	
6	27	22	23	+1	-21
69	44	11	20	+9	+25
51	49	15	19	+4	+2
91	71	9	16	+7	+20
97	78	9	15	+6	+19
87	104	10	13	+3	-17
130	131	6	10	+4	-1
	158	3	7	+4	
	171	3	5	+2	

Internationally comparable index of human capital

IHME's Human Capital Index offers a measure of expected human capital that incorporates educational attainment, education quality or learning, functional health status, and survival for 195 countries from 1990 to 2016.



Health care access and quality

The Healthcare Access and Quality (HAQ) Index is a summary measure based on 32 causes that in the presence of high-quality health care should not result in death. IHME reports HAQ for 195 countries and at the subnational level for some.

What is the Global Burden of Disease (GBD) Study?

- A **systematic**, **scientific** effort to quantify the **comparative** magnitude of **health loss** due to diseases, injuries, and risk factors by age, sex, and geographies for specific points in time.

- To align health systems with the populations they serve, policymakers first need to understand the true nature of their country's **health challenges** – and how those challenges are **shifting over time**. GBD research incorporates both the **prevalence** of a given disease or risk factor and the **relative harm** it causes.

- The tools allow decision-makers to compare the effects of different diseases, injuries, and risk factors, and to prioritize interventions to improve health and save lives.

Diseases and injuries
350+
in 195 countries + territories, 1990-present

Results generated
3.5 billion
In GBD 2021

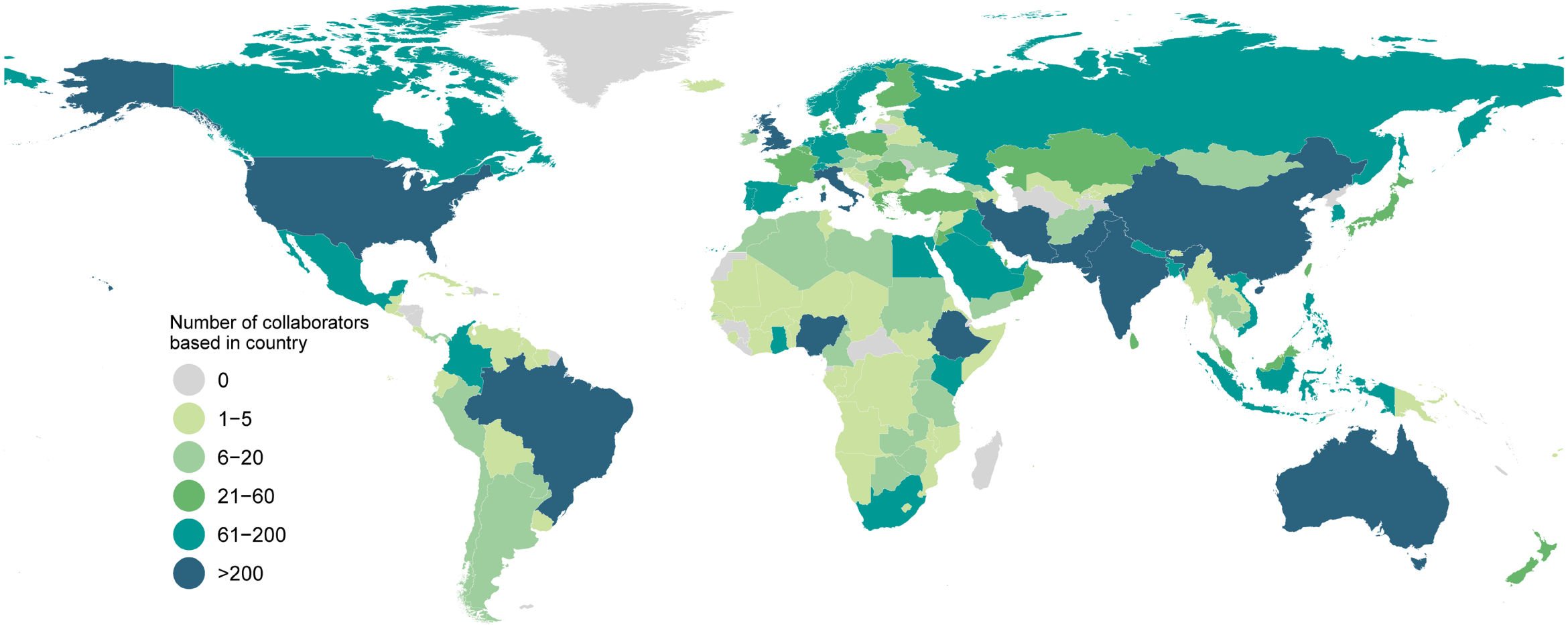
Publications
2500+
Since 2010

Participating researchers
13,000+
in over 162 countries and territories

Sources of data
329,000+
In GBD 2021

GBD collaboration

A health metrics ecosystem comprised of over **13,618 Collaborators in 164 countries and territories**

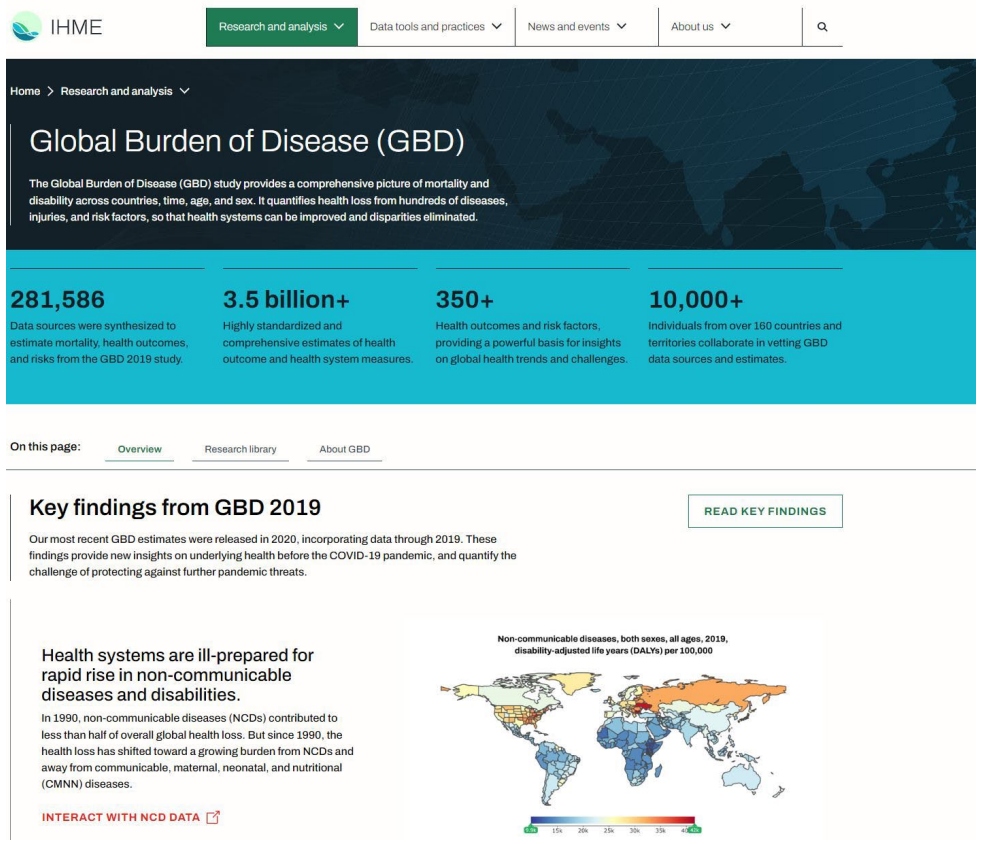


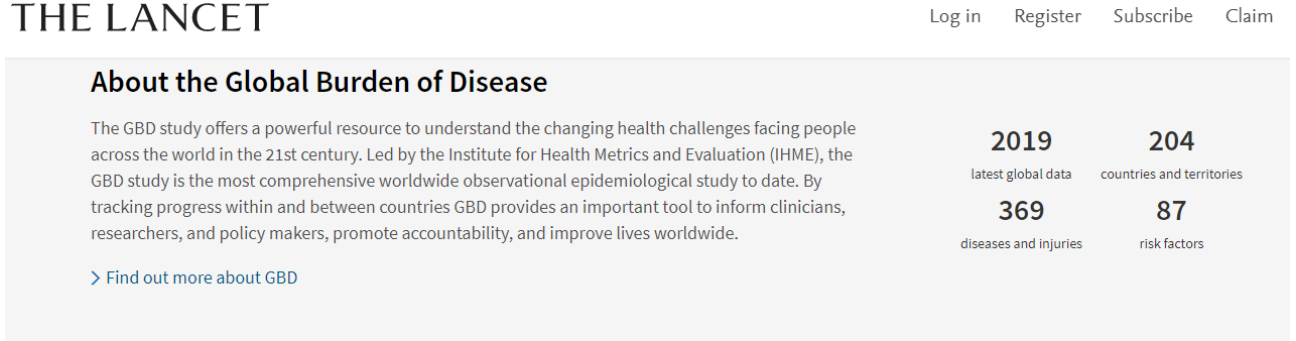
Global Public Good

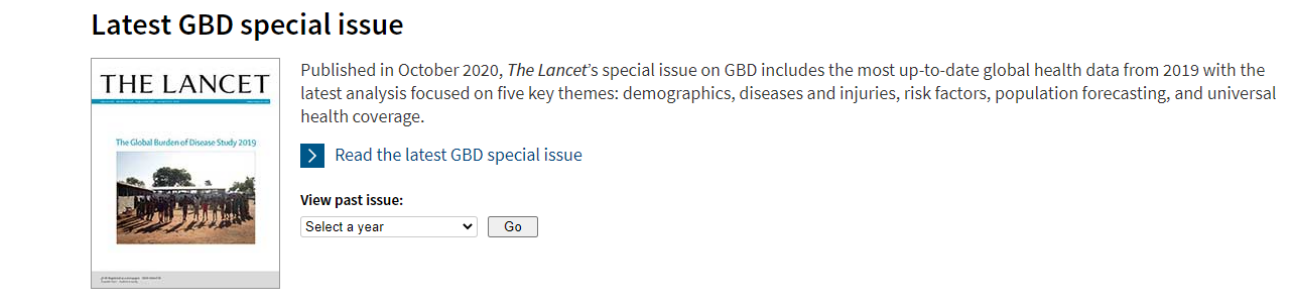
GBD 2019 Publications:

http://www.healthdata.org/gbd/gbd-2019-resources

https://www.thelancet.com/gbd



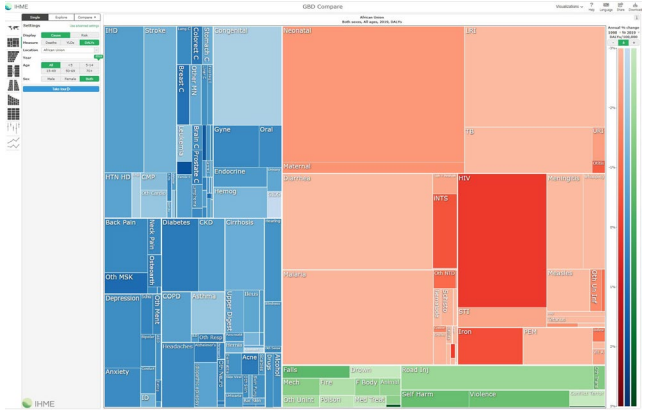


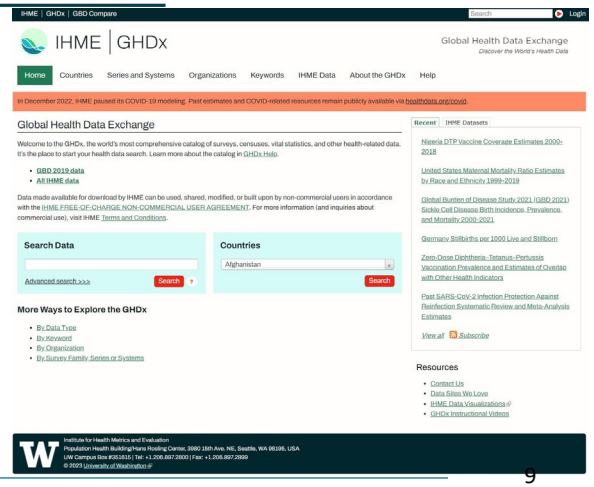


GBD 2019 Results:

https://vizhub.healthdata.org/gbd-compare/

http://ghdx.healthdata.org/gbd-results-tool





Focusing on *all* aspects of health loss

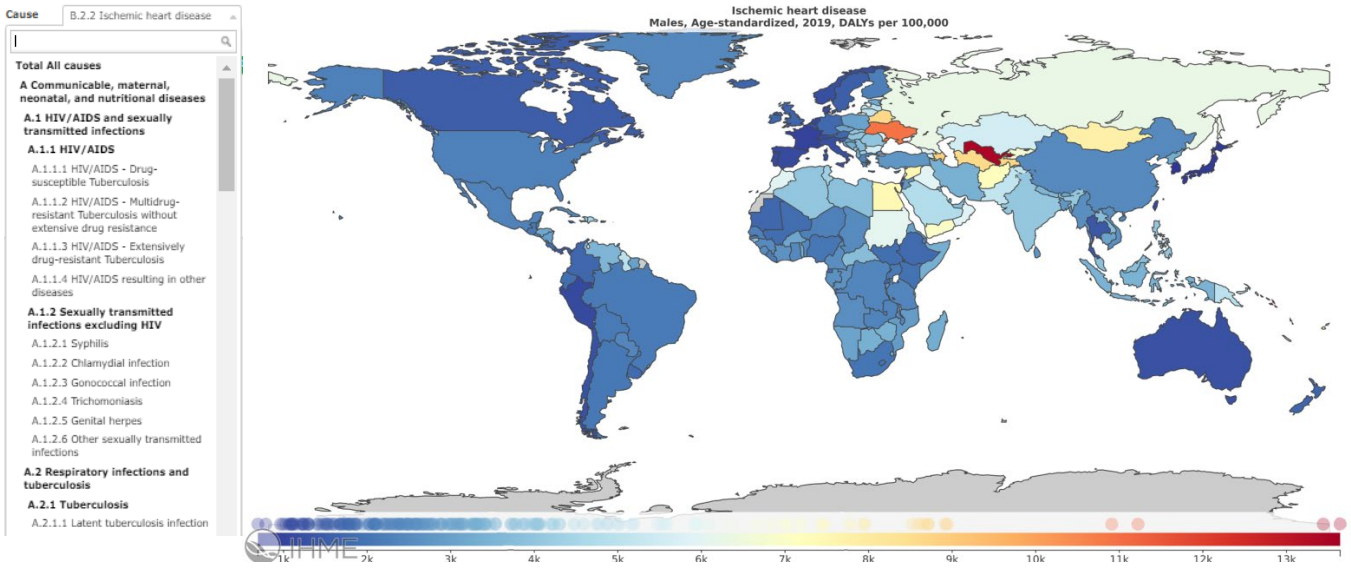
GBD aims to produce **comprehensive and comparable** estimates of ***all*** **forms of health loss** (diseases, injuries, impairments) for **every country** in the world.

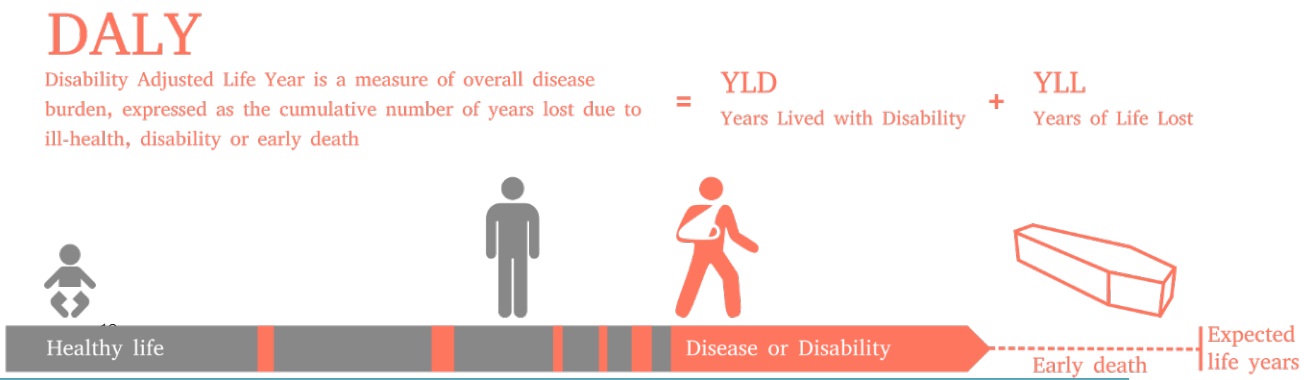
Traditional Metrics:

- Death counts, mortality rates
- Incidence, prevalence

Novel Metrics:

- Years of life lost (**YLL**s) to premature death
- Years lived with disability (**YLD**s)
  - Time spent sick or injured
    - With disability weight accounting for severity
- Disability adjusted life years (**DALY**s)
  - Years of healthy life lost = Burden

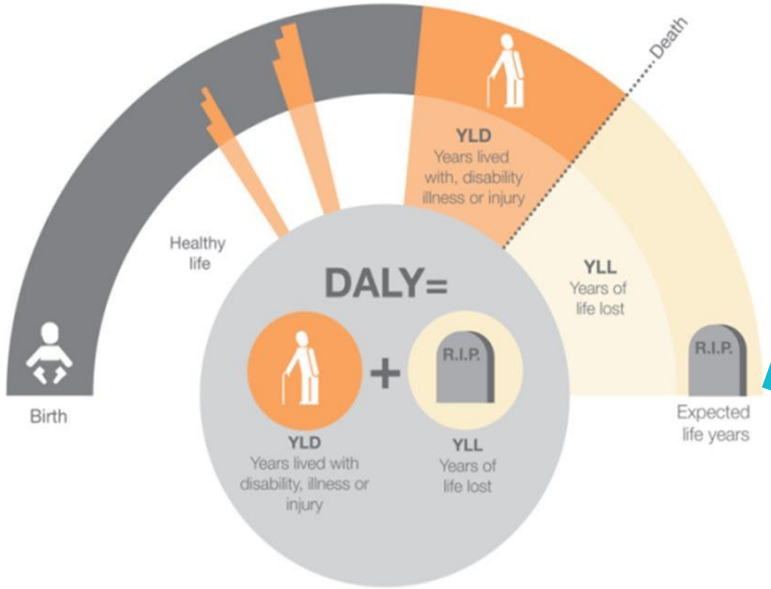




Egalitarian Approach – Measuring YLLs from the same "end point"

What is a disability adjusted life year?

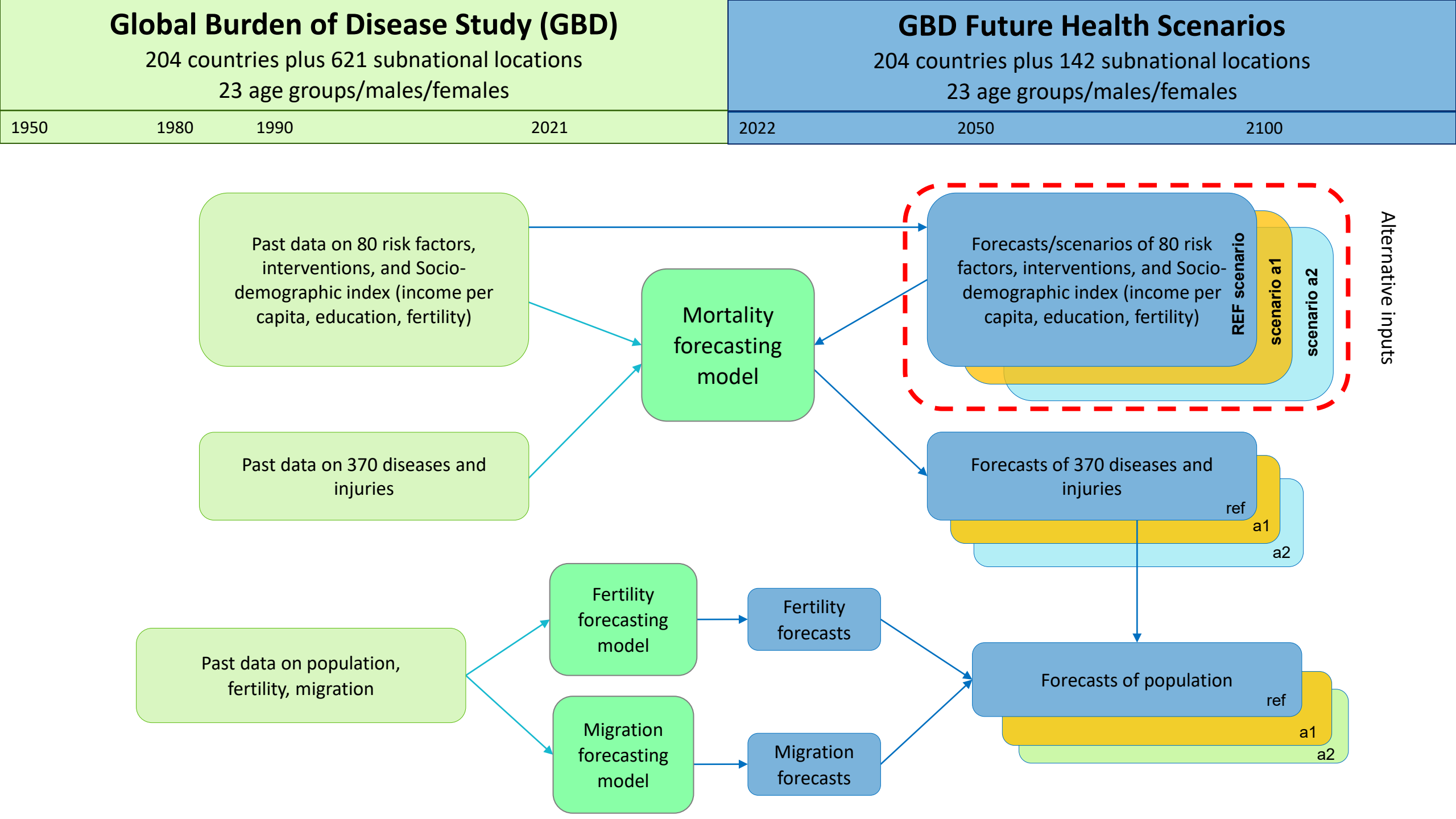
It's a measure of the overall burden of disease – it adds the years of life lost due to early death and years spent living with disability or ill-health together



GBD 2019 standard abridged life table used for computing YLLs	
AGE	Life expectancy (years)
0	88.8719
1	88.00051
5	84.03008
….	…..
90	7.617725
95	5.922359

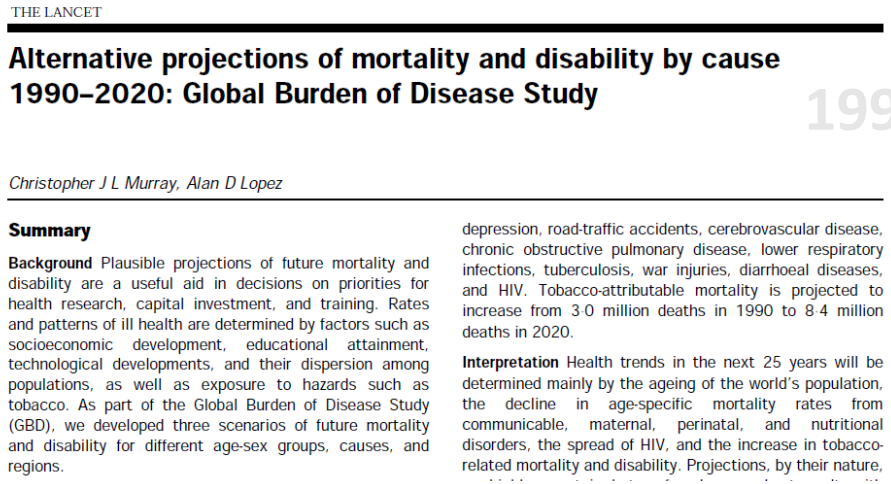
- All things being equal, we want to measure the same "end point" for all populations regardless of sex, location, access to health care, or burden of disease.
- Therefore, we use a **reference life table** and use the **longest observed average life expectancy** as the "target" and subtract years lost due to premature morality.

Reference Life Table:
http://ghdx.healthdata.org/record/ihme-data/global-burden-disease-study-2019-gbd-2019-reference-life-table


Global Burden of Disease Study (GBD)
204 countries plus 621 subnational locations
23 age groups/males/females
1950
1980
1990
2021
GBD Future Health Scenarios
204 countries plus 142 subnational locations
23 age groups/males/females
2022
2050
2100
Past data on 80 risk factors, interventions, and Socio-demographic index (income per capita, education, fertility)
Past data on 370 diseases and injuries
Mortality forecasting model
Forecasts/scenarios of 80 risk factors, interventions, and Socio-demographic index (income per capita, education, fertility)
REF scenario
scenario a1
scenario a2
Alternative inputs
Forecasts of 370 diseases and injuries
ref
a1
a2
Past data on population, fertility, migration
Fertility forecasting model
Fertility forecasts
Migration forecasting model
Migration forecasts
Forecasts of population
ref
a1
a2

History

- **1997:** Forecasting mortality and disability 1990-2020
- **2015:** FHS team established at IHME
- **2018:** Forecasting mortality, life expectancy and risk attributable burden – better/worse scenarios (type 1)
- **2020:** Forecasting populations to 2100
- **2024:** Forecasting 370 causes, deaths, YLLs, YLDs, DALYs, incidence, prevalence, life expectancy, healthy life expectancy (HALE) – target scenarios with avoidable future burden 2020-2050



THE LANCET

Alternative projections of mortality and disability by cause 1990–2020: Global Burden of Disease Study 1997

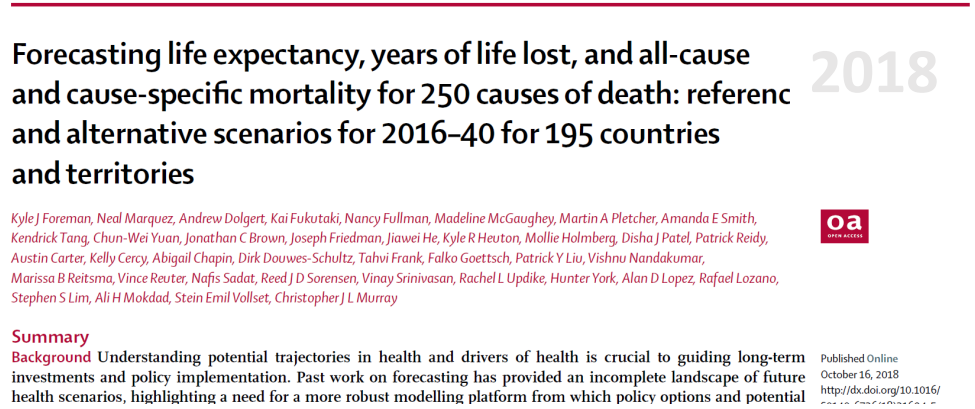
Christopher J L Murray, Alan D Lopez

Summary

Background Plausible projections of future mortality and disability are a useful aid in decisions on priorities for health research, capital investment, and training. Rates and patterns of ill health are determined by factors such as socioeconomic development, educational attainment, technological developments, and their dispersion among populations, as well as exposure to hazards such as tobacco. As part of the Global Burden of Disease Study (GBD), we developed three scenarios of future mortality and disability for different age-sex groups, causes, and regions.

depression, road-traffic accidents, cerebrovascular disease, chronic obstructive pulmonary disease, lower respiratory infections, tuberculosis, war injuries, diarrhoeal diseases, and HIV. Tobacco-attributable mortality is projected to increase from 3·0 million deaths in 1990 to 8·4 million deaths in 2020.

Interpretation Health trends in the next 25 years will be determined mainly by the ageing of the world's population, the decline in age-specific mortality rates from communicable, maternal, perinatal, and nutritional disorders, the spread of HIV, and the increase in tobacco-related mortality and disability. Projections, by their nature,



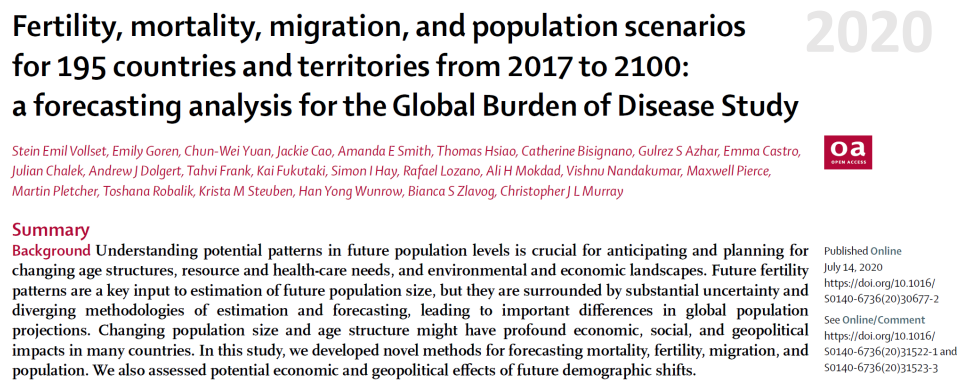
Forecasting life expectancy, years of life lost, and all-cause and cause-specific mortality for 250 causes of death: referenc and alternative scenarios for 2016–40 for 195 countries and territories 2018

Kyle J Foreman, Neal Marquez, Andrew Dolgert, Kai Fukutaki, Nancy Fullman, Madeline McGaughey, Martin A Pletcher, Amanda E Smith, Kendrick Tang, Chun-Wei Yuan, Jonathan C Brown, Joseph Friedman, Jiawei He, Kyle R Heuton, Mollie Holmberg, Disha J Patel, Patrick Reidy, Austin Carter, Kelly Cercy, Abigail Chapin, Dirk Douwes-Schultz, Tahvi Frank, Falko Goettsch, Patrick Y Liu, Vishnu Nandakumar, Marissa B Reitsma, Vince Reuter, Nafis Sadat, Reed J D Sorensen, Vinay Srinivasan, Rachel L Updike, Hunter York, Alan D Lopez, Rafael Lozano, Stephen S Lim, Ali H Mokdad, Stein Emil Vollset, Christopher J L Murray

Summary

Background Understanding potential trajectories in health and drivers of health is crucial to guiding long-term investments and policy implementation. Past work on forecasting has provided an incomplete landscape of future health scenarios, highlighting a need for a more robust modelling platform from which policy options and potential

Published Online October 16, 2018 http://dx.doi.org/10.1016/



Fertility, mortality, migration, and population scenarios for 195 countries and territories from 2017 to 2100: a forecasting analysis for the Global Burden of Disease Study 2020

Stein Emil Vollset, Emily Goren, Chun-Wei Yuan, Jackie Cao, Amanda E Smith, Thomas Hsiao, Catherine Bisignano, Gulrez S Azhar, Emma Castro, Julian Chalek, Andrew J Dolgert, Tahvi Frank, Kai Fukutaki, Simon I Hay, Rafael Lozano, Ali H Mokdad, Vishnu Nandakumar, Maxwell Pierce, Martin Pletcher, Toshana Robalik, Krista M Steuben, Han Yong Wunrow, Bianca S Zlavog, Christopher J L Murray

Summary

Background Understanding potential patterns in future population levels is crucial for anticipating and planning for changing age structures, resource and health-care needs, and environmental and economic landscapes. Future fertility patterns are a key input to estimation of future population size, but they are surrounded by substantial uncertainty and diverging methodologies of estimation and forecasting, leading to important differences in global population projections. Changing population size and age structure might have profound economic, social, and geopolitical impacts in many countries. In this study, we developed novel methods for forecasting mortality, fertility, migration, and population. We also assessed potential economic and geopolitical effects of future demographic shifts.

Published Online July 14, 2020 https://doi.org/10.1016/ S0140-6736(20)30677-2

See Online/Comment https://doi.org/10.1016/ S0140-6736(20)31522-1 and S0140-6736(20)31523-3

Alternative scenarios

Environmental risk factor targets

- Water
- Sanitation
- Hygiene
- Air Pollution
- Temperature

NCD risk factor targets

- Tobacco
- Diet
- BMI
- LDL
- SBP
- FPG

Infectious disease

- Stunting
- Wasting
- Low birth weight
- Iron deficiency
- Vitamin A deficiency
- Child underweight
- Sub-optimal breastfeeding
- Vaccine coverage

Combined

- Environmental package
- NCD package
- Infectious disease package

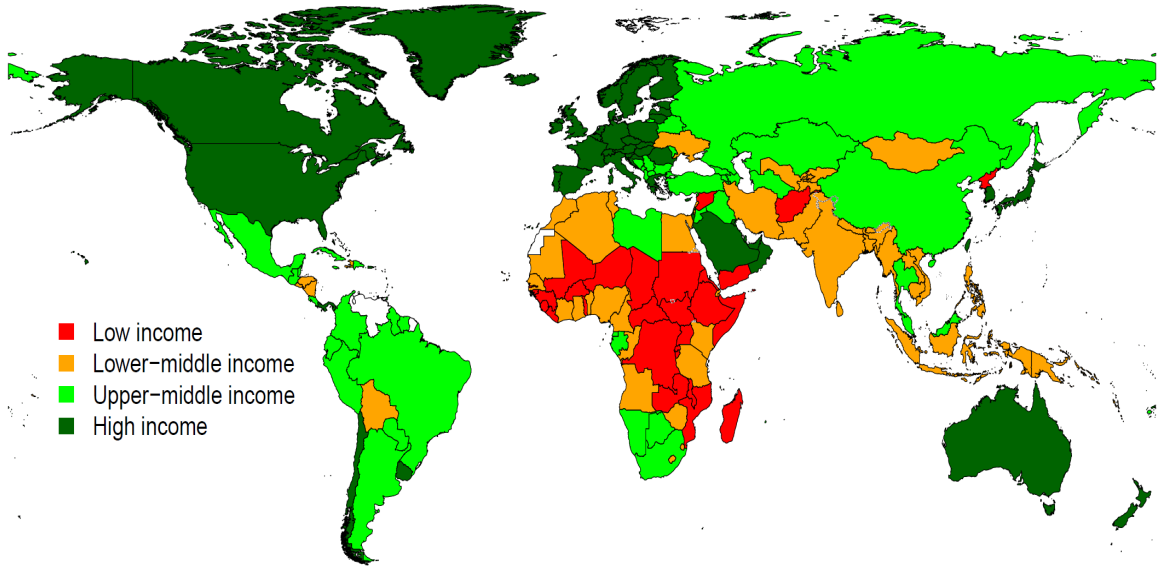
Future Health Scenarios Key Messages

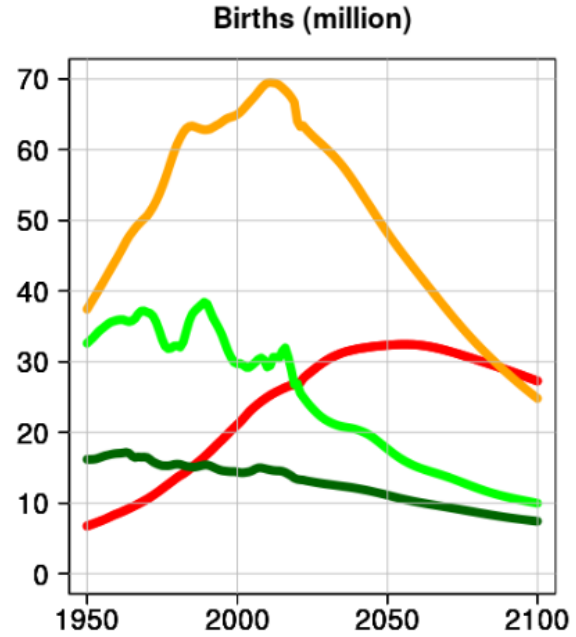
- Life expectancy is expected to continue to grow in all regions despite increases in temperature, and rising BMI.
- Between country inequalities in life expectancy will persist but narrow across countries and regions between now and 2050 in our reference forecast.
- Most health systems will face a major shift towards non-communicable diseases (NCDs) within the next generation including large increases in the number of individuals with a high need for caregiving.
- Alternative scenarios with more favorable risk factor trajectories demonstrate that there are huge opportunities through policy change to alter the course of 21st century health.
- Much of the future health burden will be determined by how much progress we can make with well-established risk factors and interventions (e.g., smoking, air pollution, diet, vaccination, health system quality and access).

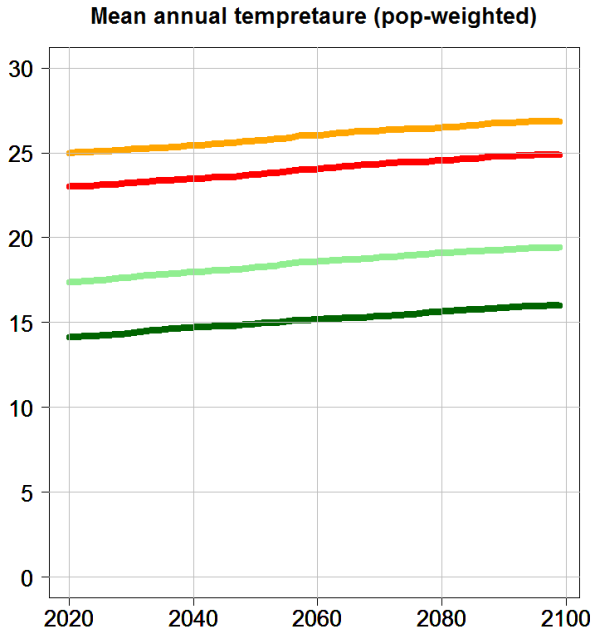
Fertility

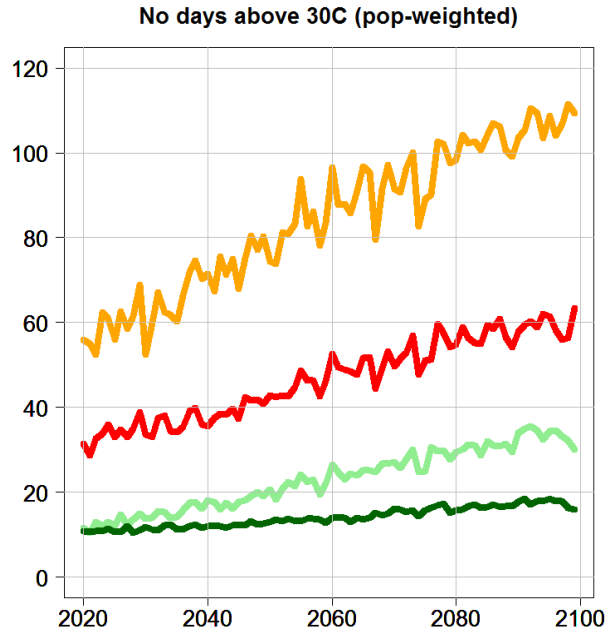
- Fertility rates are declining everywhere, but remains above replacement in around 45% of 204 countries. We forecast that number to be close to 100% in 2100.
- Fertility remains high in the places that will be the most heat-stressed and poor, shifting the world's births to increasingly vulnerable conditions.
    - For example, the proportion of the world's births in World Bank Low-income countries will increase from less than 10% in 1950 and 20% currently to 40% in 2100
- Most countries outside of Sub-Saharan Africa will experience the consequences of low fertility with aging populations and inversion of population pyramids that will lead to profound fiscal, economic and social consequences.
- Alternative scenarios with higher met need and education coverage as well as pro-natal policies will demonstrate the policy potential to alter the course of fertility in the 21st century

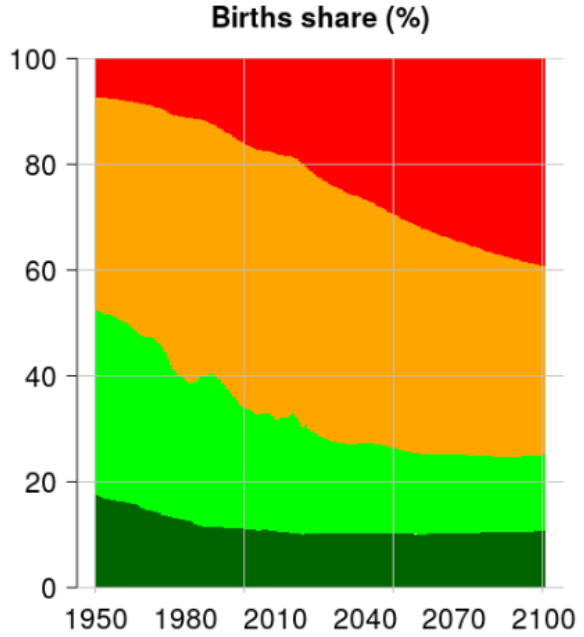
World Bank regions



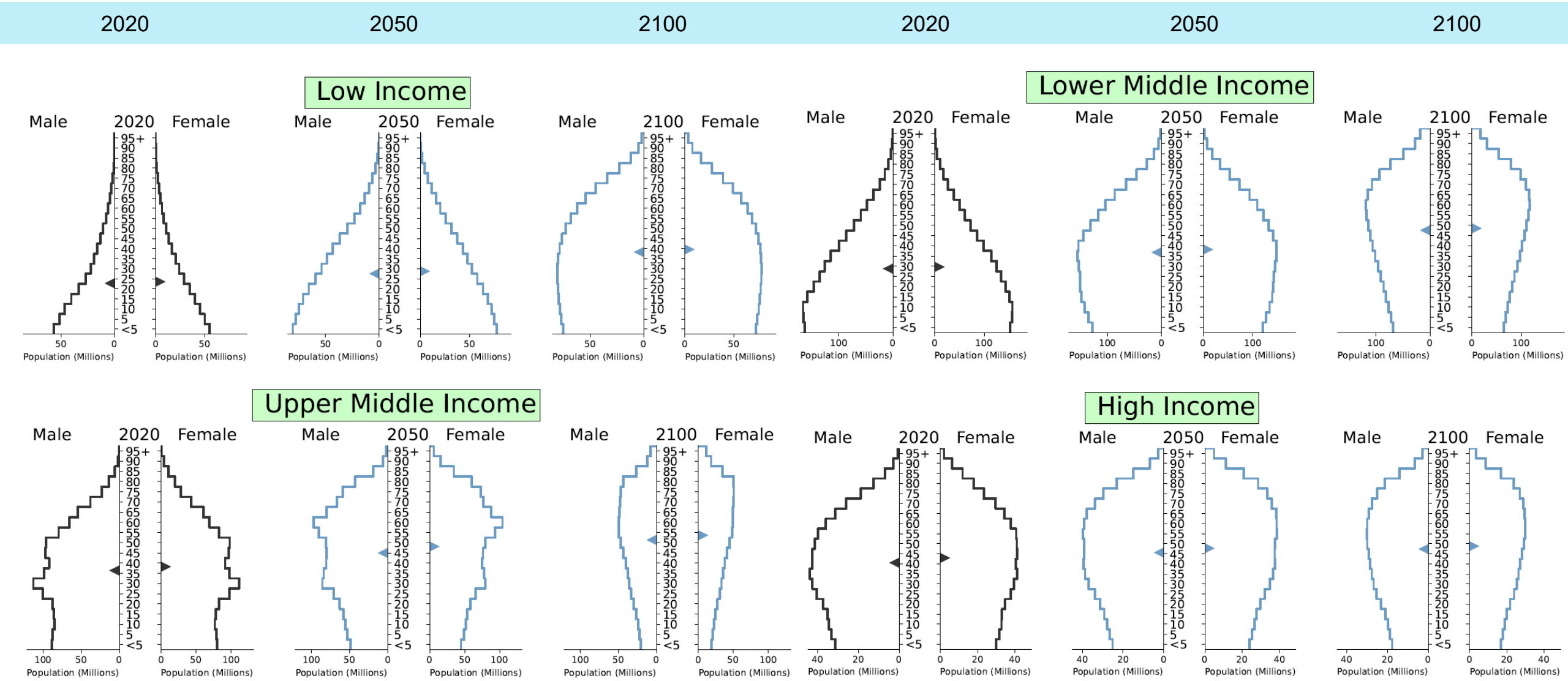








Population pyramids – World Bank regions



Climate change

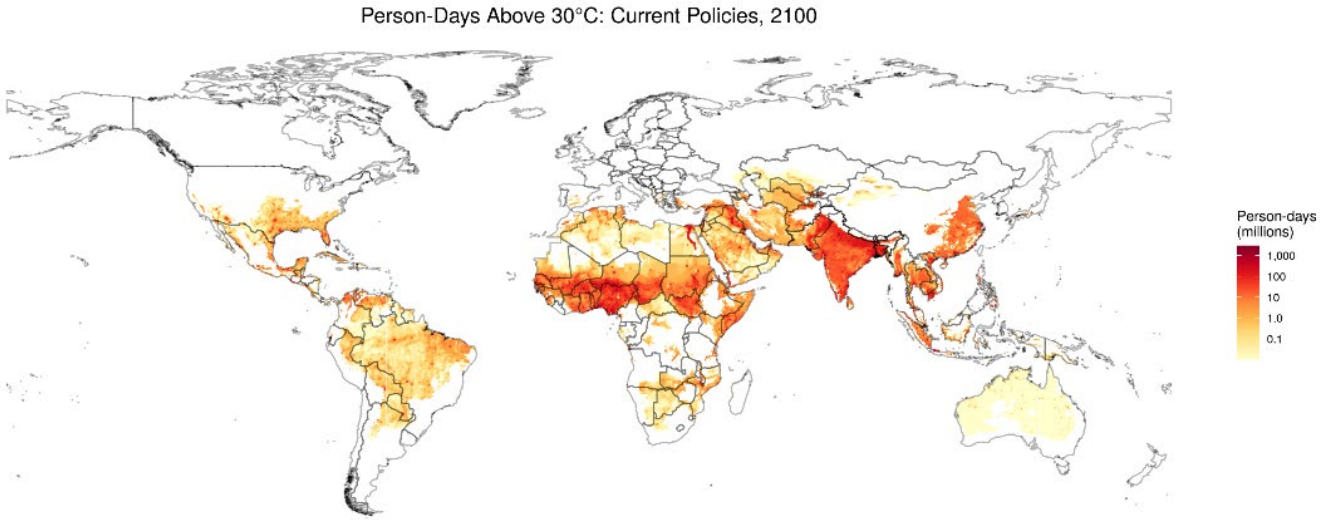
1) Health impacts of climate change are quite complex given U-shaped risk functions – some countries may see reduced risk and others substantial increases in risk.

2) Some locations (Sahel, parts of India) likely have large populations in inhabitable places leading mass out migration.

3) Geopolitical instability may follow.

4) Large array of adaptation technologies need to be developed and deployed to limit impacts

Where person-days above 30C will occur in 2100

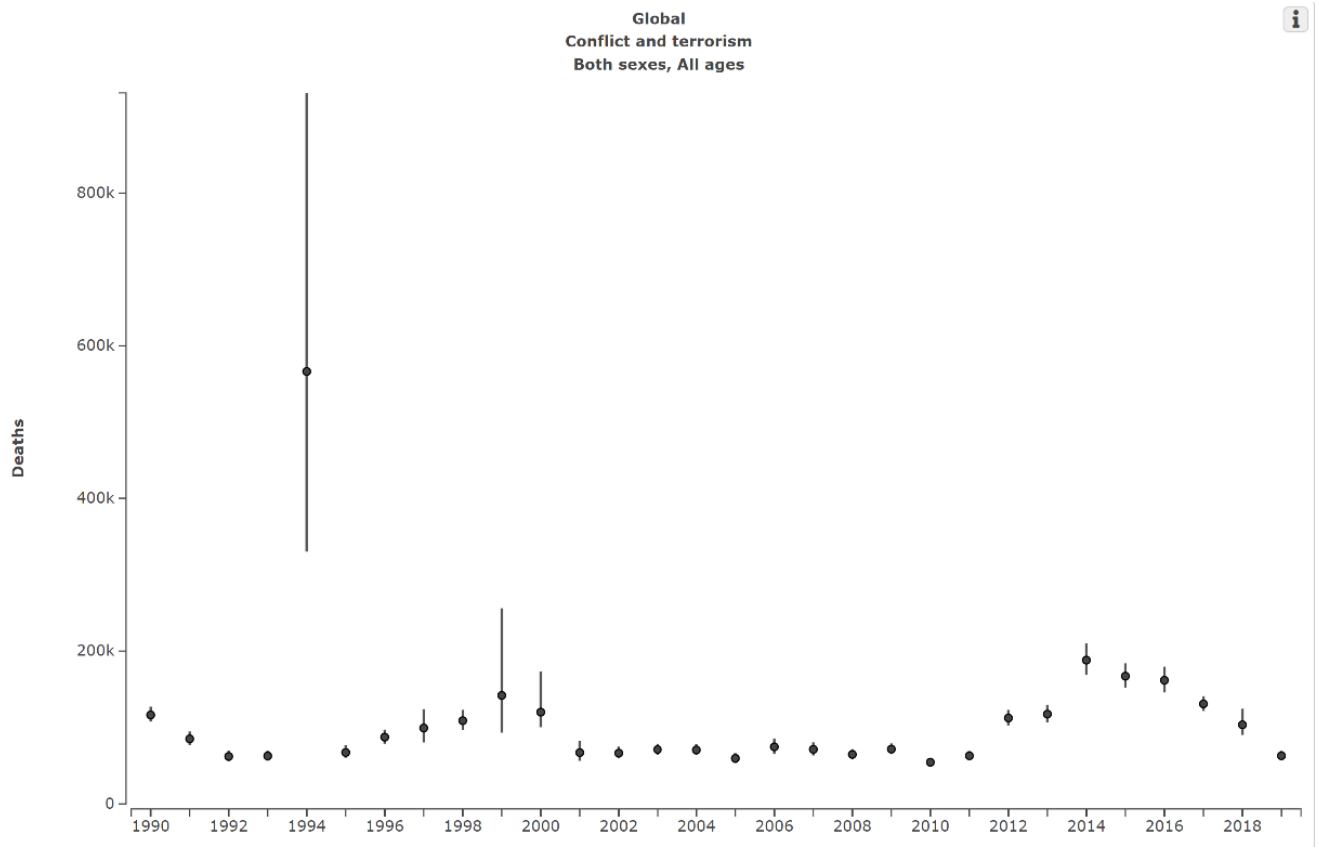


Future pandemics

1) COVID-19 has killed more than 20 million in 3 years.
2) COVID-19 may still present a major risk of a new variant with immune escape and increased severity: we do not know.
3) Risk of another pandemic of this magnitude is also unknown: we have had two in 100 years. Some factors such as population growth and spread into areas with more wild life interaction may increase risk of zoonotic transfer.
4) Main strategies are surveillance and drug/diagnostic/vaccine innovation.
5) As long as surveillance is through governments only, we remain at risk of political interference e.g. slow reporting or non-reporting

Conflict

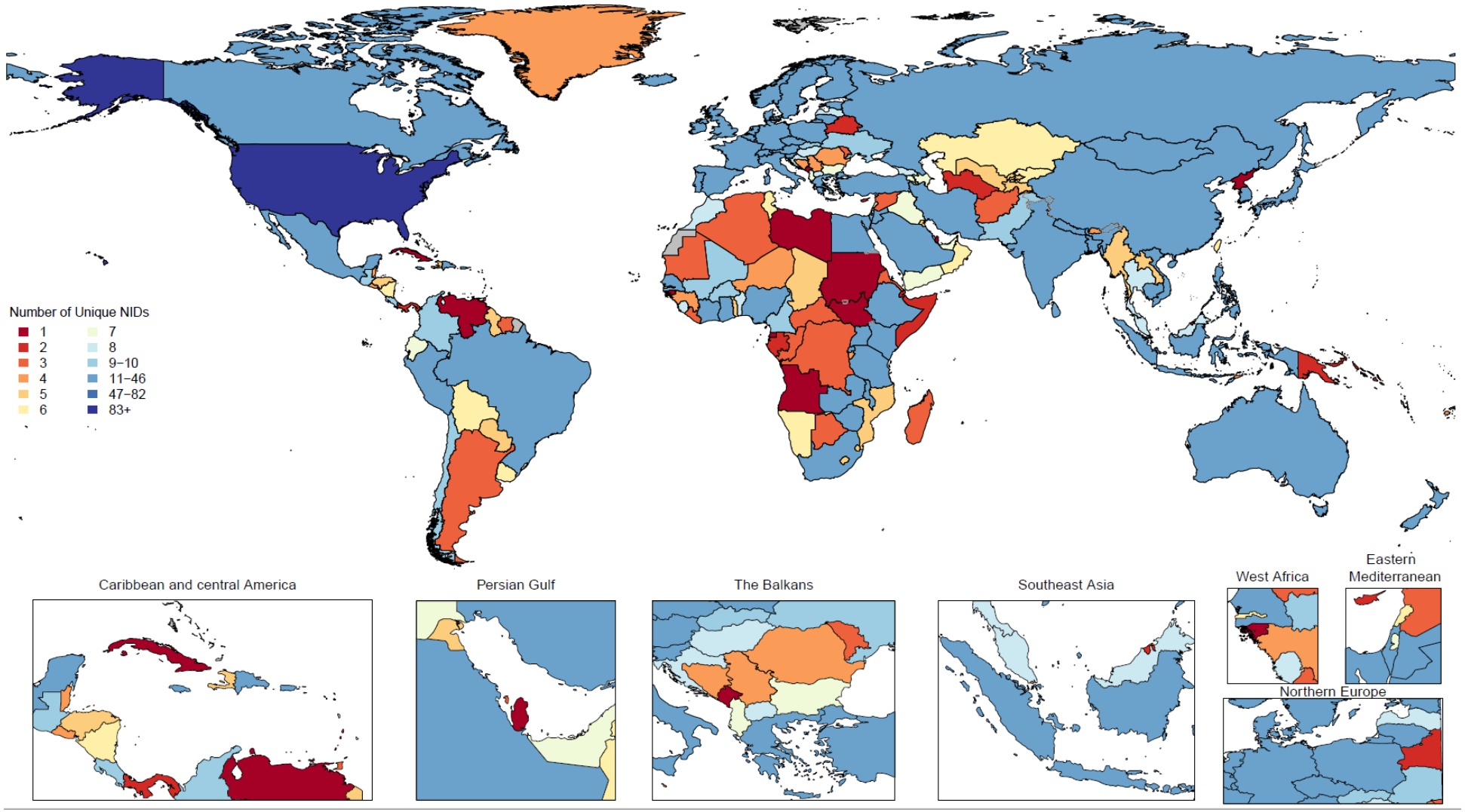
1) On average over the last 30 years, conflict has killed less than 200,000 a year
2) 2022 will be a much higher death toll due to the Russia-Ukraine war.
3) The return of Great Power war may mean that conventional conflicts may be more common.
4) Real risk of nuclear confrontation of some form.



Diet, obesity and physical activity

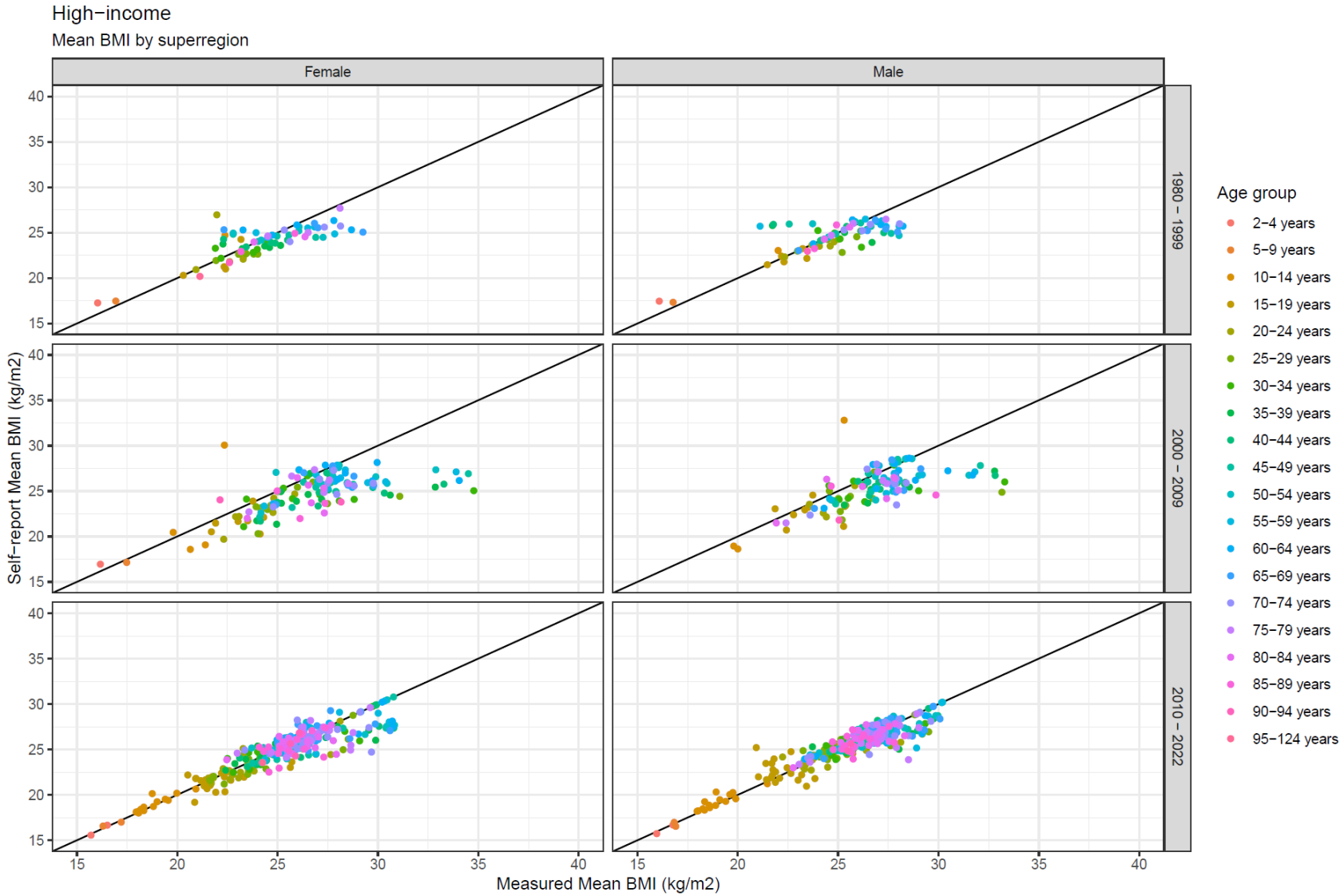
1) Of major risk factors, obesity is the one that is steadily increasing around the world.
2) Increase in obesity is likely linked to the nexus of total caloric intake, diet composition, and physical activity.
3) Steady increase in obesity will slow or even reverse the decline in cardiovascular diseases, and contribute to rising deaths from some cancers.
4) No community has reversed the increase in obesity – policies have failed to date.
5) New pharmacological agents are available but have substantial side-effects limiting widespread use. Urgent need to experiment on different options to limit the increase in obesity.

Obesity: We use ~2,000 surveys of which 45% measure BMI

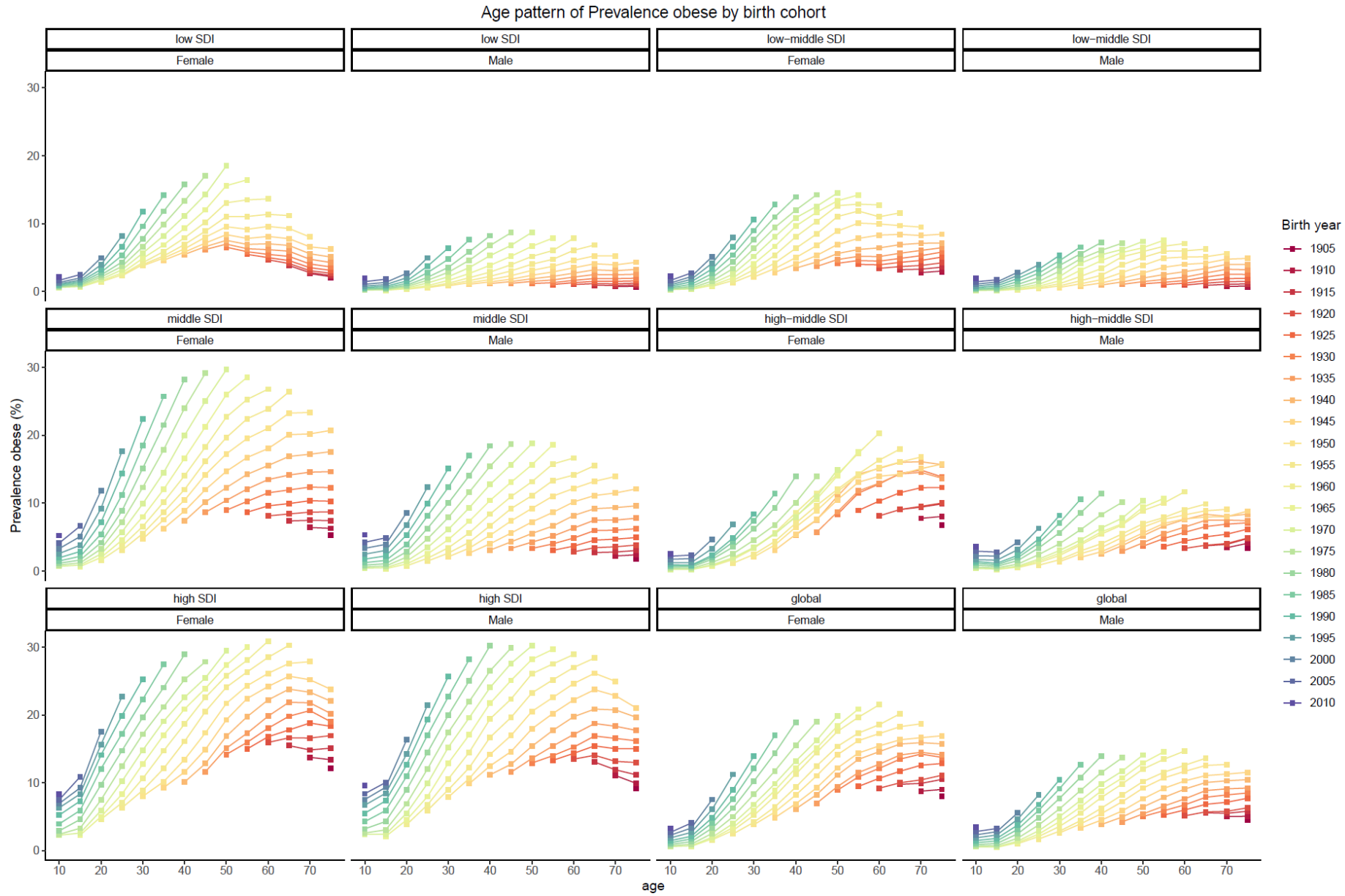


Social acceptability of high BMI might be increasing over time

- The relationship between self-reported and measured BMI has changed over time in countries in the high-income region.
- Fewer people are under-reporting BMI suggesting that social norms around weight might be changing

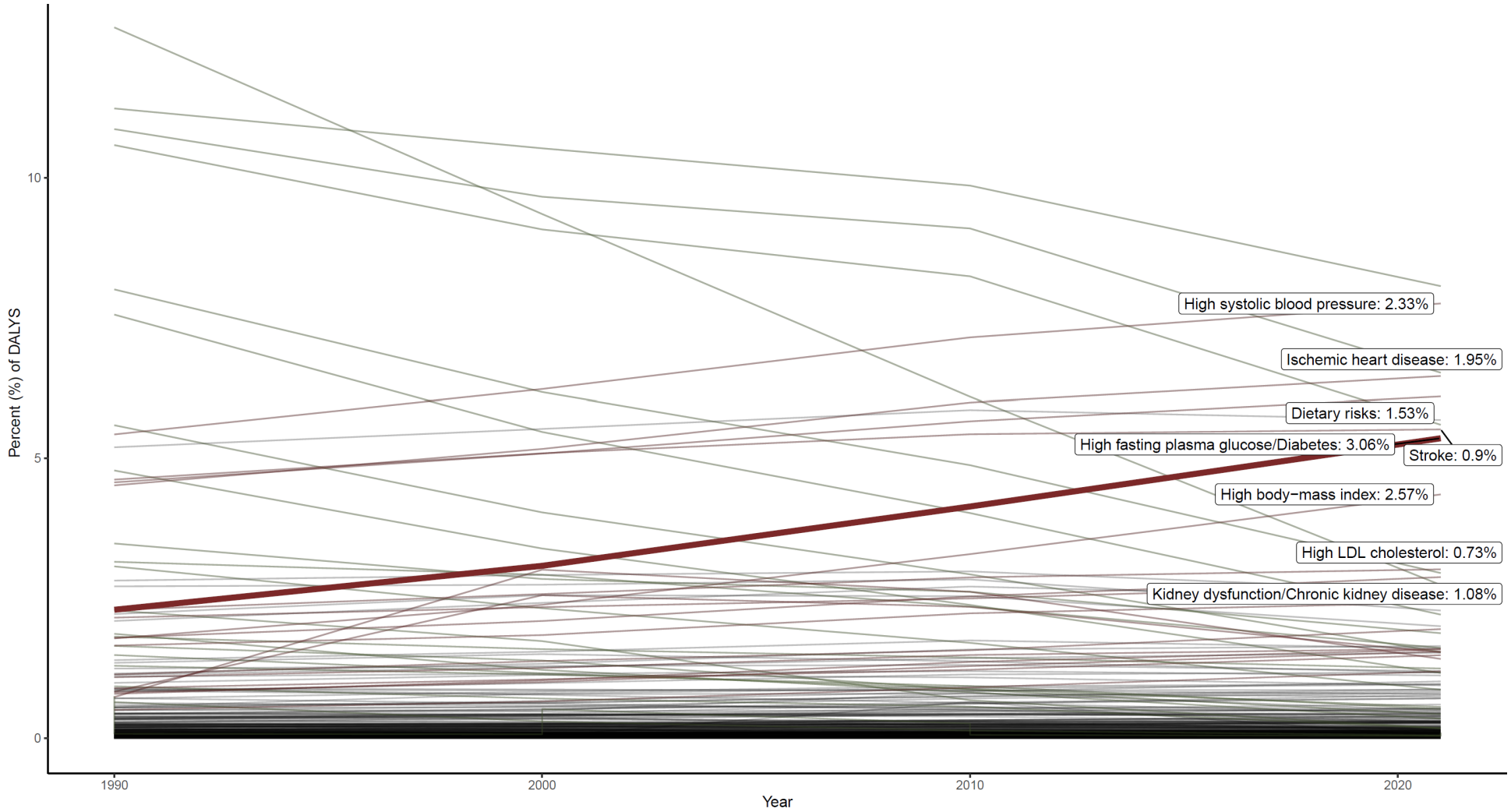


One of the saddest graphs of all time



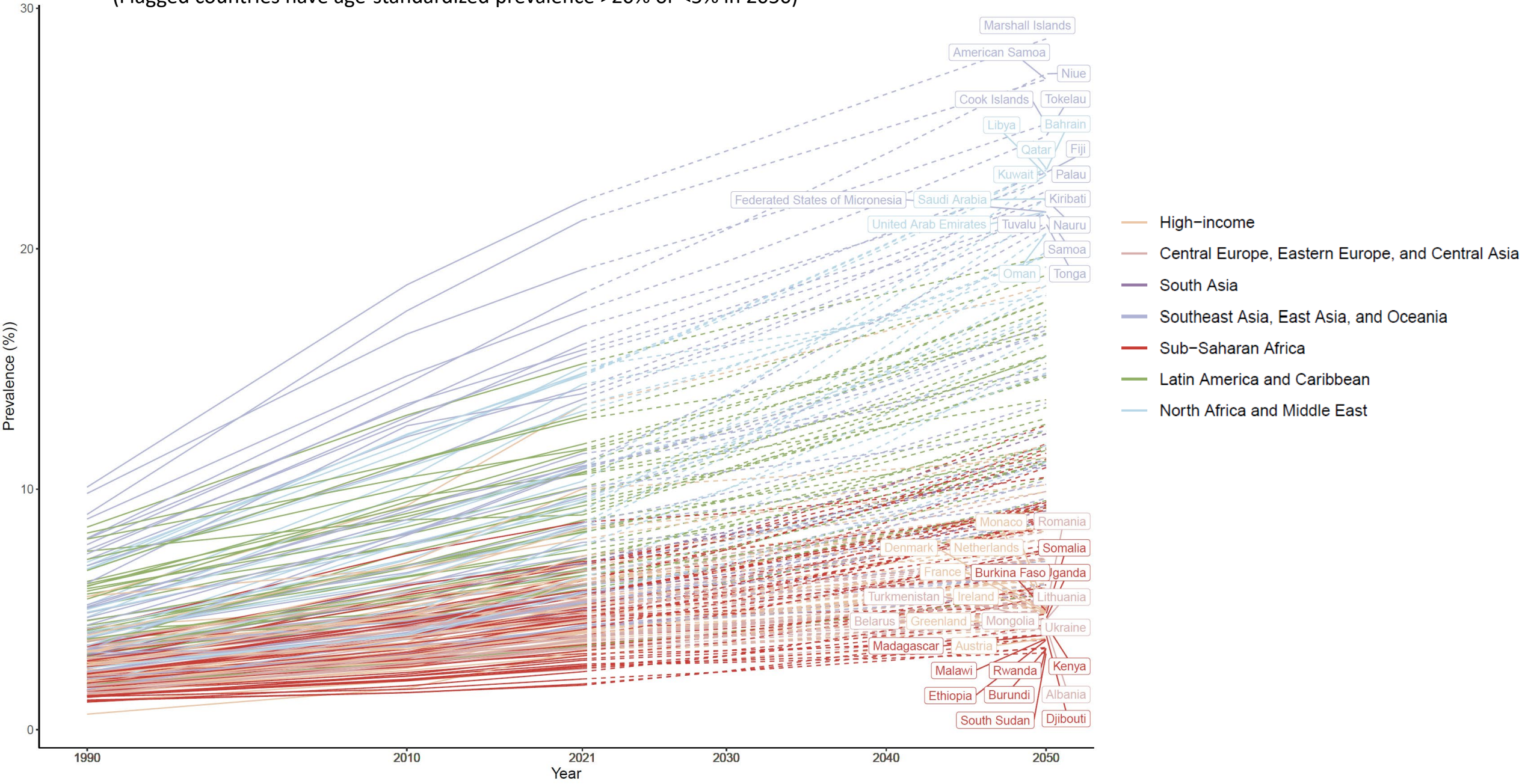
FPG/Diabetes burden from 1990 to 2021 is increasing steadily.

Among all diseases and risks, the fraction of DALYS due to FPG/diabetes has increased the most since 1990



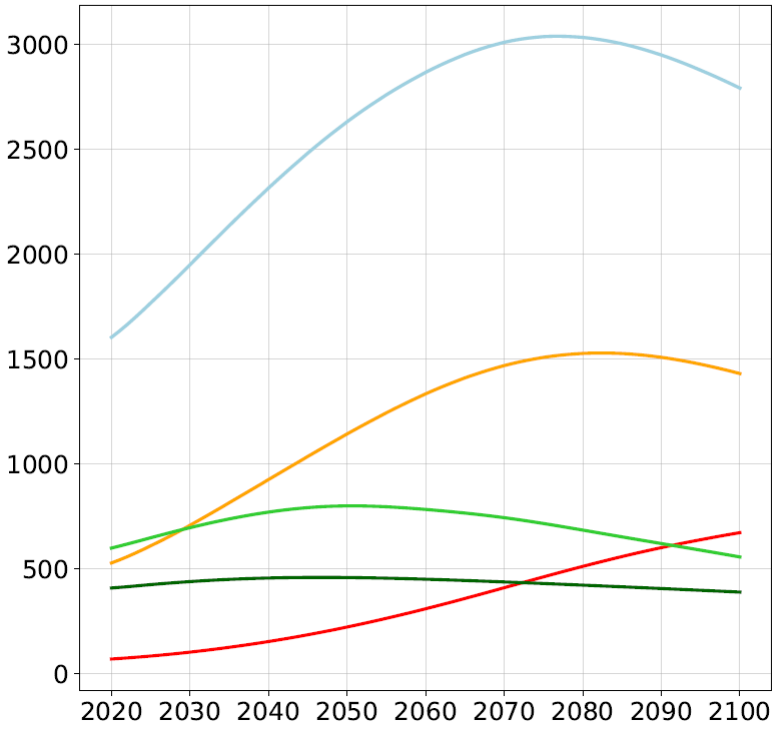
Diabetes: Age-standardized time trend in 204 locations from 1990 to 2050

(Flagged countries have age-standardized prevalence >20% or <5% in 2050)

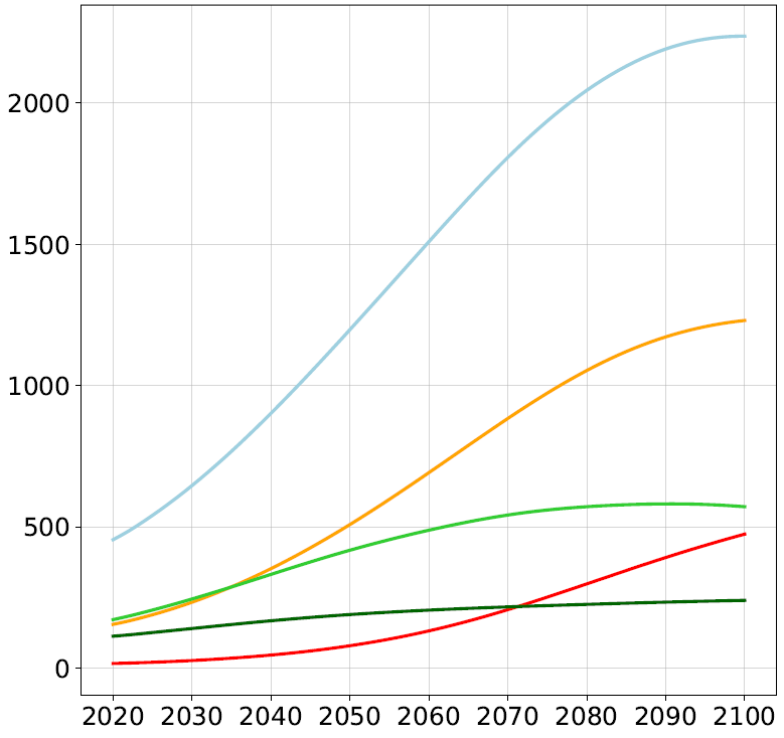


Number of people (millions) living with major diseases

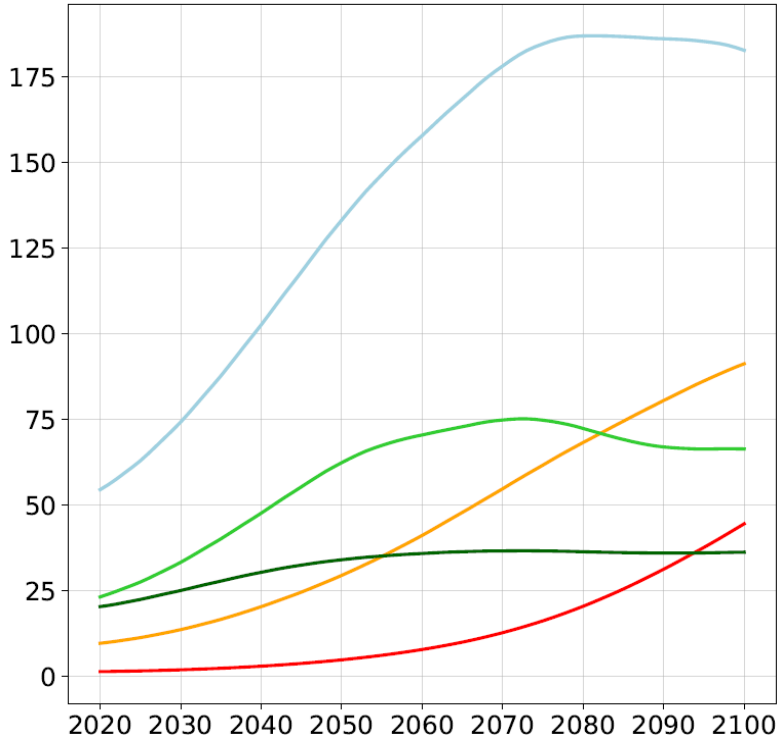
Musculoskeletal Disorders

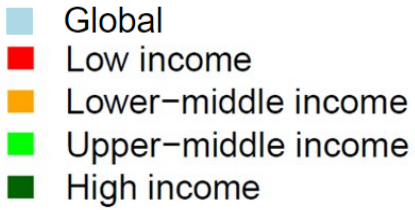


Type 2 Diabetes



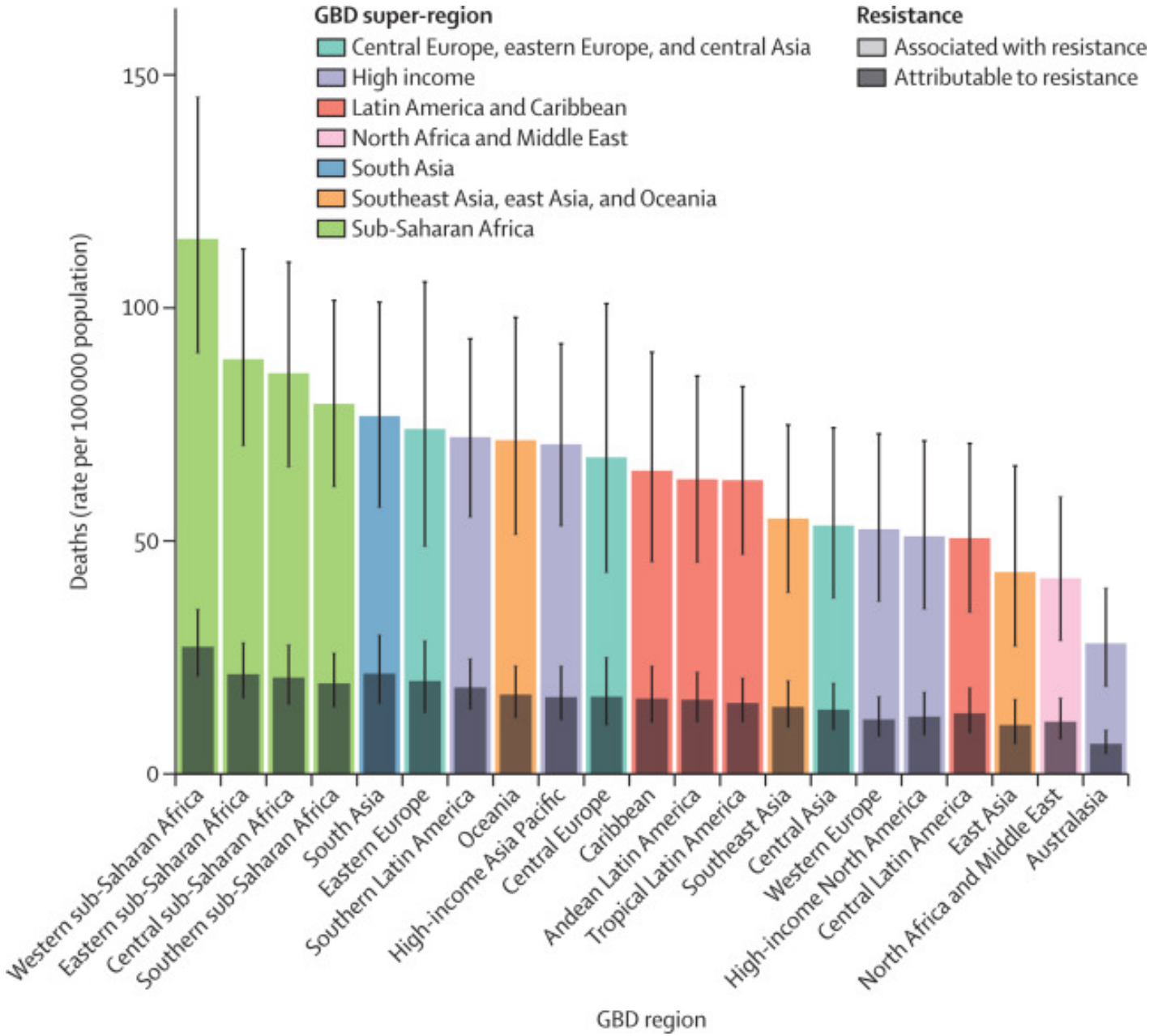
Alzheimer's and other dementias





Key Findings: AMR Deaths by GBD Region

- **4.95** million (3.63-6.57) deaths **associated with** bacterial AMR
  - Making bacterial AMR the 3rd-leading underlying cause of death among GBD Level 3 causes, behind only ischaemic heart disease and stroke
- **1.27** million (95% UI 0.911-1.71) deaths **attributable to** bacterial AMR
  - Making bacterial AMR the 12th-leading underlying cause of death among GBD Level 3 causes, ahead of HIV, tuberculosis, and malaria



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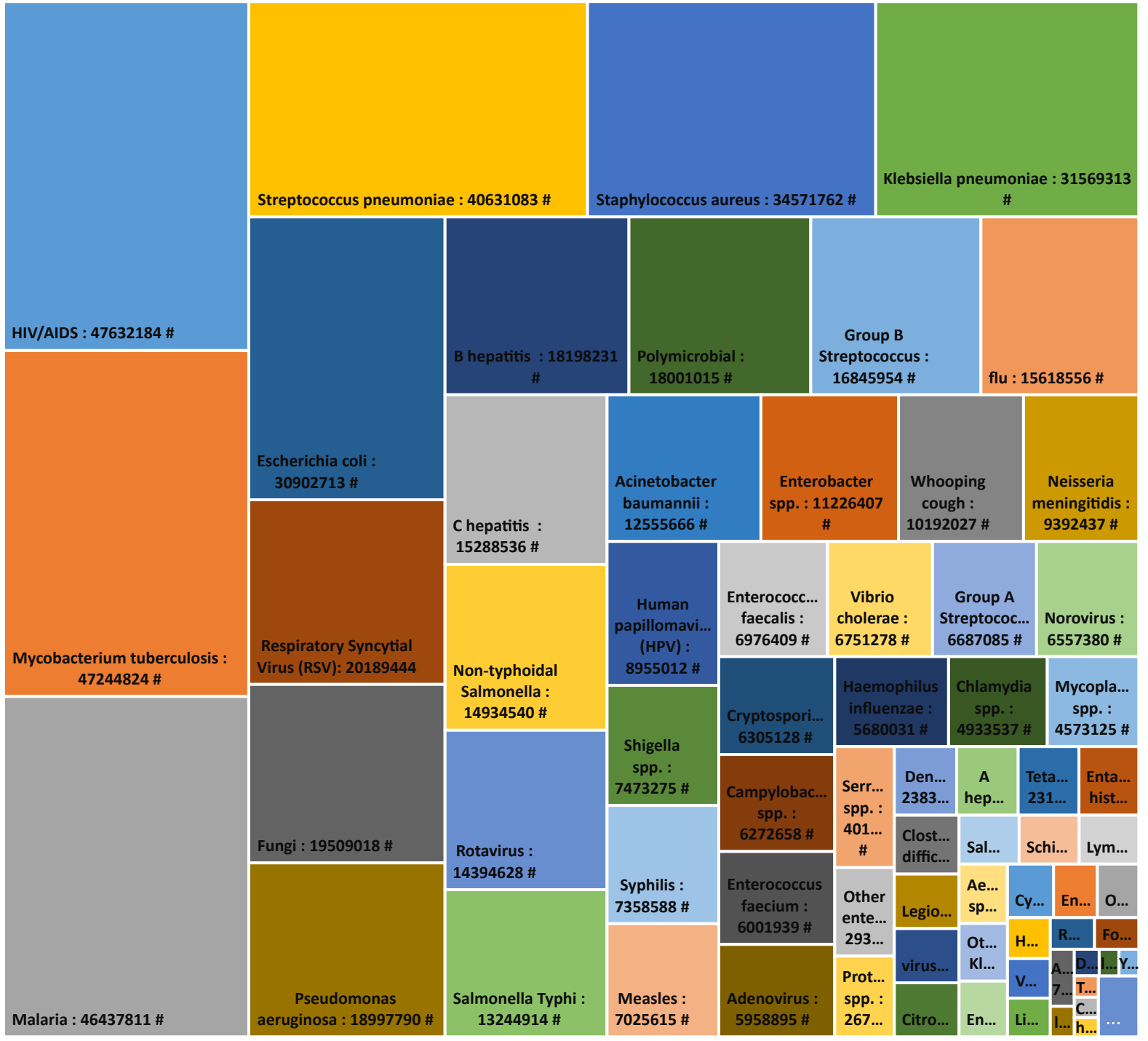
26% of DALYs a pathogen is on the pathway to death

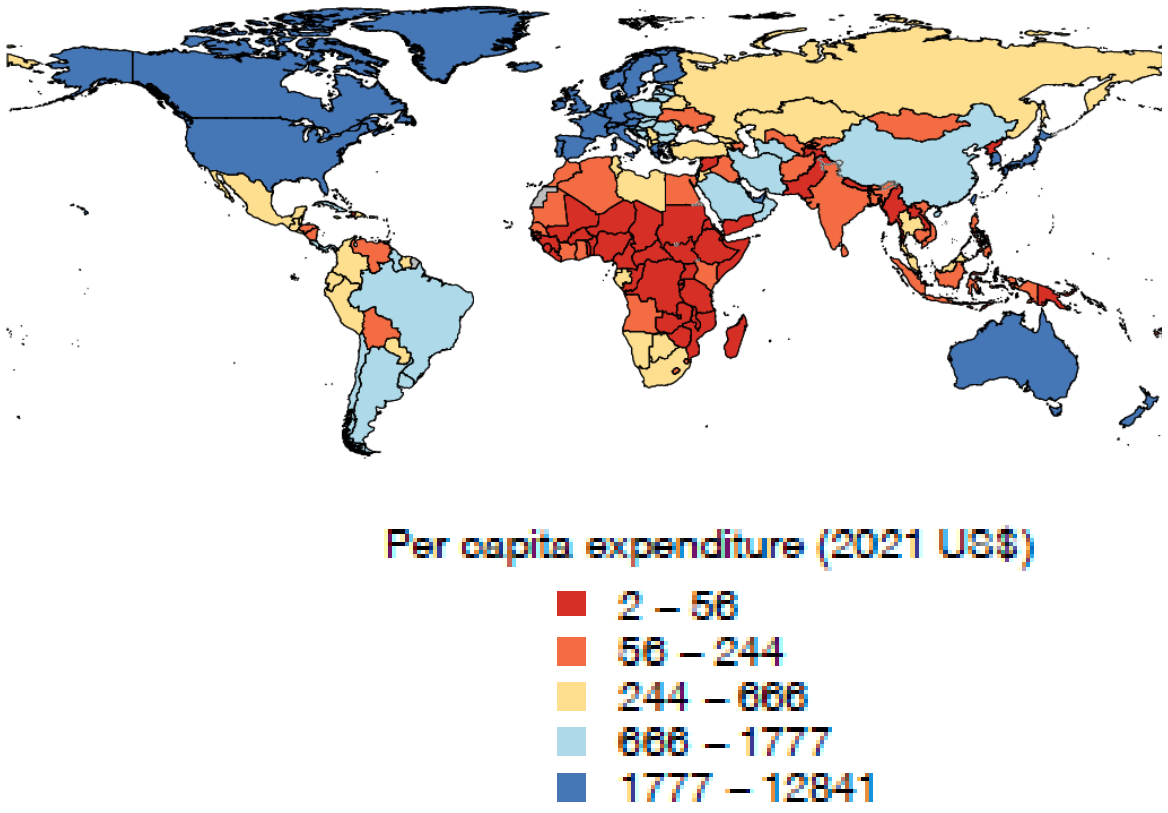
Treemap shows share of this pathogen burden for 82 specific pathogens.

7 pathogens cause more than 30 million DALYs each: HIV, TB, Malaria, Strep pneumo, S. aureus, Klebsiella and E.coli.

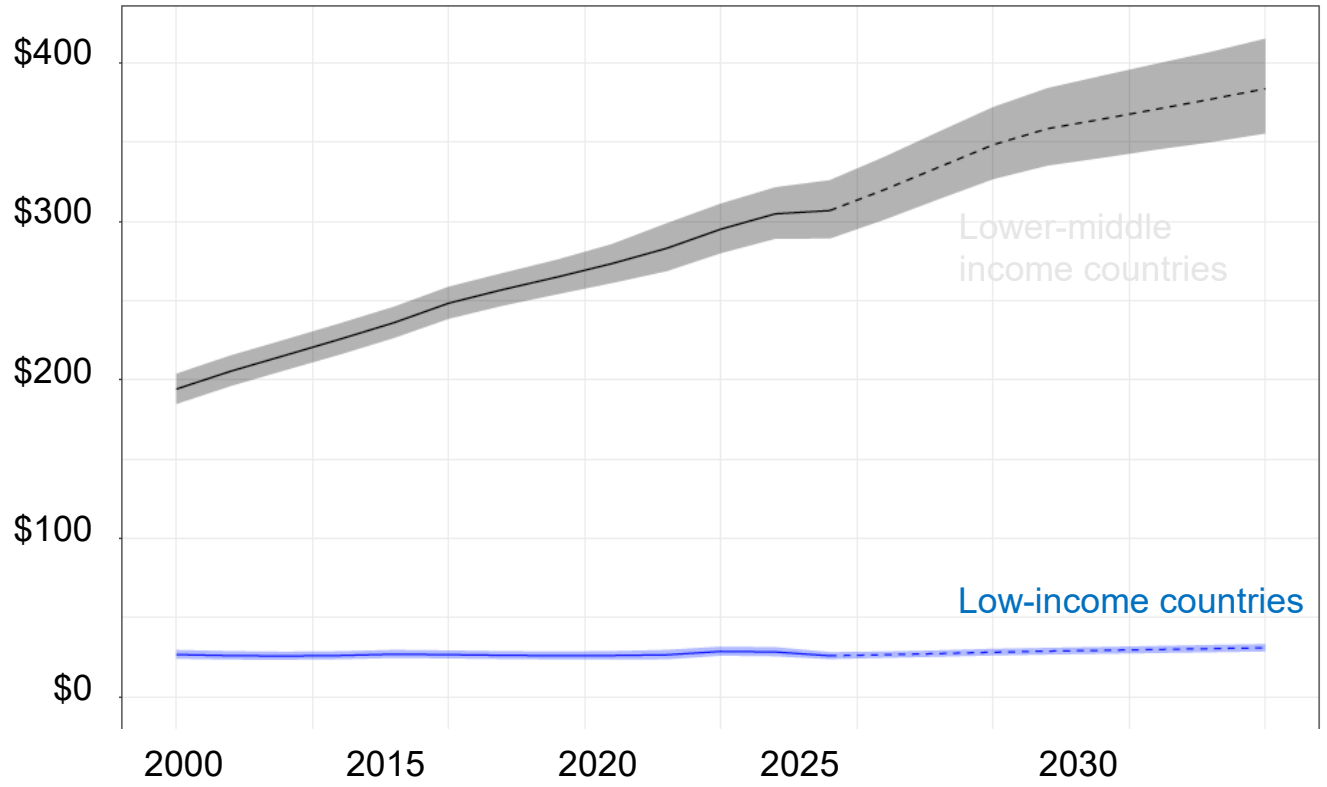


IHME forecasts of health spending per capita are at best flatline for low-income countries and could decline

Domestic health spending per capita, 2023

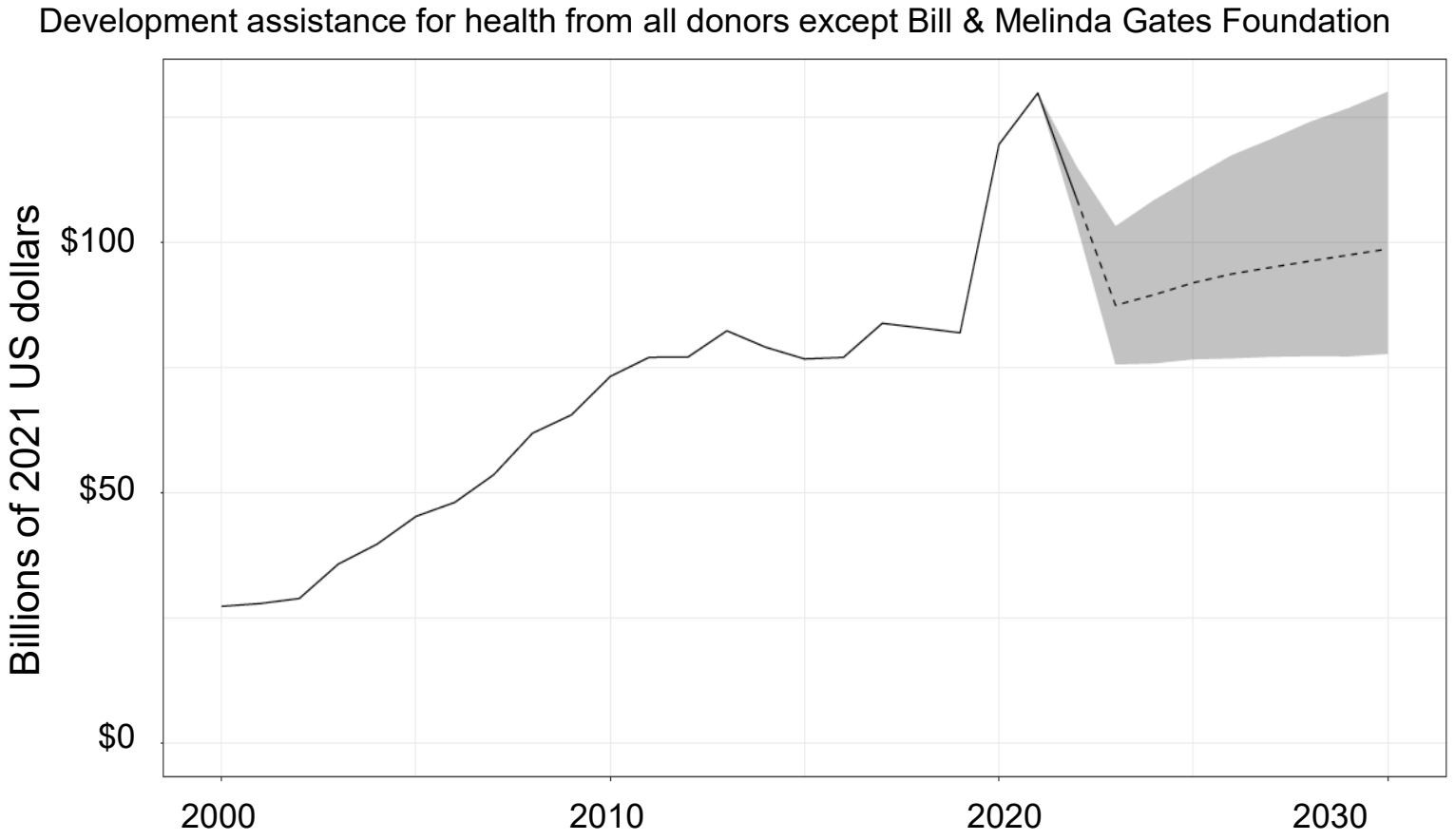


Domestic health spending per capita (2021 USD)



These forecasts do not take into account debt related to COVID and rise in debt service payments

DAH reference forecasts are likely optimistic

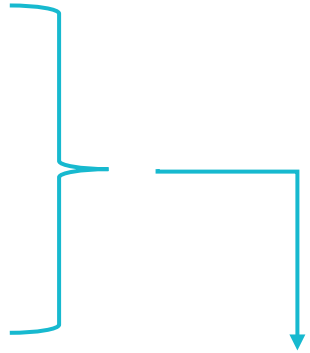


Large uncertainty in DAH growth:

- Competing demands (climate)
- GFATM and PEPFAR US support could diminish
- Long-term impact of COVID on financing e.g. debt ceilings
- Donor legislatures calls for domestic co-finance

Potential for the resource gaps in low-income and lower-middle income countries grow

- Flatline domestic spending combined
  Potentially flat or declining DAH
  The prospect of major new tools emerging for select diseases
  Increased demand for health and non-health priorities

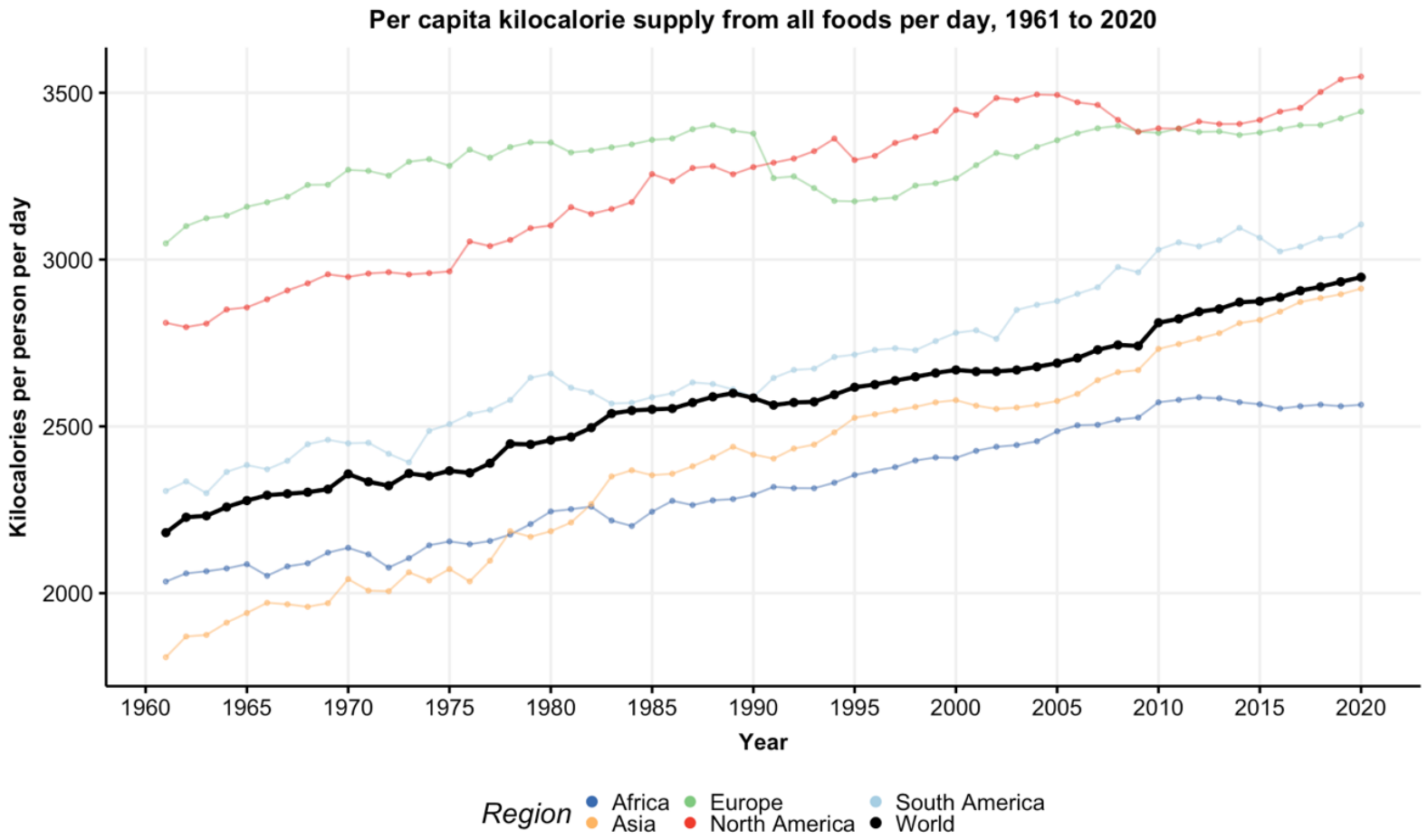


May contribute to a larger financing gap

- WB, GAVI, WHO, GFATM, GFF etc call for domestic resource mobilization as a part of the financing solution.

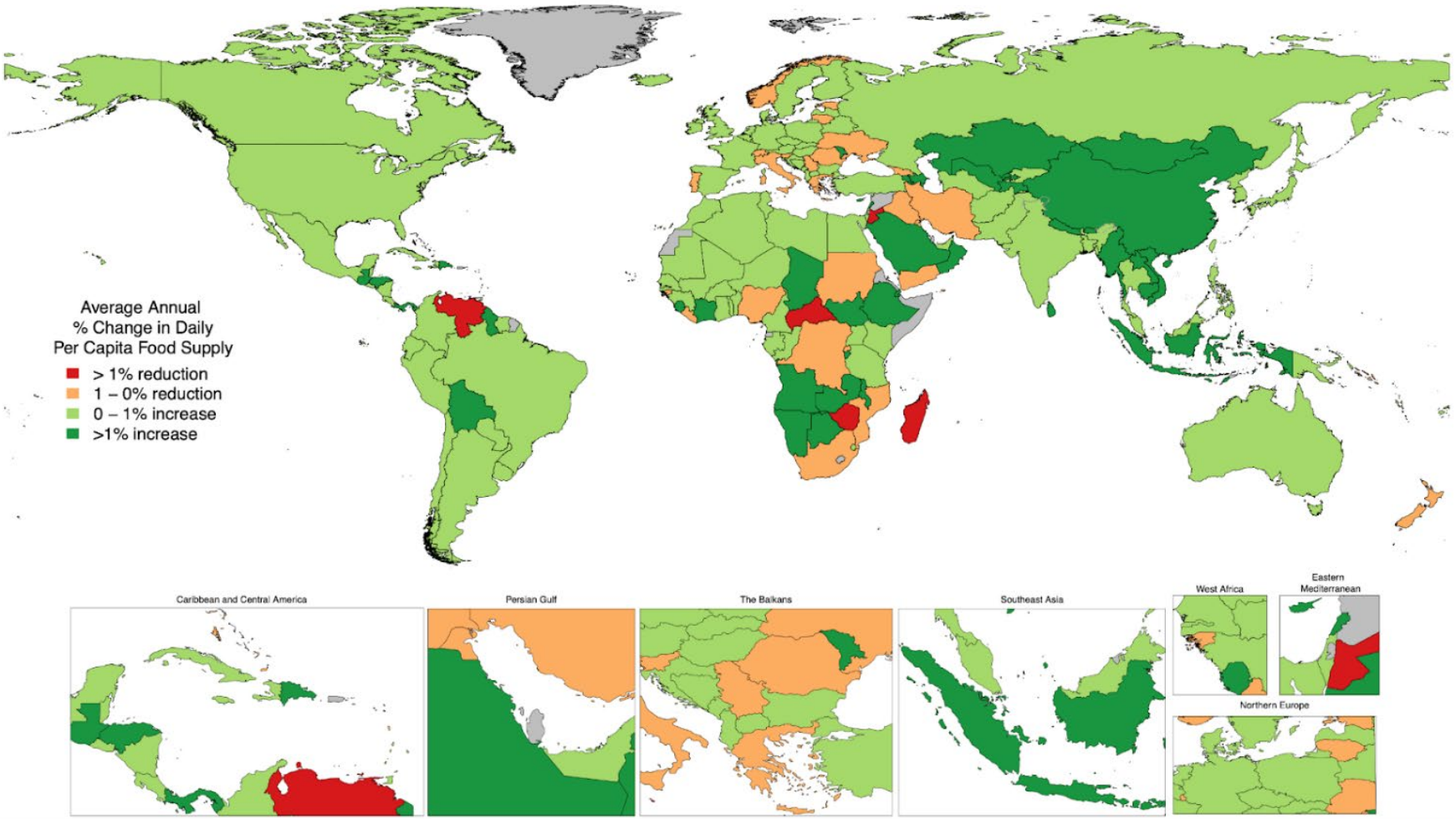
- Tracking overtime using standardized methods is critical

Food Insecurity: global Per Capita Kilocalorie Supply from all Foods Per Day (1961-2020) have steadily increased

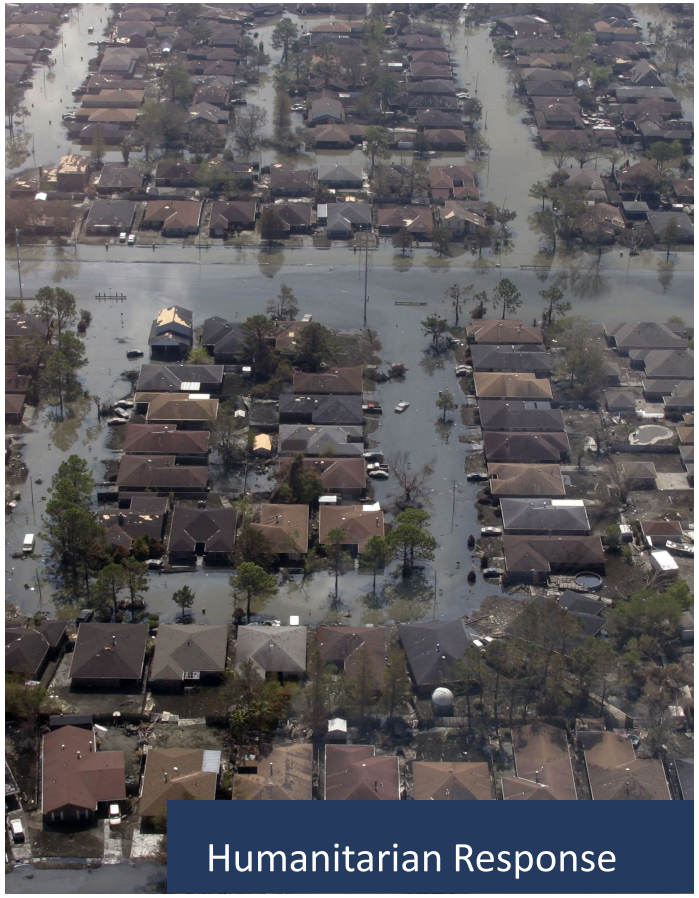


Source: FAO

Food Insecurity: Geographic Distribution of Average Annual Percent Change in Daily Caloric Availability Per Capita Over the Past Decade



Knowing where people live is critical to saving lives



Understanding damage and loss through a people-focused lens: population and demographic changes.

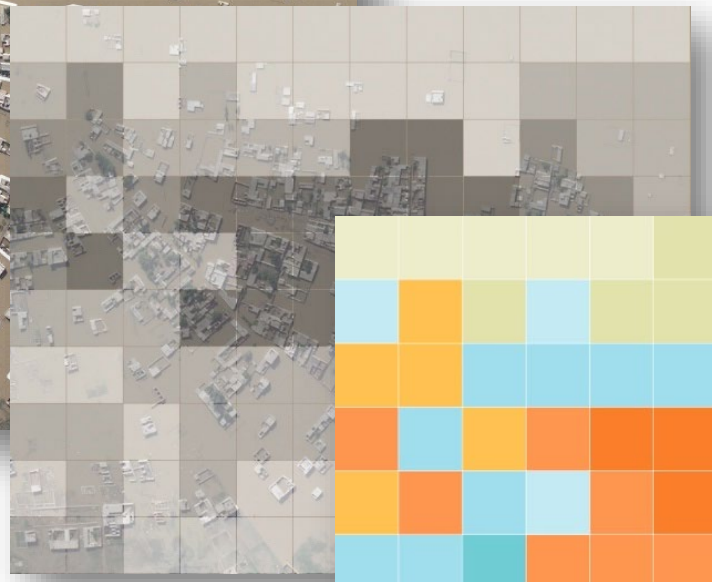
Combining the strengths of Planet, Microsoft, and IHME, new levels of detail and insight can be unlocked for population mapping.

The work will help identify the communities that are most at risk for death, illness, and mass migration.

Sample satellite image showing flooded Kabul river, Pakistan 2022 (courtesy of Planet)

1. Planet delivers frequently-updated, high-res satellite images

2. Microsoft image-processing AI identifies buildings



3. Gridded building density maps are passed to IHME

4. IHME creates gridded population maps and is able to track population-level movements in real-time

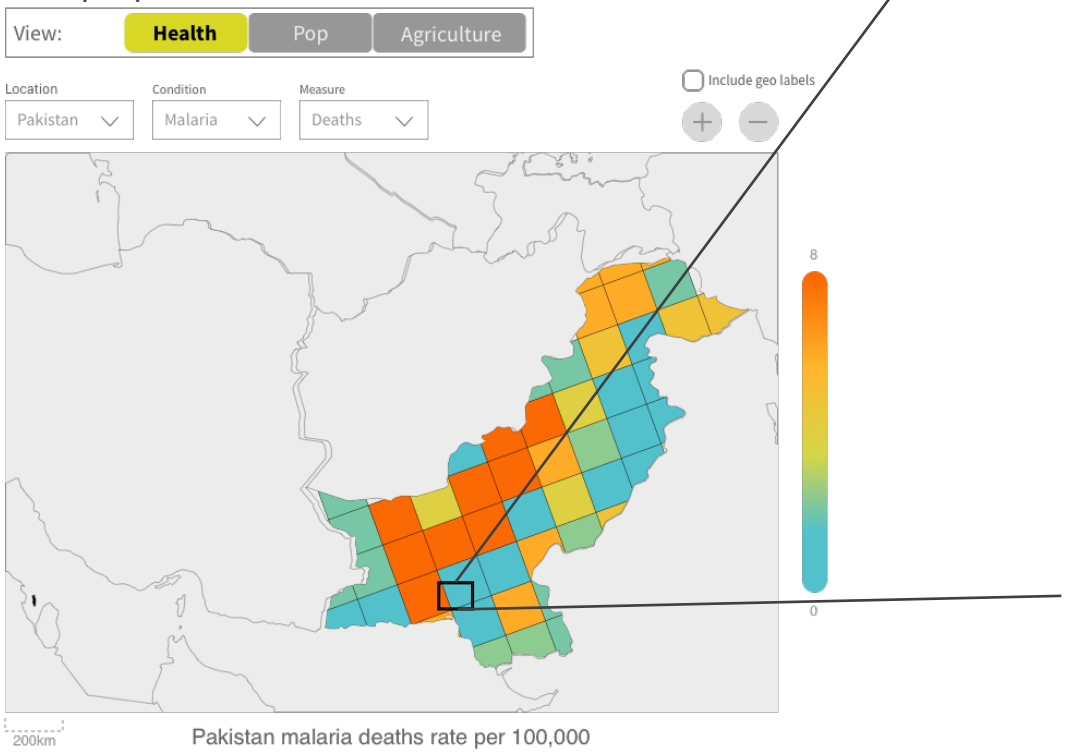
IHME's scientists are leveraging

- building density counts;
- gold standard country and regional population estimates;
- cutting-edge small area estimation techniques to create **consistent** and **rigorous** population estimates at the 40m^2

Understanding damage and loss through a people-focused lens: population and demographic changes.

Drawing on multiple layers of data, IHME's research would provide novel access to:

- Distribution of health burden
- Population movement over time
- Vulnerable populations



Mock-ups showing hypothetical data, for display purposes only.

Using detailed population maps to better estimate the human niche and forecast migration

- Better estimates of where people live, will allow estimating models of the current human niche.
- More refined models would take into account that humans can thrive above 30 degrees C day/nigh annual mean temperature if they are high income.
- Our preliminary estimates taking in account where population is growing the fastest suggest than 800 million or more are likely to migrate over the century in RCP4.5 scenario.

Short-list of threats to health

- Artificial intelligence/malicious AI
- Antimicrobial resistance
- Pandemics
- Threat to reproductive rights and justice from low fertility
- Lack of policy response to aging
- Mental health
- Climate (including climate migration and food insecurity)
- Diabetes and obesity
- New pollutants
- Conflict

Cross-cutting or underlying themes that need to be addressed

- Global governance
- Trust
- Commercial interests (political economy and private sector)
- Food systems
- Access to technologies/supply chains
- Poverty and inequity
- Gender inequality
- One health
- Health workforce
- Data intelligence systems
- Intersection of systems and human behavior
- Structural discrimination
- Culture

Some cross-cutting solutions worth exploring

1) Accelerated innovation
2) New forms of global and regional cooperation that are not constrained by UN, Bretton Woods rules that create greater transparency, global surveillance, and facilitate response.
3) Resilient health systems – core capacities, effective surveillance, policy triggers for decision-making, evidence rules.
4) Enhancing trust between individuals and between governments and communities.
5) Focus adaptation and manage migration in high risk locations.

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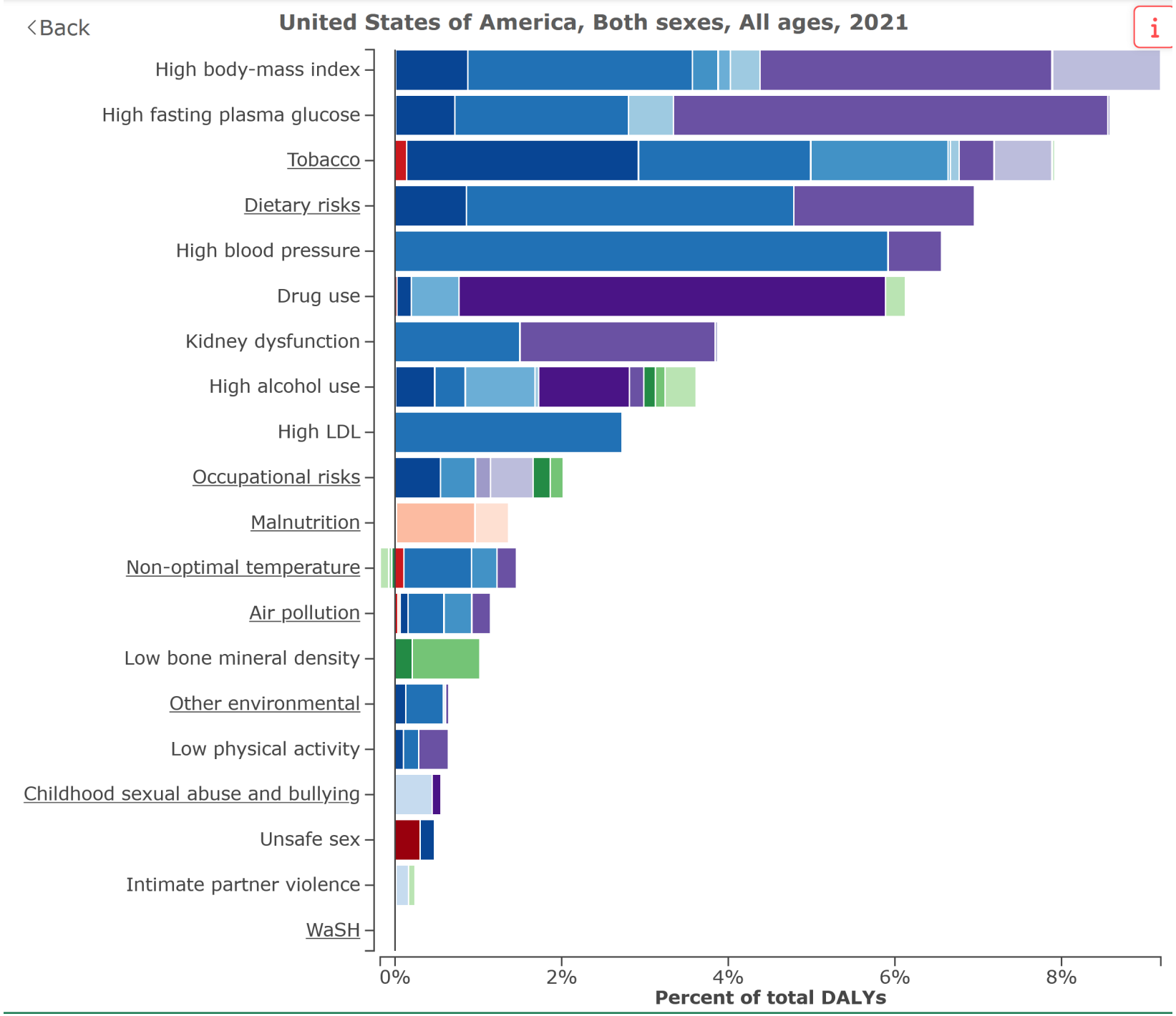
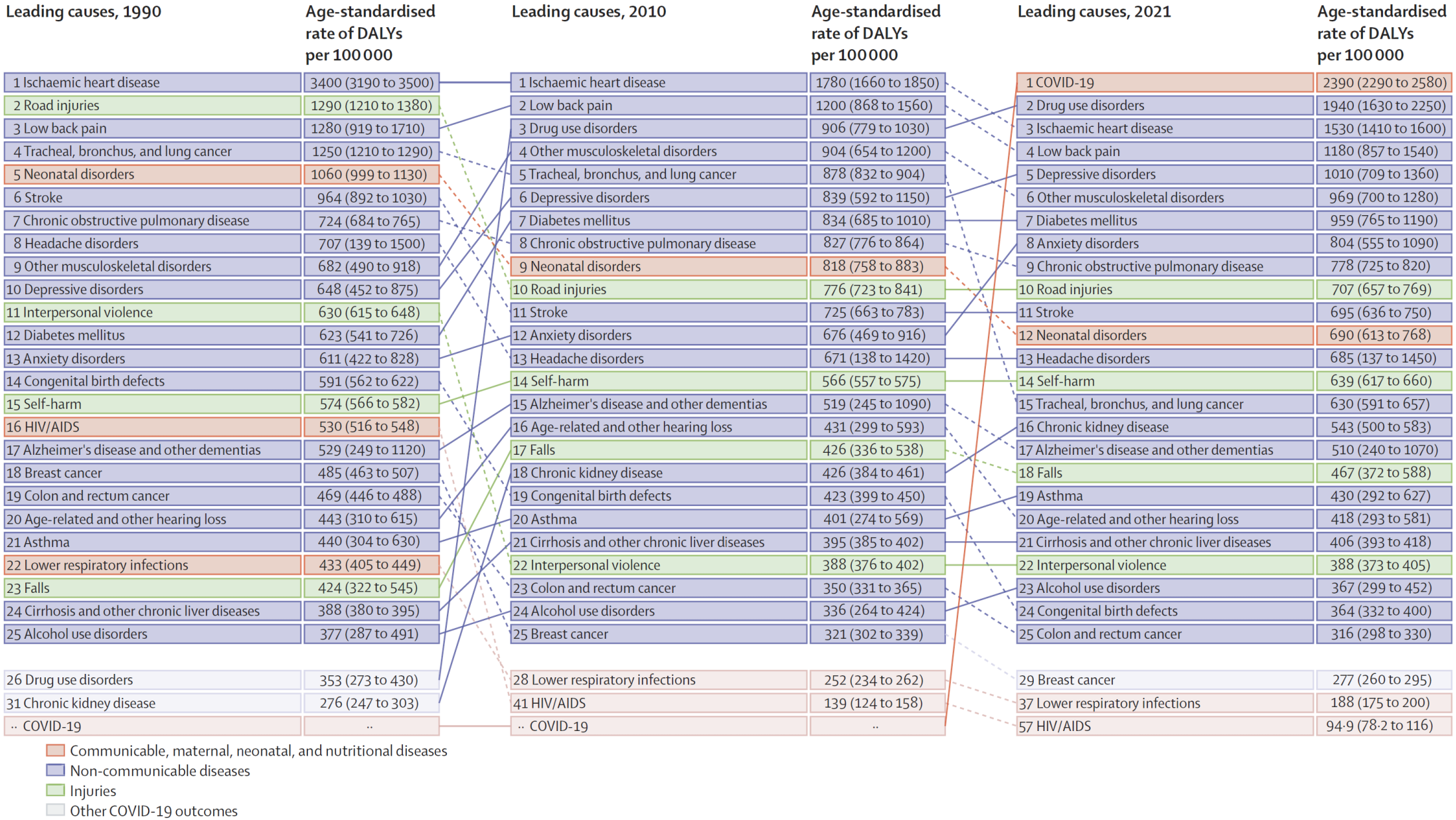
Founded 1823 · Published weekly

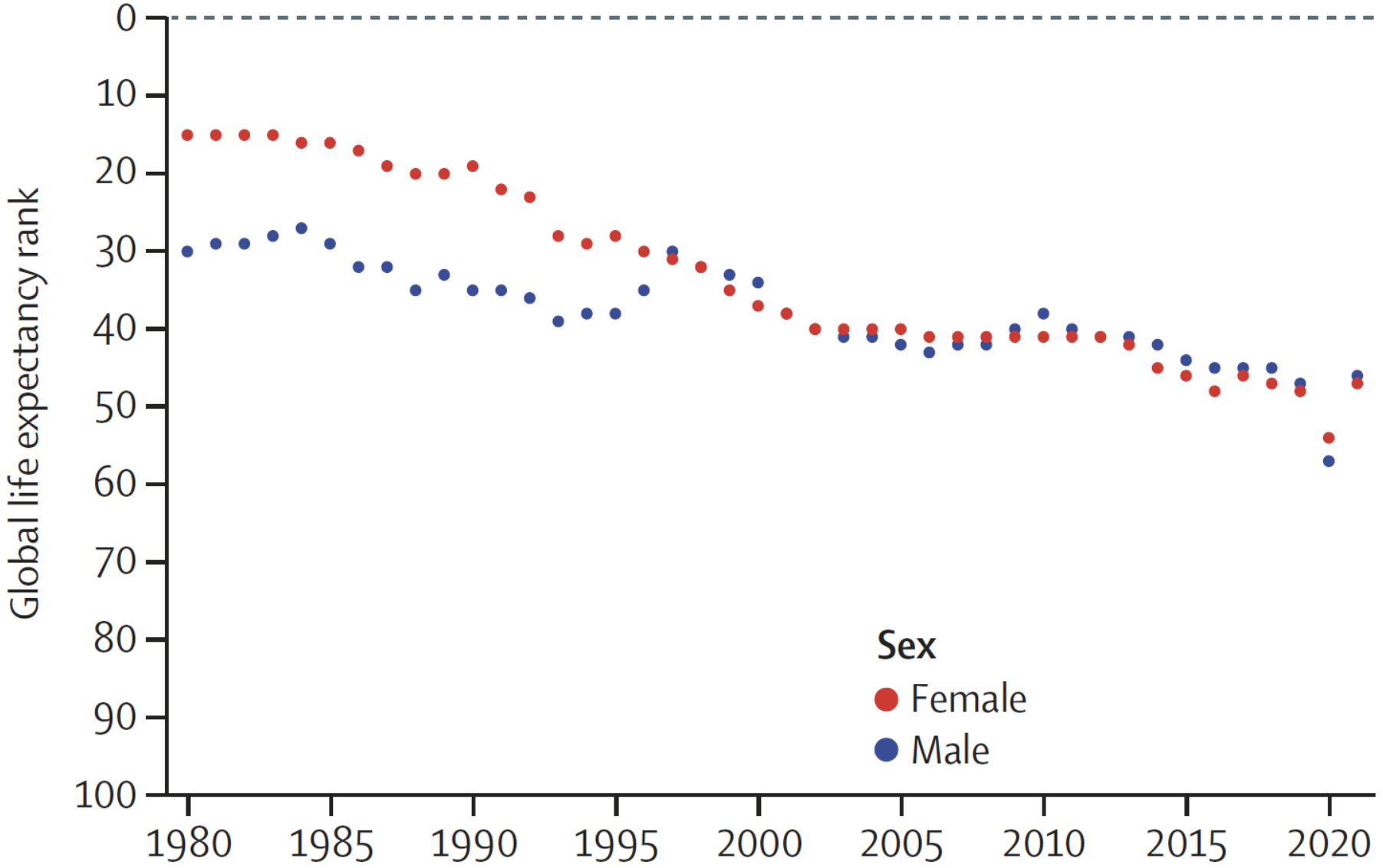
Risk factors contributing to US burden of disease 2021



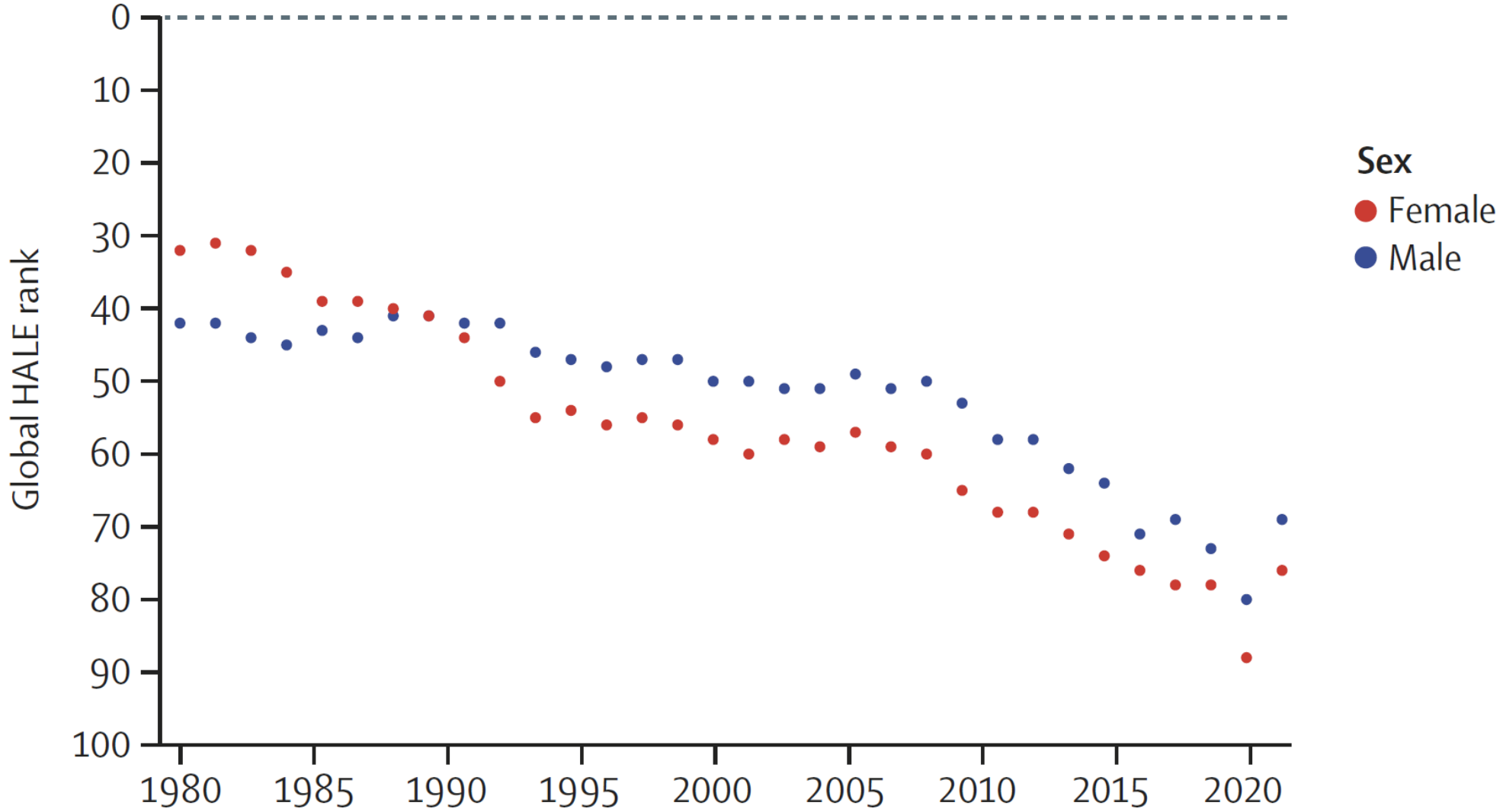
Years of healthy life lost in 1990, 2010, and 2021



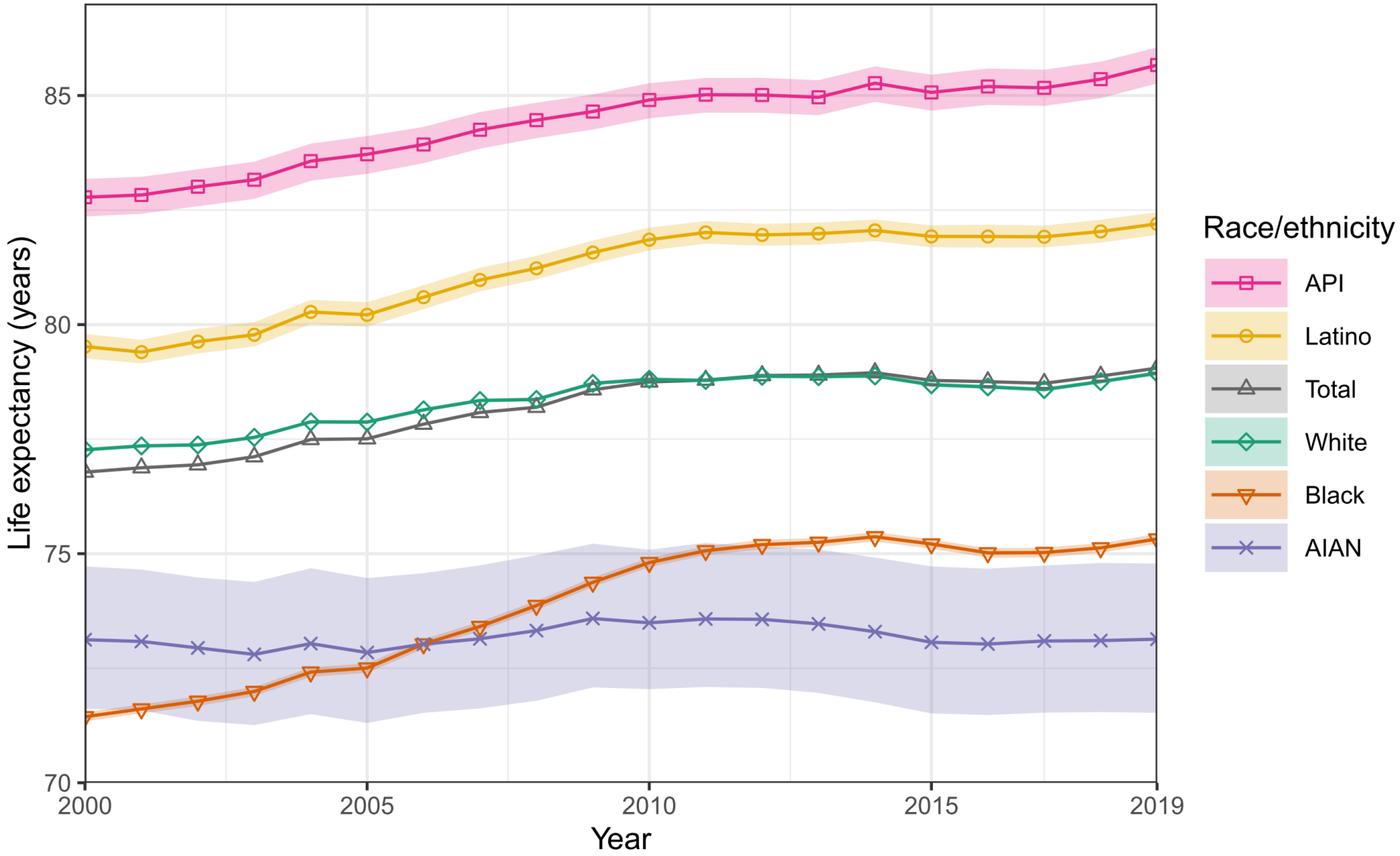
Steady decline over 40+ years: Global life expectancy ranking for the USA, 1980-2021



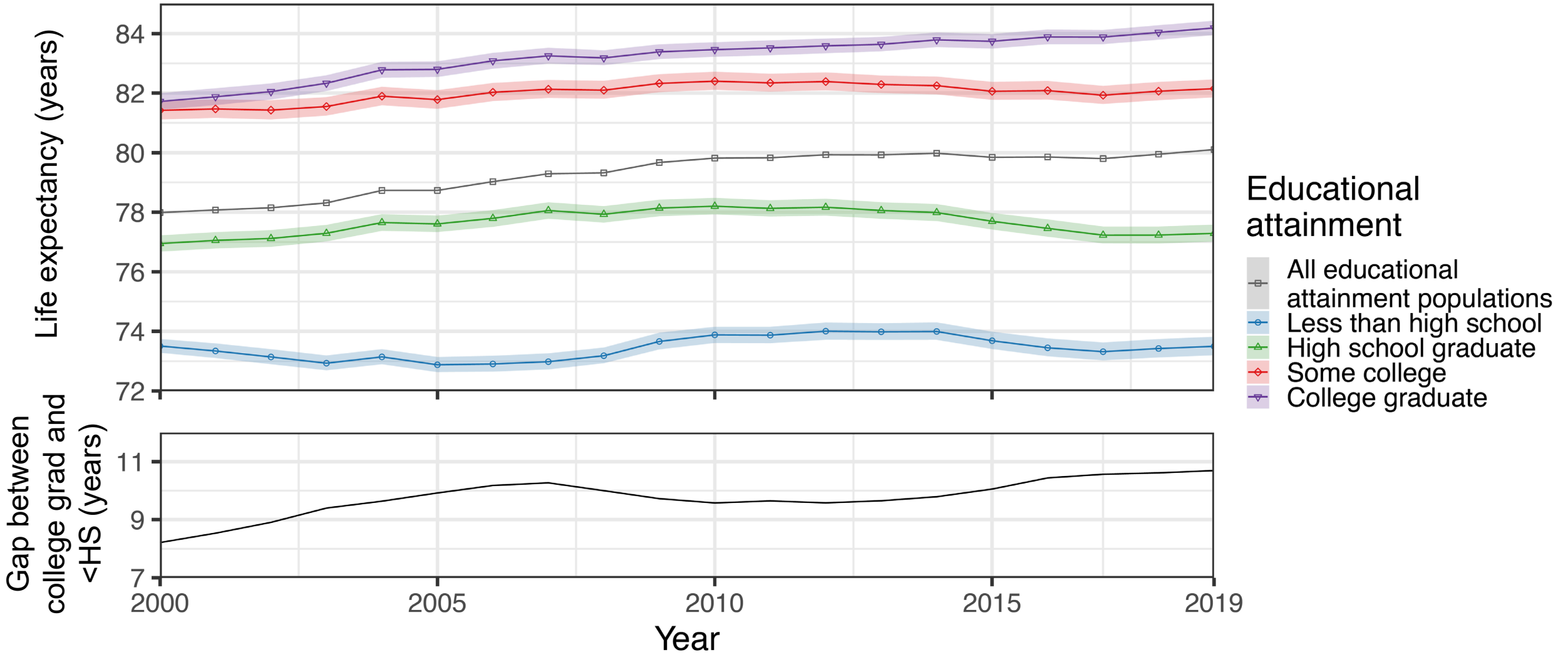
High disease prevalence means Global HALE ranking of the USA are even lower than for life expectancy



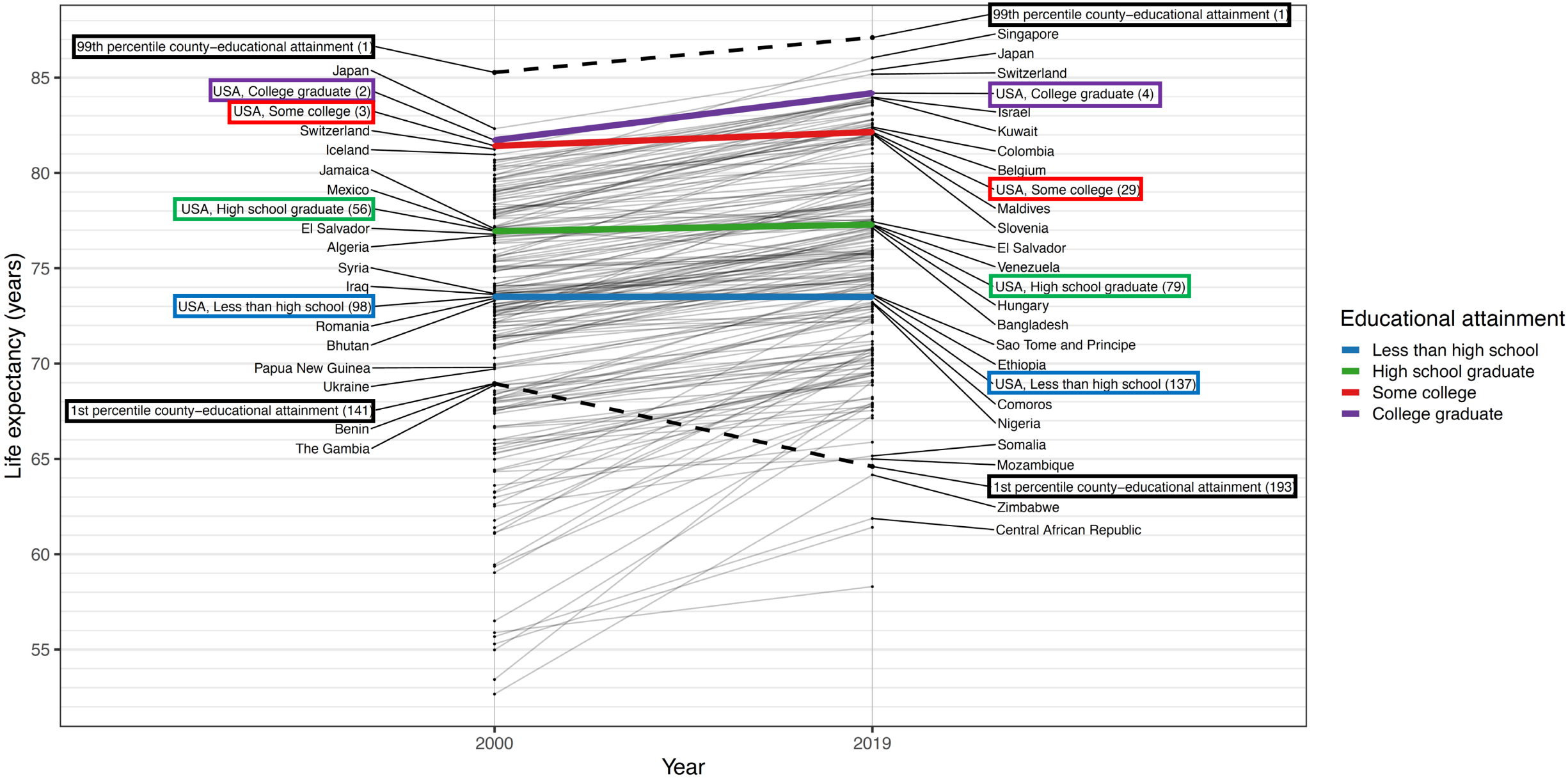
National life expectancy by racial/ethnic group



National Life Expectancy, 2000–19



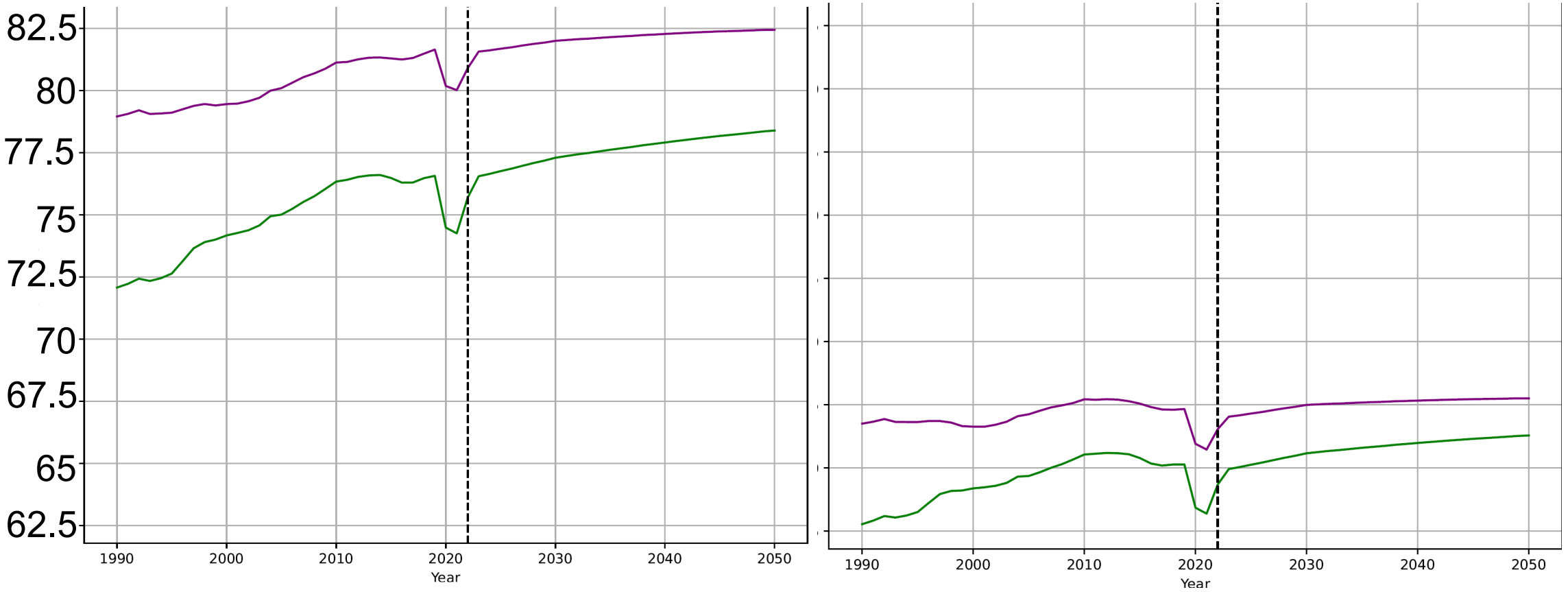
Comparison to Other Countries



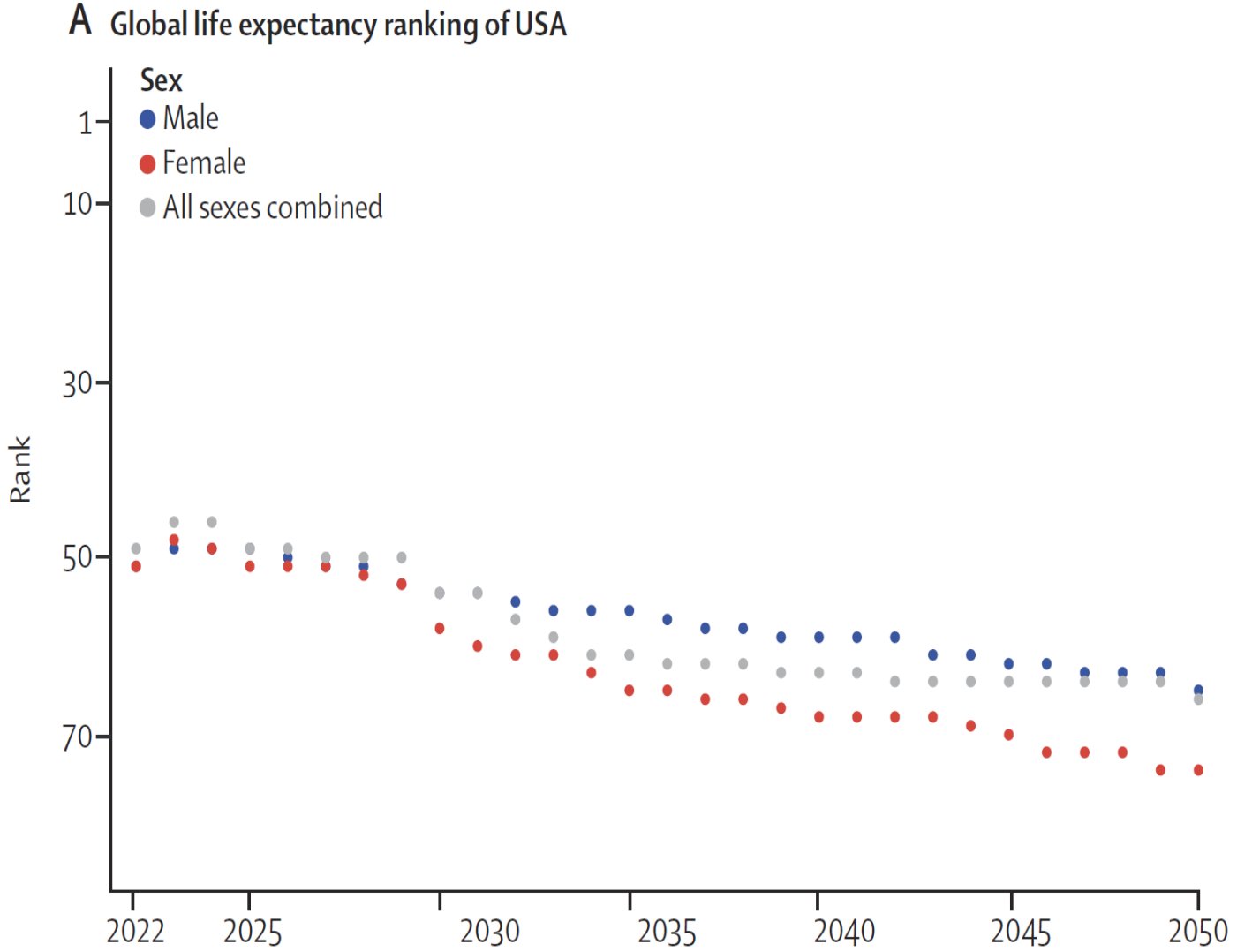
Forecasts: USA slight improvement

Life expectancy

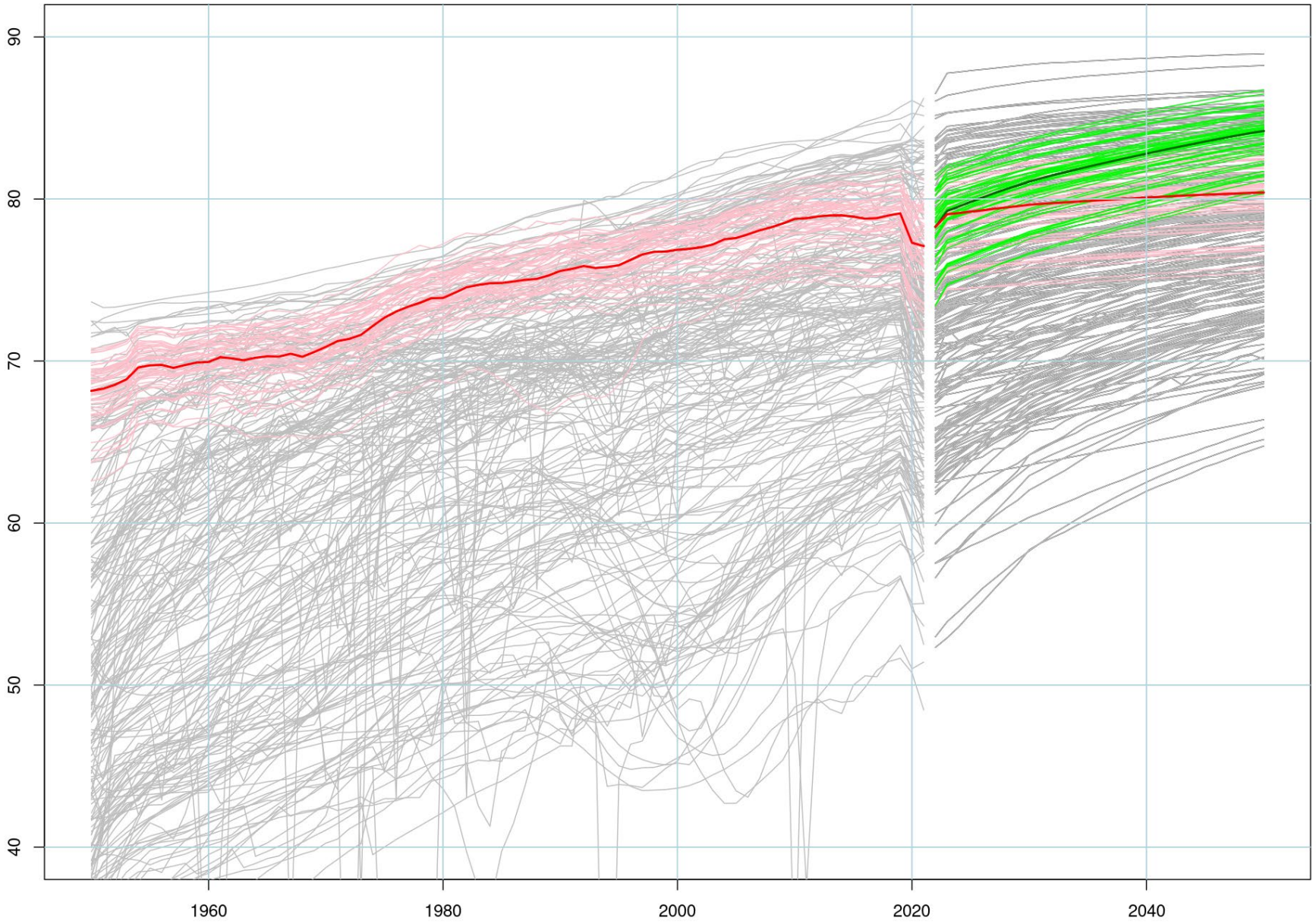
Healthy life expectancy (HALE)



US rank expected to continue declining: Global life expectancy ranking of the USA, 2022-2050, reference scenario



US and US states compared to country forecasts, green is the behavioral risk factor scenario



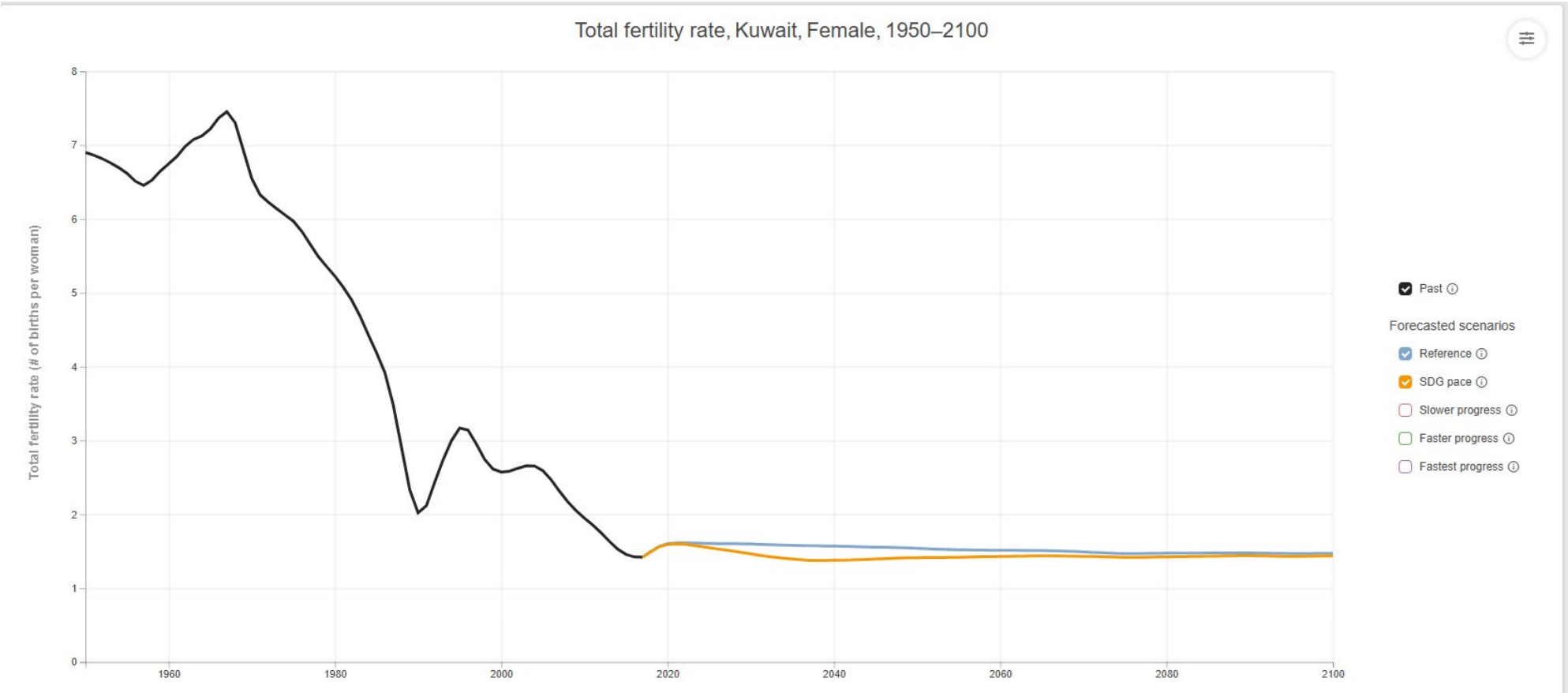
Some strategies to reduce disease burden in the US

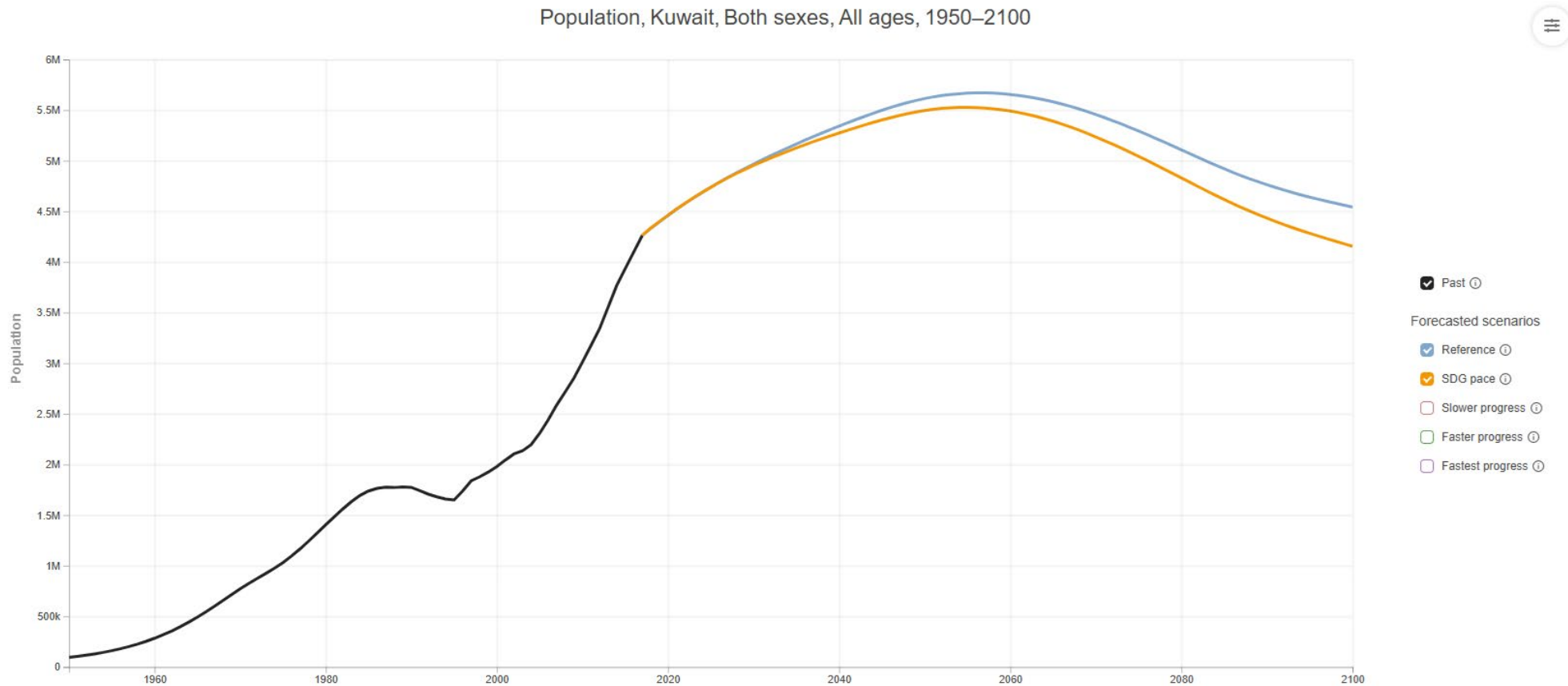
1) Close the education gaps between boys and girls and between poor disadvantaged groups the rest of the US. Early child development programs likely will be a critical part of this solution.

2) Address the nexus of obesity, diet and physical activity. Both through subsidies, taxes, community health worker led programs, and GLP1s.

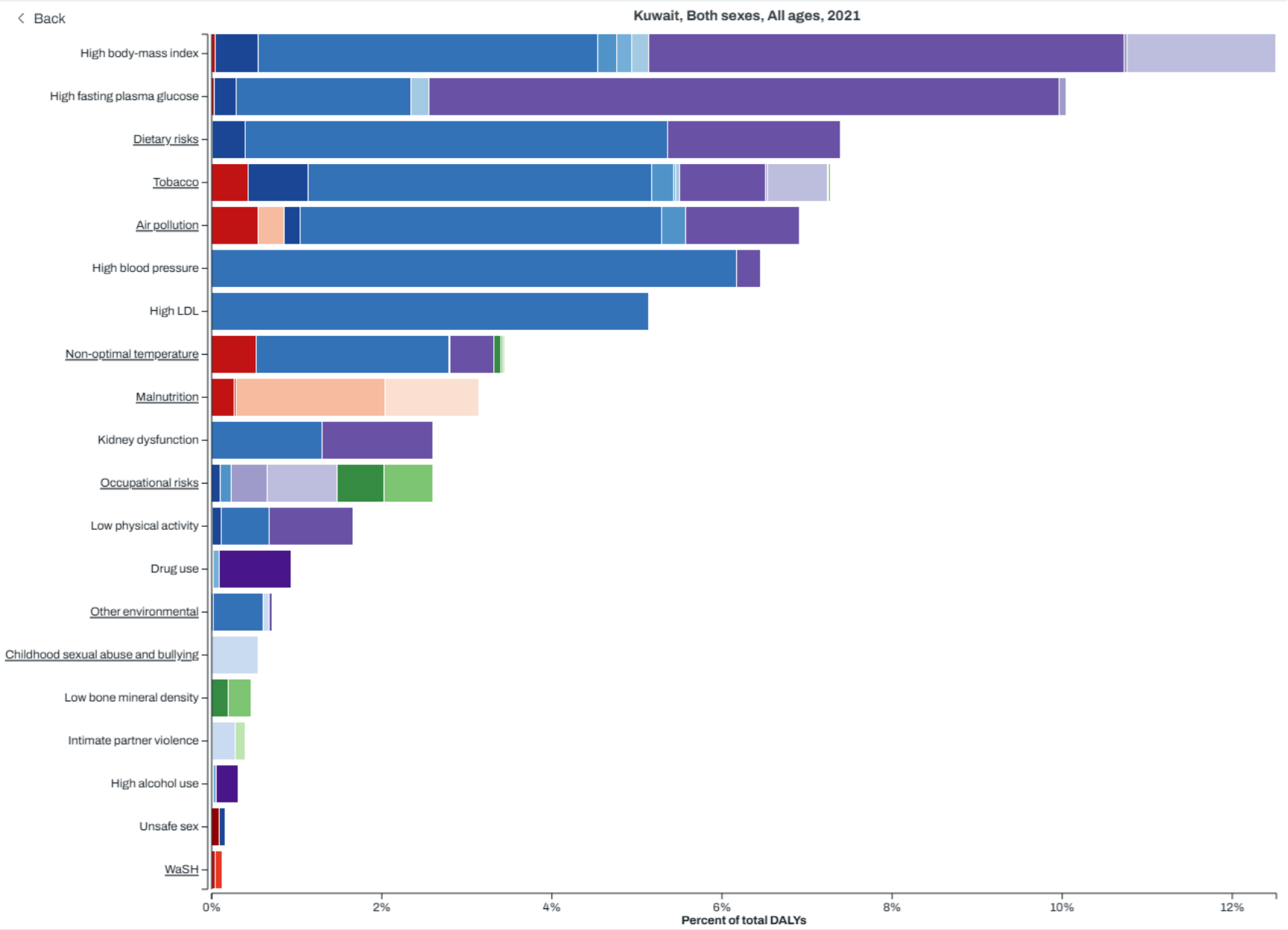
3) Achieve universal health coverage as a way to enhance access to preventive interventions, primary health care and reduce catastrophic spending.

4) Address the other key risk factors especially tobacco and high blood pressure.

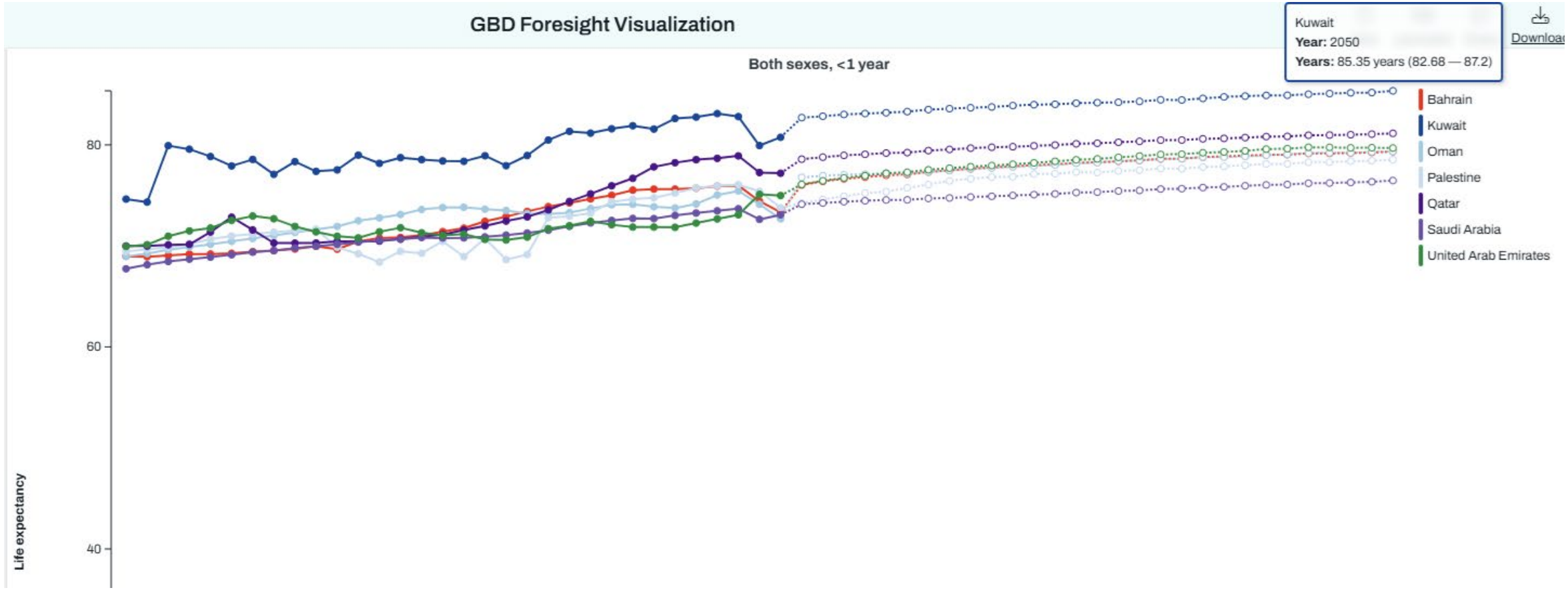

Total fertility rate, Kuwait, Female, 1950–2100
Total fertility rate (# of births per woman)
8
7
6
5
4
3
2
1
0
1960
1980
2000
2020
2040
2060
2080
2100
Past
Forecasted scenarios
Reference
SDG pace
Slower progress
Faster progress
Fastest progress


Population, Kuwait, Both sexes, All ages, 1950–2100
Population
6M
5.5M
5M
4.5M
4M
3.5M
3M
2.5M
2M
1.5M
1M
500k
0
1960
1980
2000
2020
2040
2060
2080
2100
Past
Forecasted scenarios
Reference
SDG pace
Slower progress
Faster progress
Fastest progress

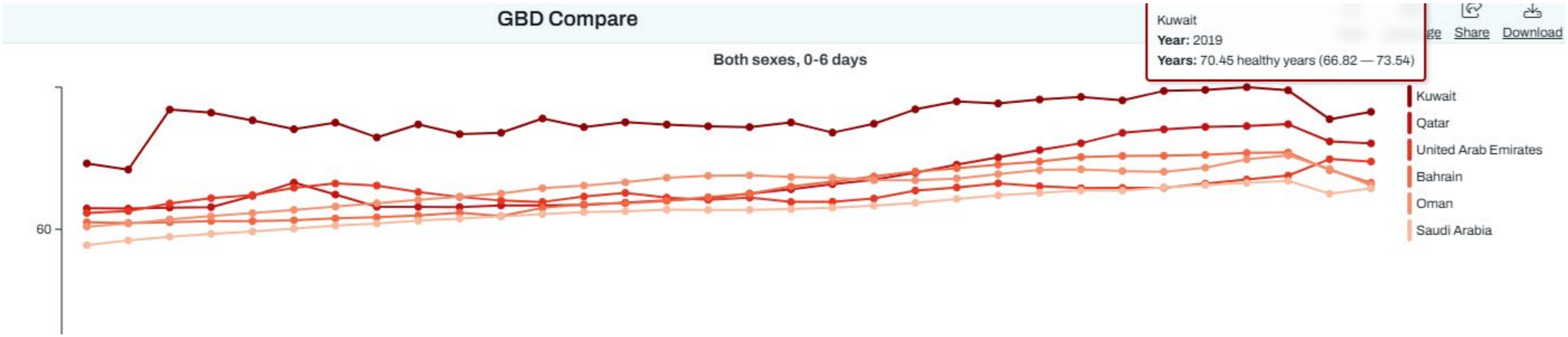
Risk factors contributing to Kuwait burden of disease 202

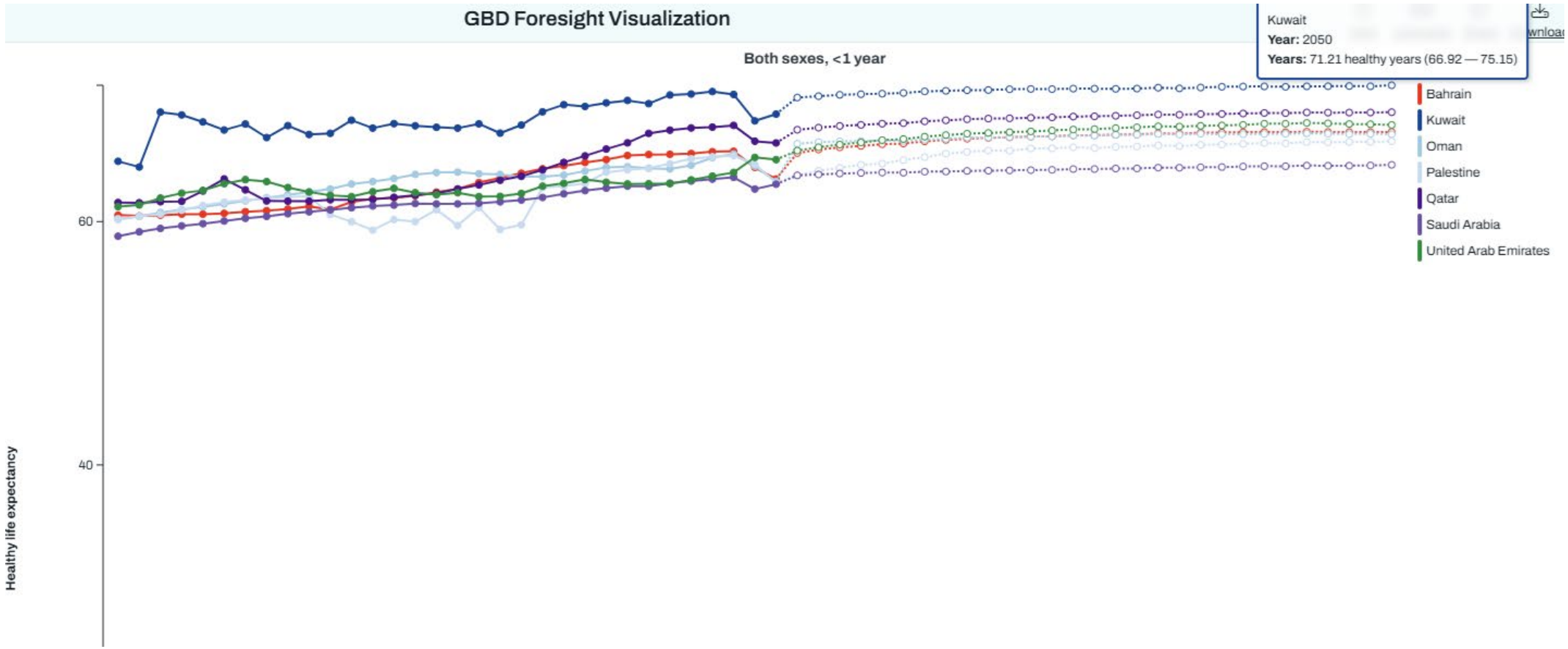


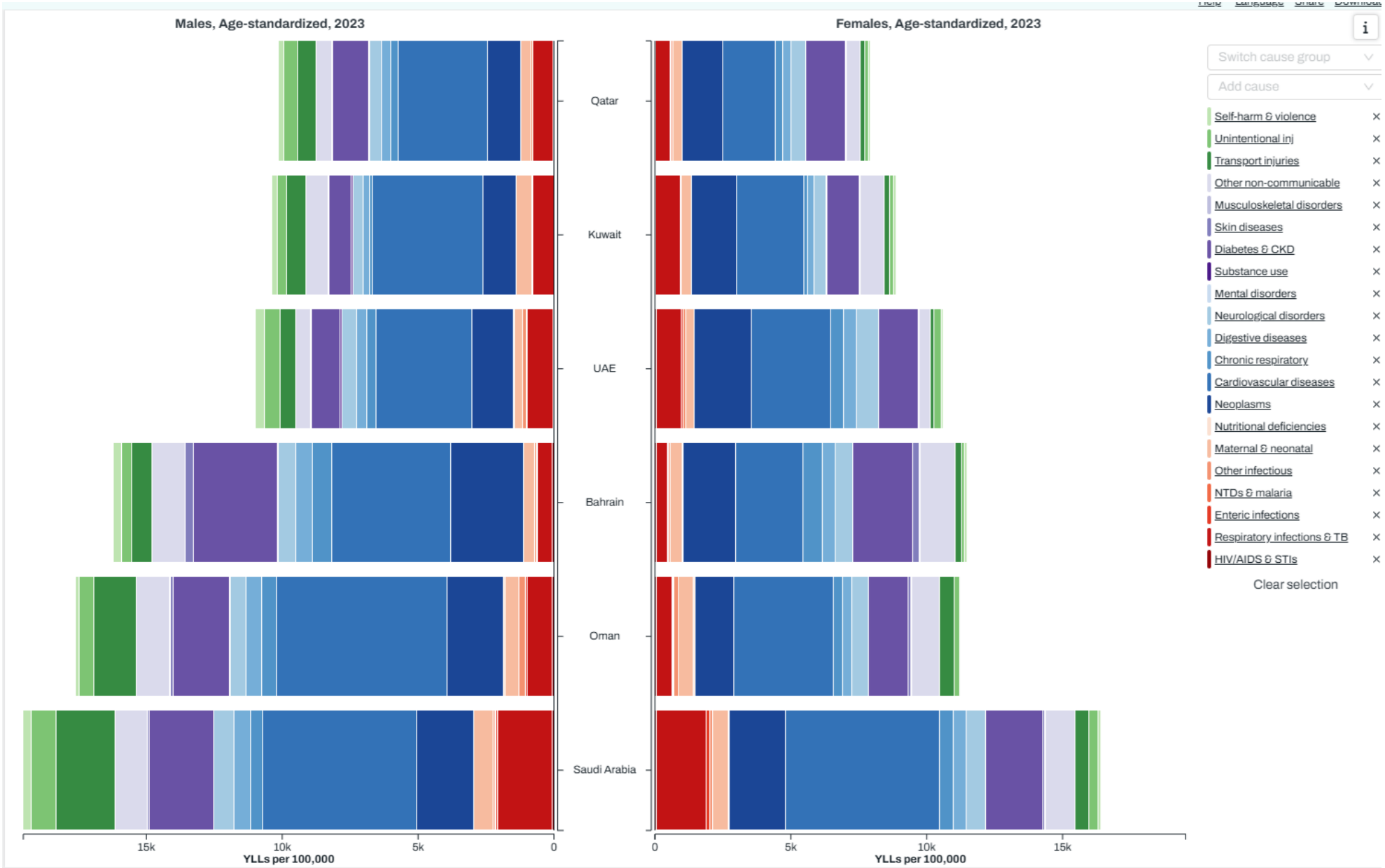
Life expectancy in GCC countries

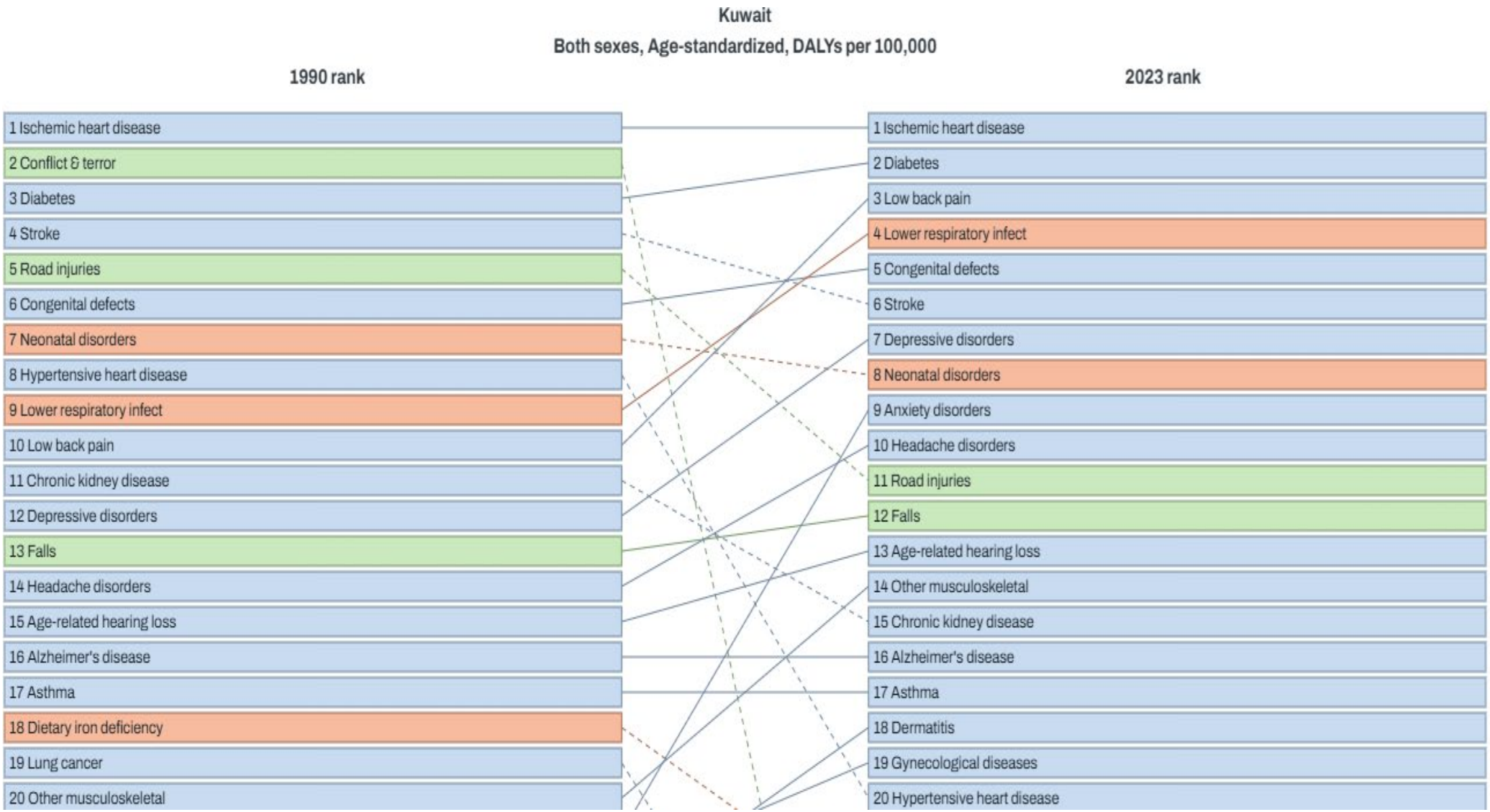

GBD Foresight Visualization
Kuwait
Year: 2050
Years: 85.35 years (82.68 — 87.2)
Download
Both sexes, <1 year
Life expectancy
80
60
40
Bahrain
Kuwait
Oman
Palestine
Qatar
Saudi Arabia
United Arab Emirates

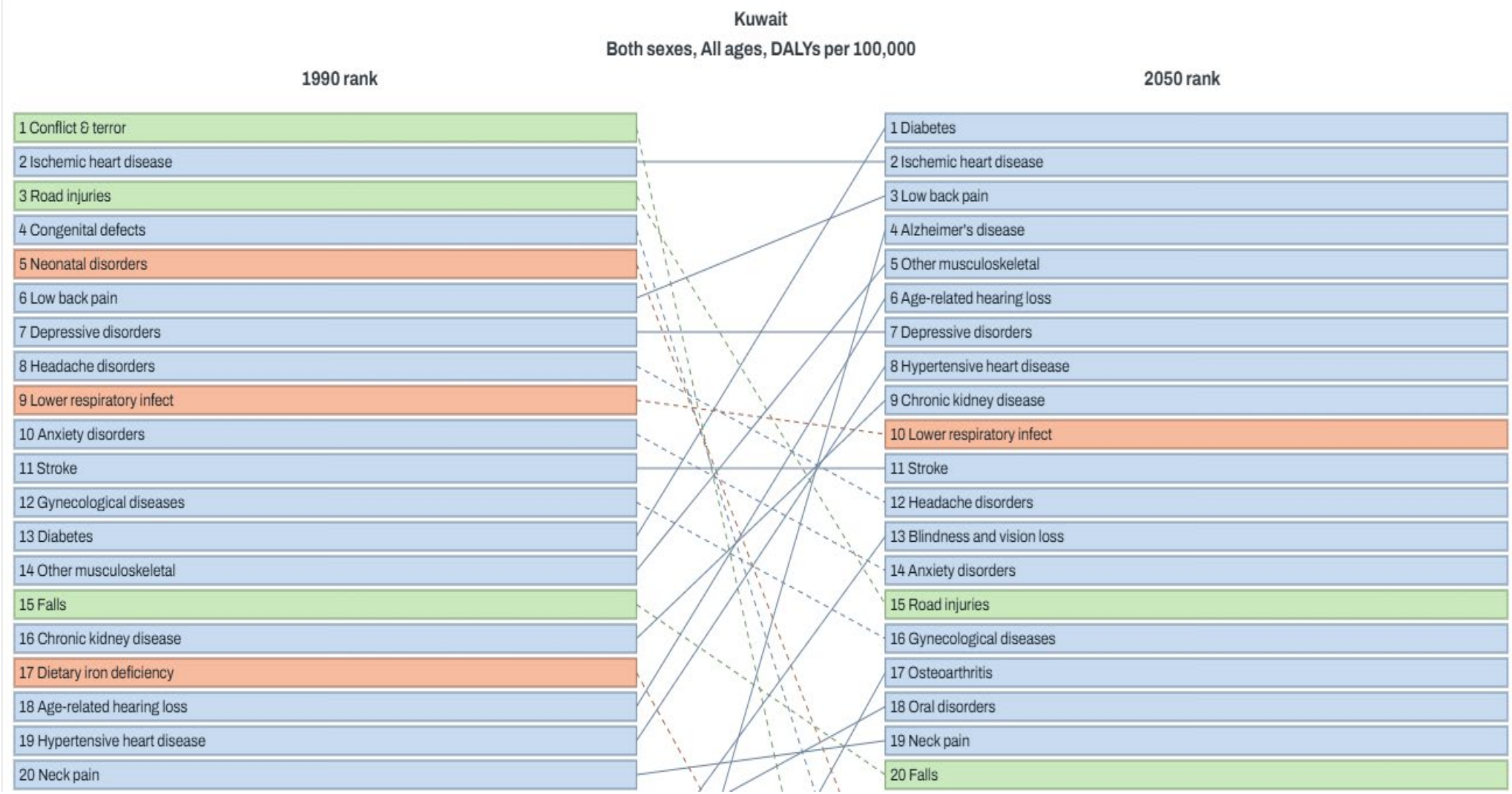
Healthy Life expectancy in GCC countries




GBD Foresight Visualization
Both sexes, <1 year
Kuwait
Year: 2050
Years: 71.21 healthy years (66.92 — 75.15)
Bahrain
Kuwait
Oman
Palestine
Qatar
Saudi Arabia
United Arab Emirates
60
40
Healthy life expectancy


Males, Age-standardized, 2023
Females, Age-standardized, 2023
Qatar
Kuwait
UAE
Bahrain
Oman
Saudi Arabia
15k
10k
5k
0
YLLs per 100,000
Switch cause group
Add cause
Self-harm & violence
Unintentional inj
Transport injuries
Other non-communicable
Musculoskeletal disorders
Skin diseases
Diabetes & CKD
Substance use
Mental disorders
Neurological disorders
Digestive diseases
Chronic respiratory
Cardiovascular diseases
Neoplasms
Nutritional deficiencies
Maternal & neonatal
Other infectious
NTDs & malaria
Enteric infections
Respiratory infections & TB
HIV/AIDS & STIs
Clear selection


Kuwait
Both sexes, Age-standardized, DALYs per 100,000
1990 rank
2023 rank
1 Ischemic heart disease
2 Conflict & terror
3 Diabetes
4 Stroke
5 Road injuries
6 Congenital defects
7 Neonatal disorders
8 Hypertensive heart disease
9 Lower respiratory infect
10 Low back pain
11 Chronic kidney disease
12 Depressive disorders
13 Falls
14 Headache disorders
15 Age-related hearing loss
16 Alzheimer's disease
17 Asthma
18 Dietary iron deficiency
19 Lung cancer
20 Other musculoskeletal
1 Ischemic heart disease
2 Diabetes
3 Low back pain
4 Lower respiratory infect
5 Congenital defects
6 Stroke
7 Depressive disorders
8 Neonatal disorders
9 Anxiety disorders
10 Headache disorders
11 Road injuries
12 Falls
13 Age-related hearing loss
14 Other musculoskeletal
15 Chronic kidney disease
16 Alzheimer's disease
17 Asthma
18 Dermatitis
19 Gynecological diseases
20 Hypertensive heart disease


Kuwait
Both sexes, All ages, DALYs per 100,000
1990 rank
2050 rank
1 Conflict & terror
2 Ischemic heart disease
3 Road injuries
4 Congenital defects
5 Neonatal disorders
6 Low back pain
7 Depressive disorders
8 Headache disorders
9 Lower respiratory infect
10 Anxiety disorders
11 Stroke
12 Gynecological diseases
13 Diabetes
14 Other musculoskeletal
15 Falls
16 Chronic kidney disease
17 Dietary iron deficiency
18 Age-related hearing loss
19 Hypertensive heart disease
20 Neck pain
1 Diabetes
2 Ischemic heart disease
3 Low back pain
4 Alzheimer's disease
5 Other musculoskeletal
6 Age-related hearing loss
7 Depressive disorders
8 Hypertensive heart disease
9 Chronic kidney disease
10 Lower respiratory infect
11 Stroke
12 Headache disorders
13 Blindness and vision loss
14 Anxiety disorders
15 Road injuries
16 Gynecological diseases
17 Osteoarthritis
18 Oral disorders
19 Neck pain
20 Falls

Some strategies to reduce disease burden in Kuwait

1. Address the other key risk factors especially obesity, diabetes, tobacco, and high blood pressure.
2. Given the diversity of risks and communities, no simple menu of effective programs for risk reduction.
3. Local experimentation to figure out what works in a given community is likely to be necessary.
4. Many leading risks (tobacco, blood pressure, blood sugar, cholesterol, alcohol intake, physical inactivity, components of diet) there is an important role for primary health care.
5. Need to broaden the notion of accountability beyond providing high quality care to encompass achieving risk reduction in partnership with patients.
6. Forging a connection between healthcare provision and progress for individuals and communities in health outcomes will be critical for the future.
7. Focus on early disease detection.

IHME

Thank you!

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