



IHME

Measuring what matters

Global Burden of Disease 2019

COST Action Burden EU Network meeting

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GBD 2019:

- In GBD 2019 we estimated burden for:
 - 369 diseases and injuries
 - 87 Risk factors
 - » 512 risk-outcome pairings
- **Period:** all GBD outcomes estimated annually from 1990-2019
 - Mortality, fertility and population analyzed from 1950-2019
 - Cause-specific mortality from 1980-2019
- 23 age groups: 5-year age bands
- For male and female, and both sexes combined.

Every cycle re-estimates the entire time series to ensure internal consistency, and to allow for analysis of trends.

GBD 2019:

- For more than 1,000 geographic locations
 - Within 204 countries and territories
 - 21 countries with subnational assessments
 - » Within 7 super-regions
- Countries with subnational BoD estimation:
 - **Europe:** United Kingdom, Sweden, Norway, Italy, Poland, the Russian Federation
 - **The Americas:** Brazil, Mexico, USA
 - **Africa:** Ethiopia, Kenya, South Africa, Nigeria
 - **Asia:** China, Japan, the Philippines, Iran, Indonesia, India, Pakistan
 - **Australasia:** New Zealand

GBD 2019

- All analyses in compliance with GATHER.
- All metadata publicly available on the *Global Health Data Exchange (GHDx)*.
- All analytic code stored in GitHub.

- **Highly standardized statistical analytical approach emphasizing:**
 - **comparability, and**
 - **comprehensiveness.**

GBD Review Weeks

In-depth, methodological consultations conducted annually to foster scientific dialogue, with a key focus on:

- Reviewing methods and estimates from the previous GBD cycle;
- Discussing key improvements to consider in the upcoming GBD cycles.

- **December 2019: GBD 2020 Review Week 1** (IHME, Seattle)
 - **Topics covered:** Demographics estimation, Severity distribution, CoD data processing, Crosswalking, Clinical data, Ischemic heart disease, Risk-outcome pair selection, etc.

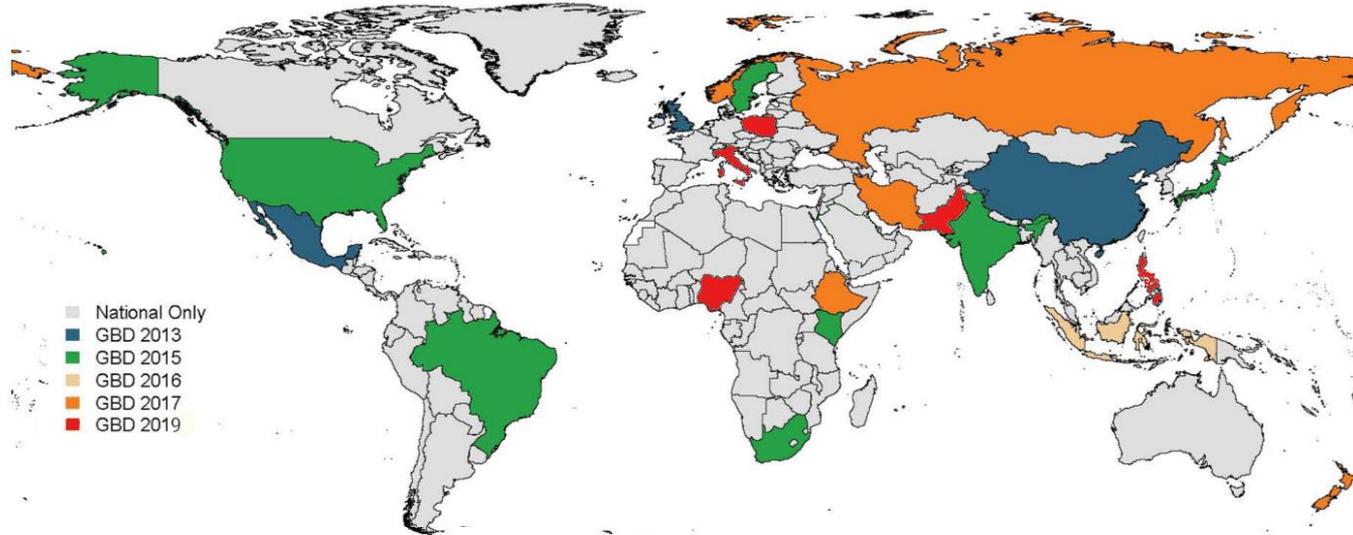
- **January 2020: GBD 2020 Review Week 2** (WHO HQ, Geneva)
 - First-ever GBD review week held at WHO.
 - *Purpose:* advance WHO-IHME collaboration, share technical approaches and engage in joint scientific dialogue on the technical aspects of estimation.
 - **Topics covered:** dementia, alcohol & tobacco, blindness and vision loss, mental health, CoD redistribution, etc.
 - **Attendees:** 45 WHO HQ staff, 26 members of the GBD Scientific Council, 16 IHME staff.

Subnational Review Weeks: March – April 2020

- Technical meetings with collaborators from 8 countries, to review country estimates and align on the overall priorities for scientific credibility and policy relevance of GBD results.

New Zealand	March 2-6
Norway	March 9-13
Italy	March 9-13
Brazil	March 23-27
Ethiopia	April 6-10
Indonesia	April 6-10
Poland	April 20-24
UK	April 20-24

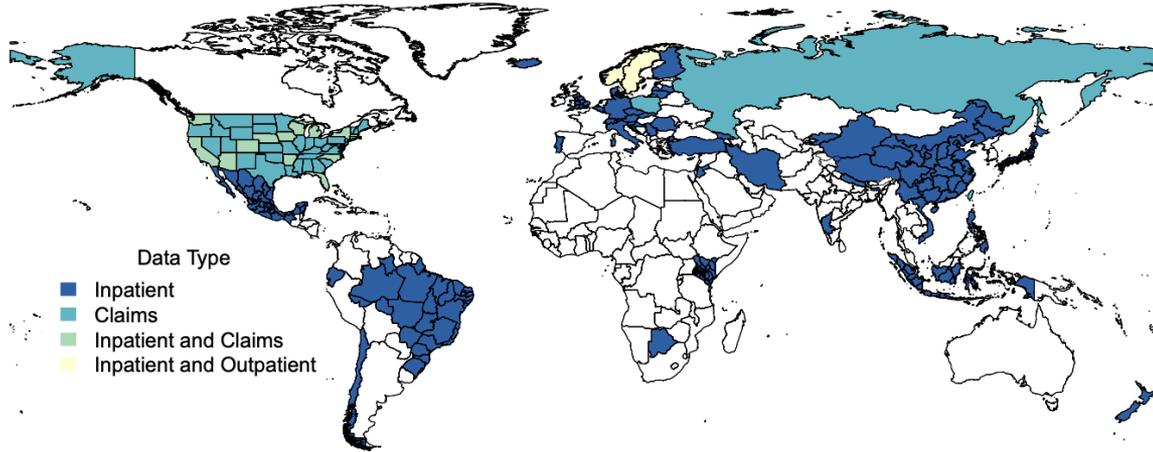
Subnational BoD Estimation



GBD 2013		GBD 2015		GBD 2016		GBD 2017		GBD 2019	
China		Brazil	South Africa	Indonesia		Ethiopia	Norway	Italy	Nigeria
Mexico		India	Sweden	United Kingdom		Iran	Russia	Poland	
United Kingdom		Japan	United States			New Zealand		Philippines	
		Kenya						Pakistan	

Expanding utilization of hospital primary care and claims data in GBD 2019

Clinical Data Source Locations



- Many data acquisitions based on collaborations
- Data serves shared goals of standardizing and expanding utility of population health indicators
- Clinical data applied to various inputs in GBD modeling framework

GBD 2019

Socio-demographic Index (SDI): more comprehensive measure of development

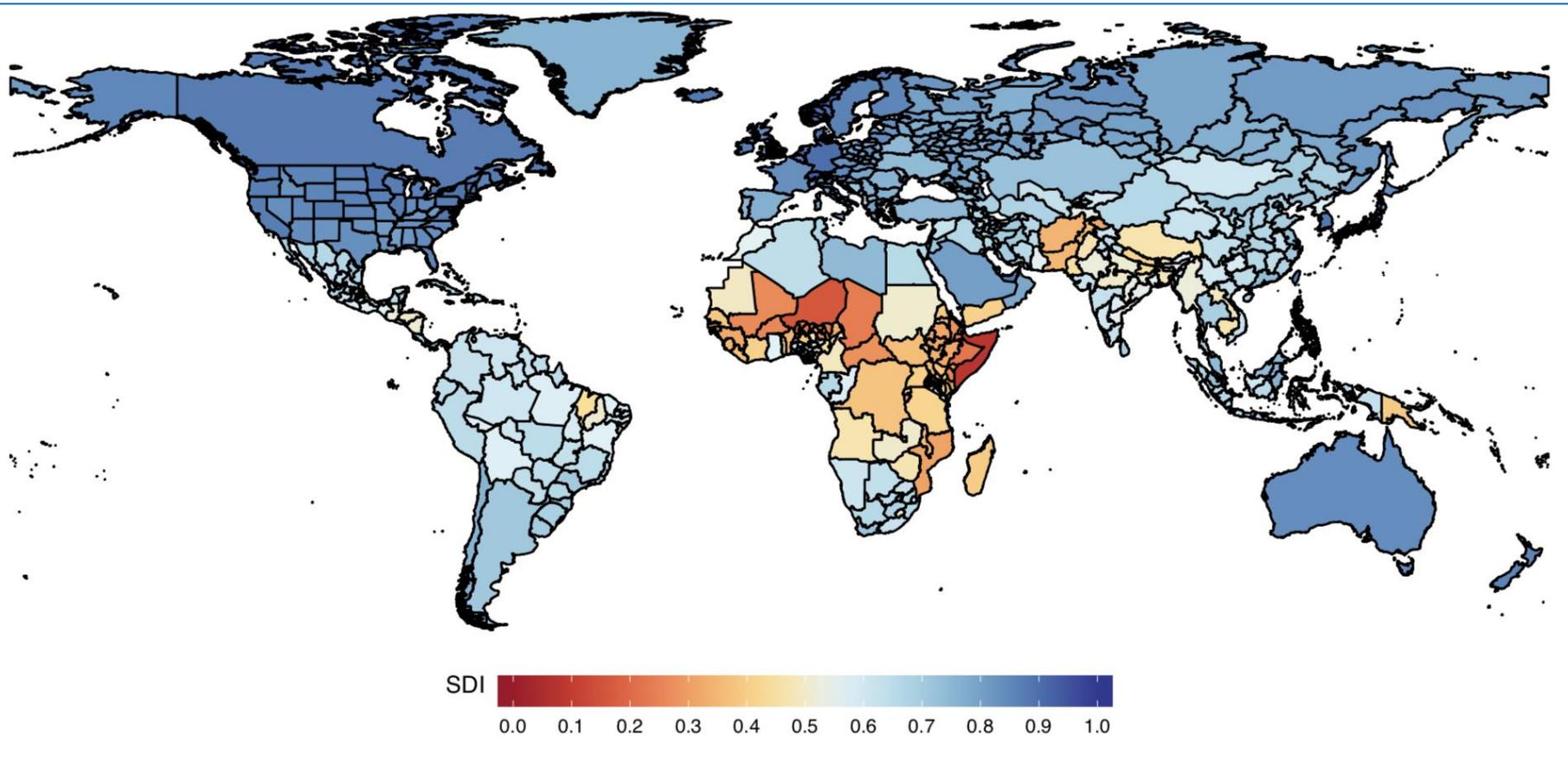
- SDI includes three components by location and year:
 - Lag-distributed income (LDI) per capita
 - Total fertility rate under the age of 25 (TFU25) as a proxy for the status of women in societies
 - Mean educational attainment for persons aged 15 and older (EDU15+).
- Each component C is scaled between 0 and 1.

$$I_{TFU25} = \frac{(C_{TFU25} - C_{TFU25\ low})}{(C_{TFU25\ high} - C_{TFU25\ low})}$$

- SDI is the geometric mean of those rescaled values

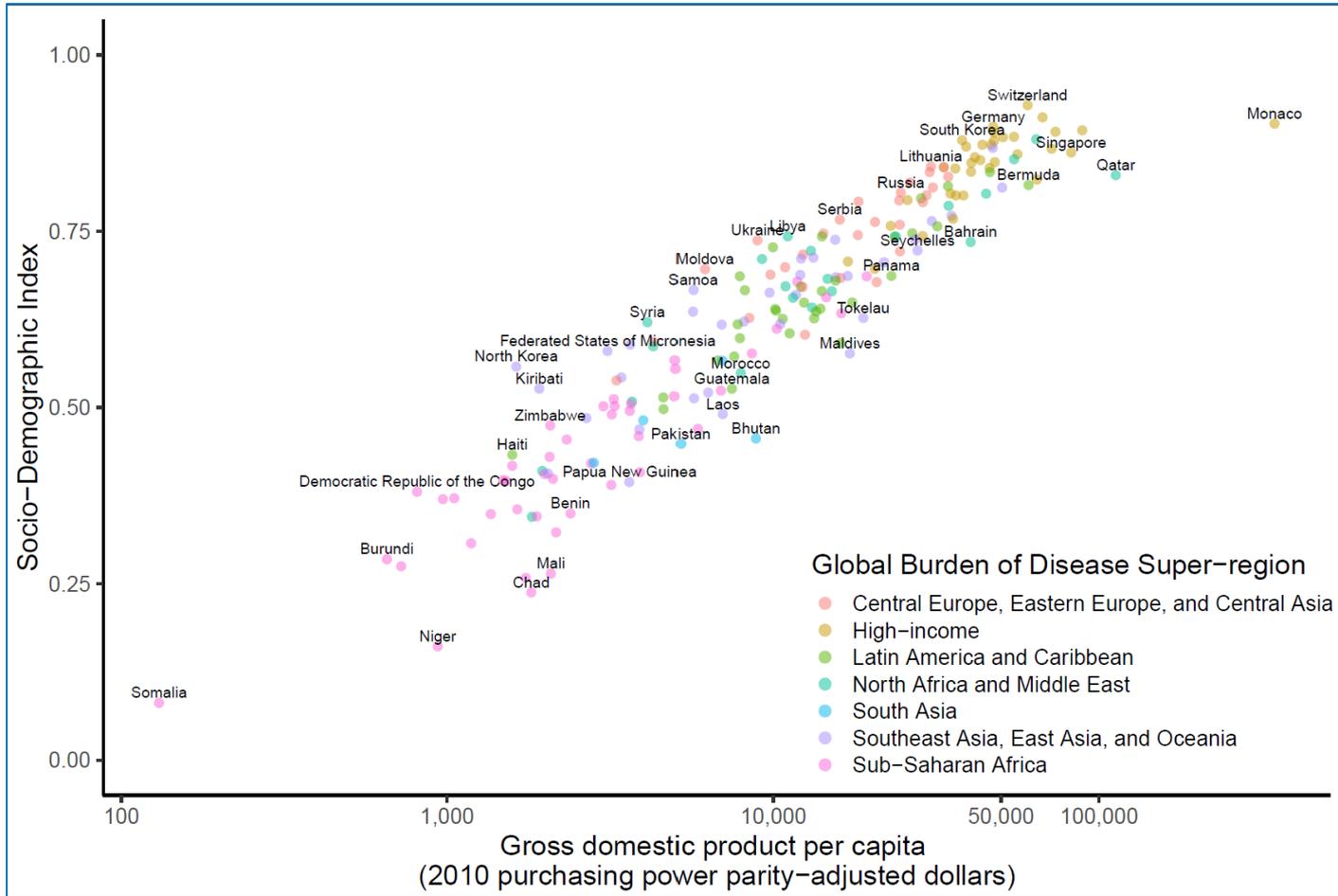
$$SDI = \sqrt[3]{I_{TFU25} * I_{Educ} * I_{lnLDI}}$$

SDI 2019: wide range across countries in 2019

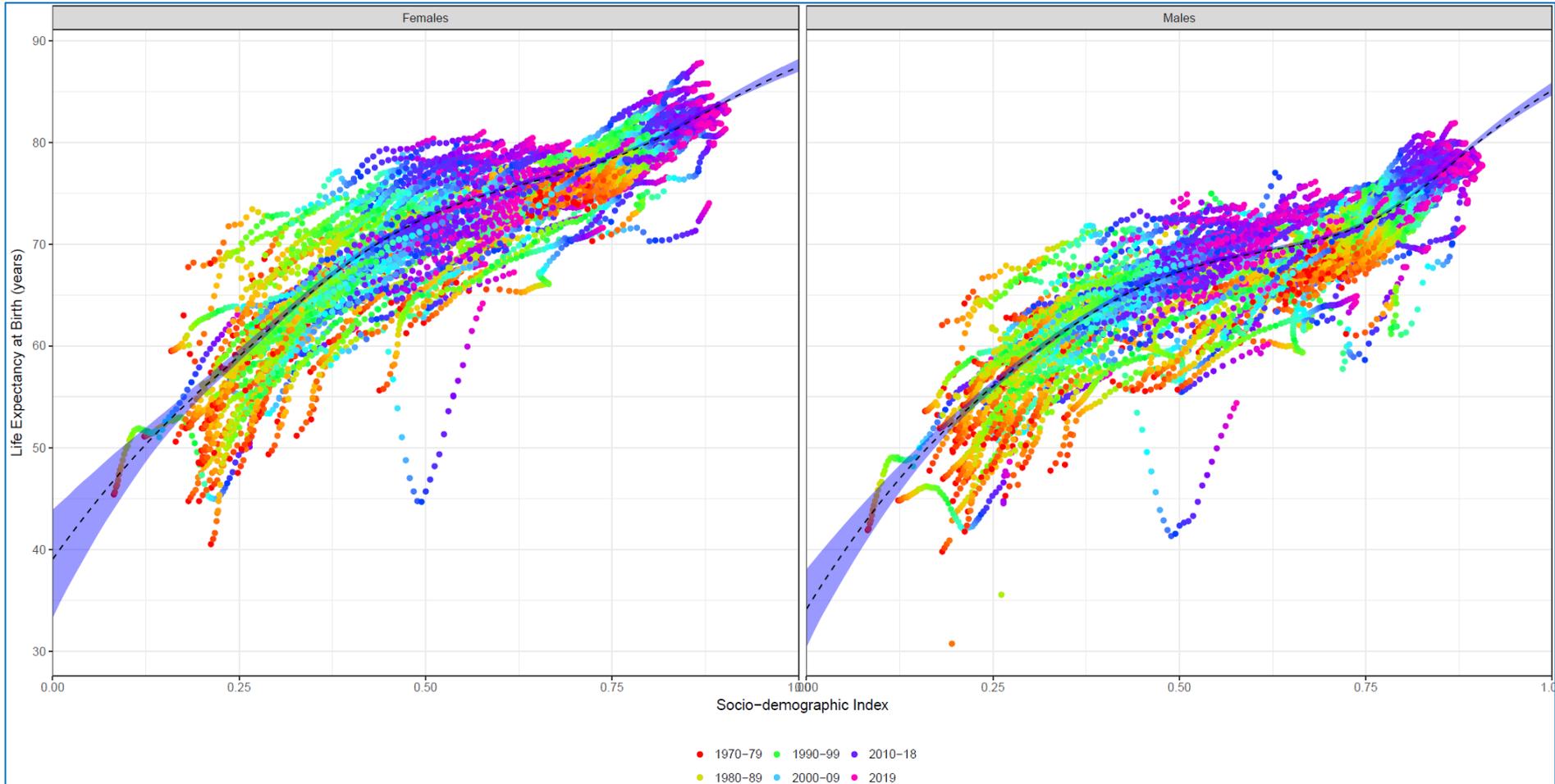


SDI and GDP per capita

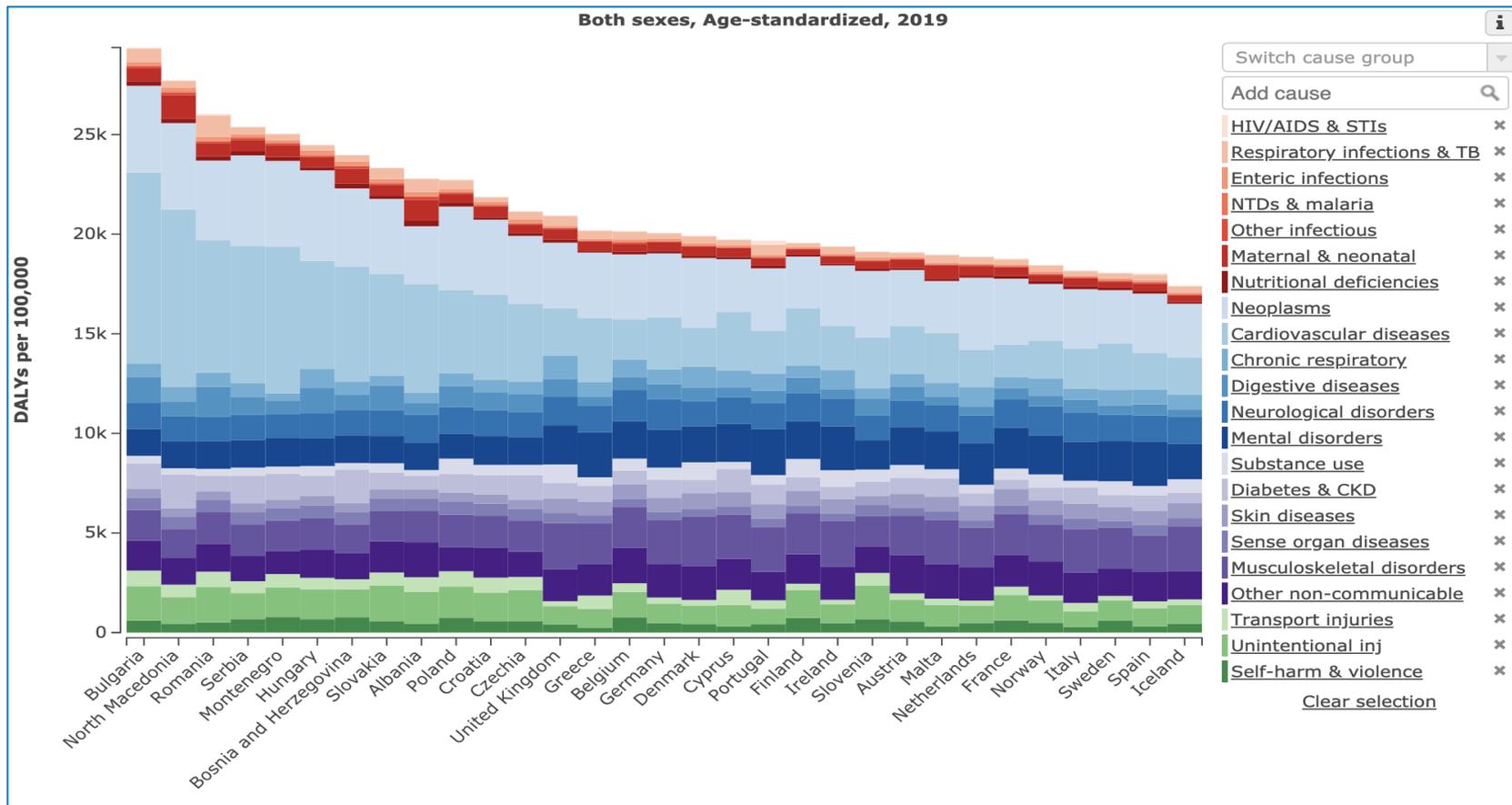
SDI can vary by 0.25 at the same level of GDP per capita



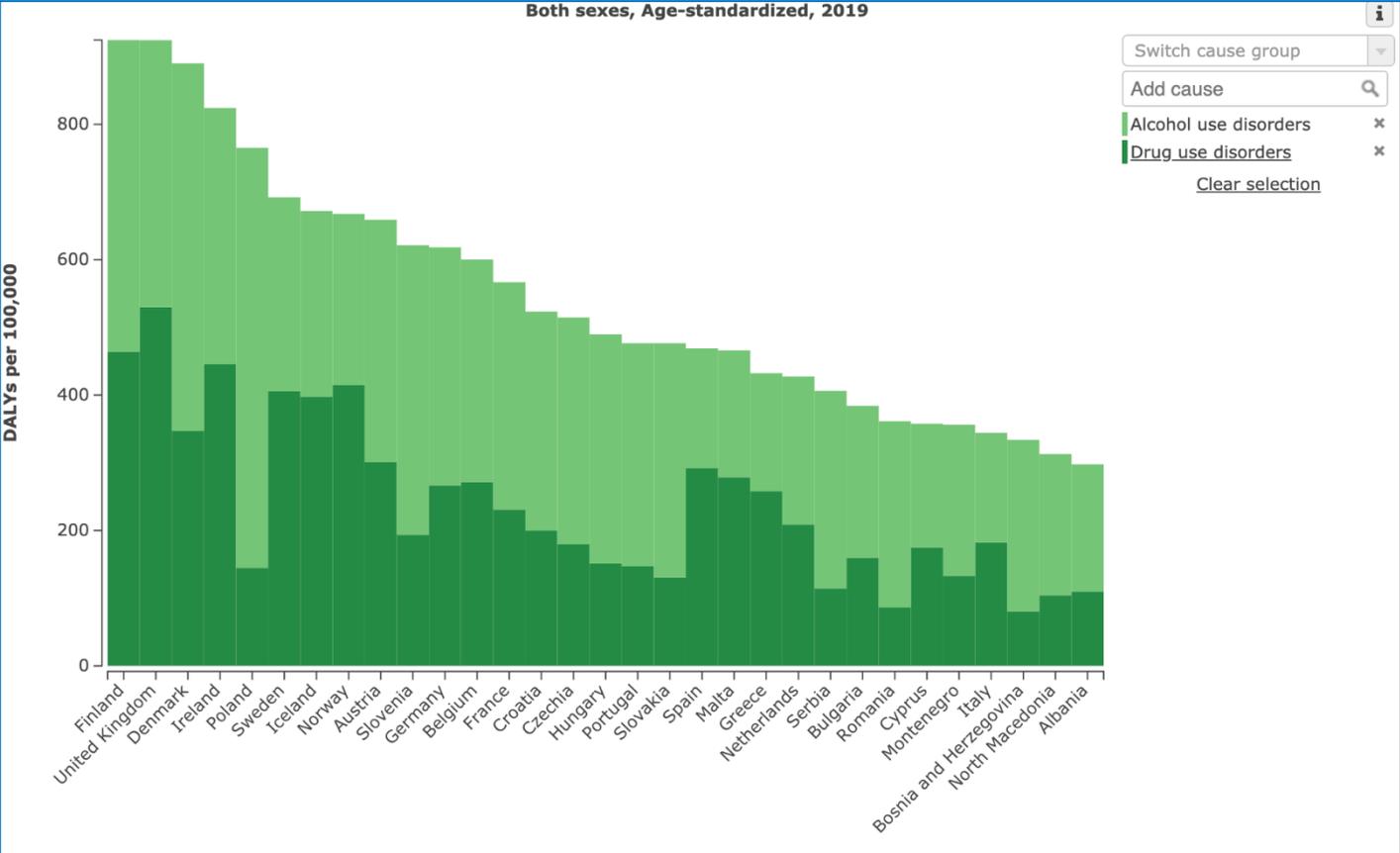
Strong relationship between SDI and life expectancy at birth



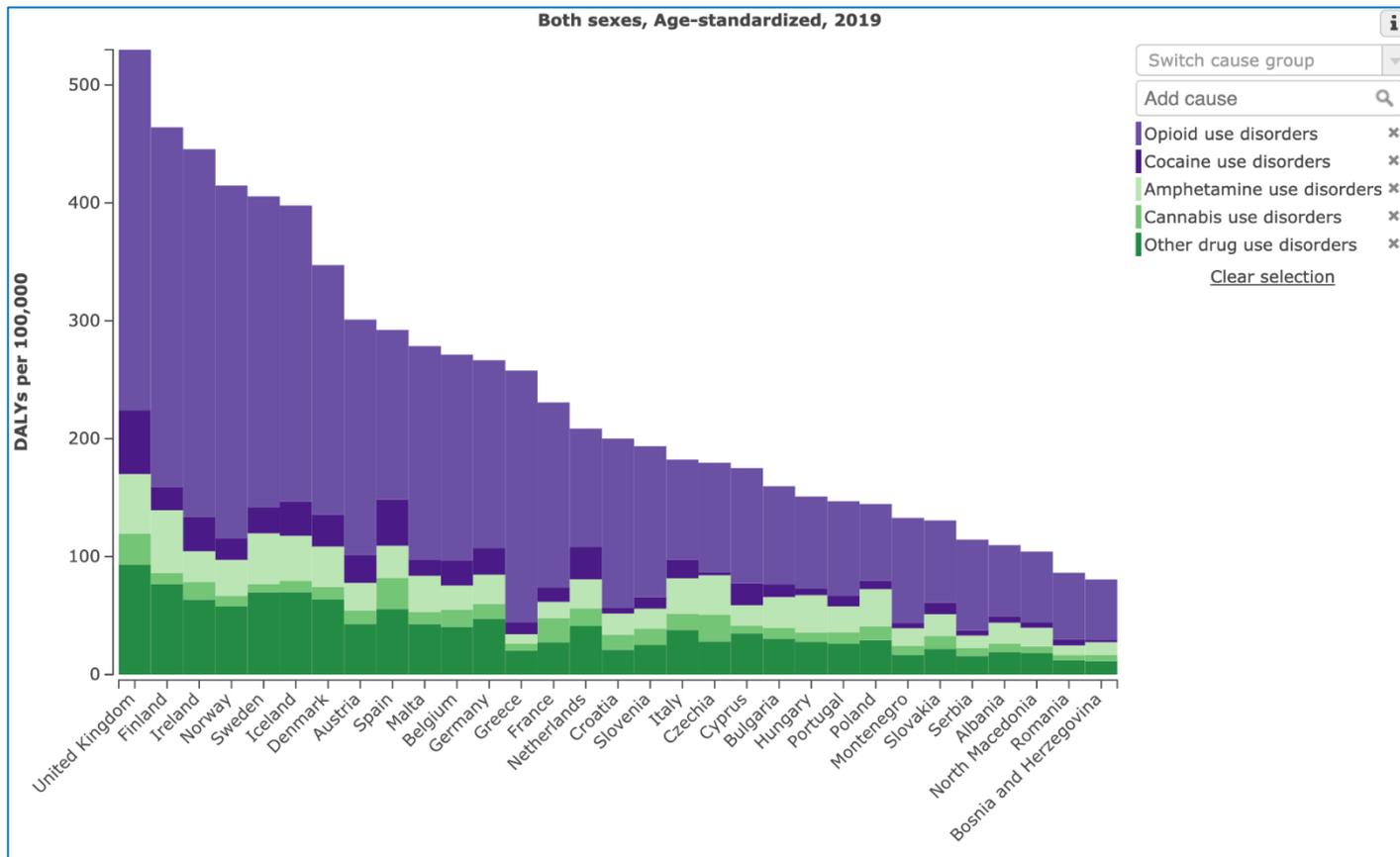
Age standardized DALYs rate for all causes, 2019: Western and Central Europe



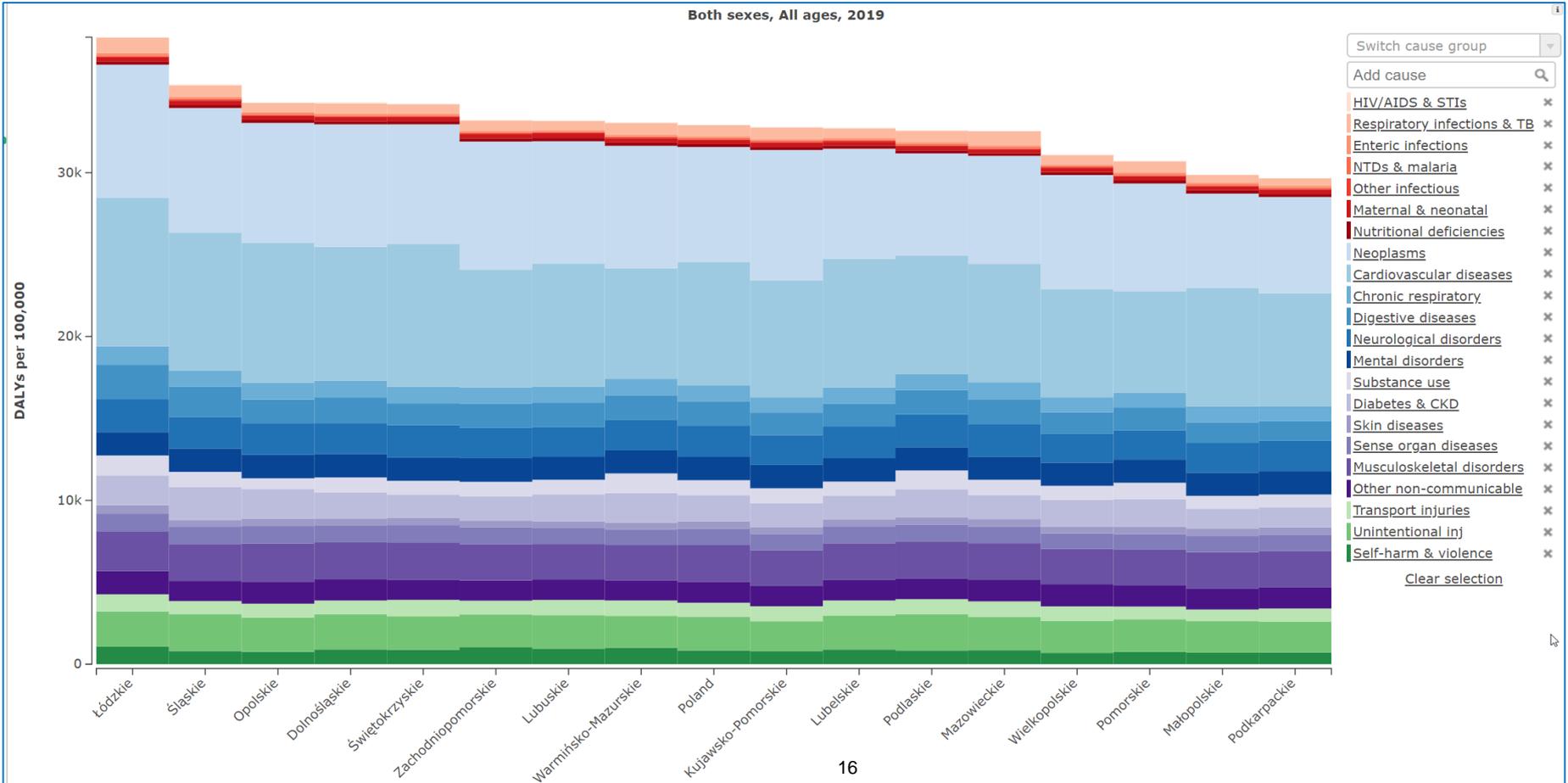
DALYs due to substance use disorders, 2019: Western and Central Europe



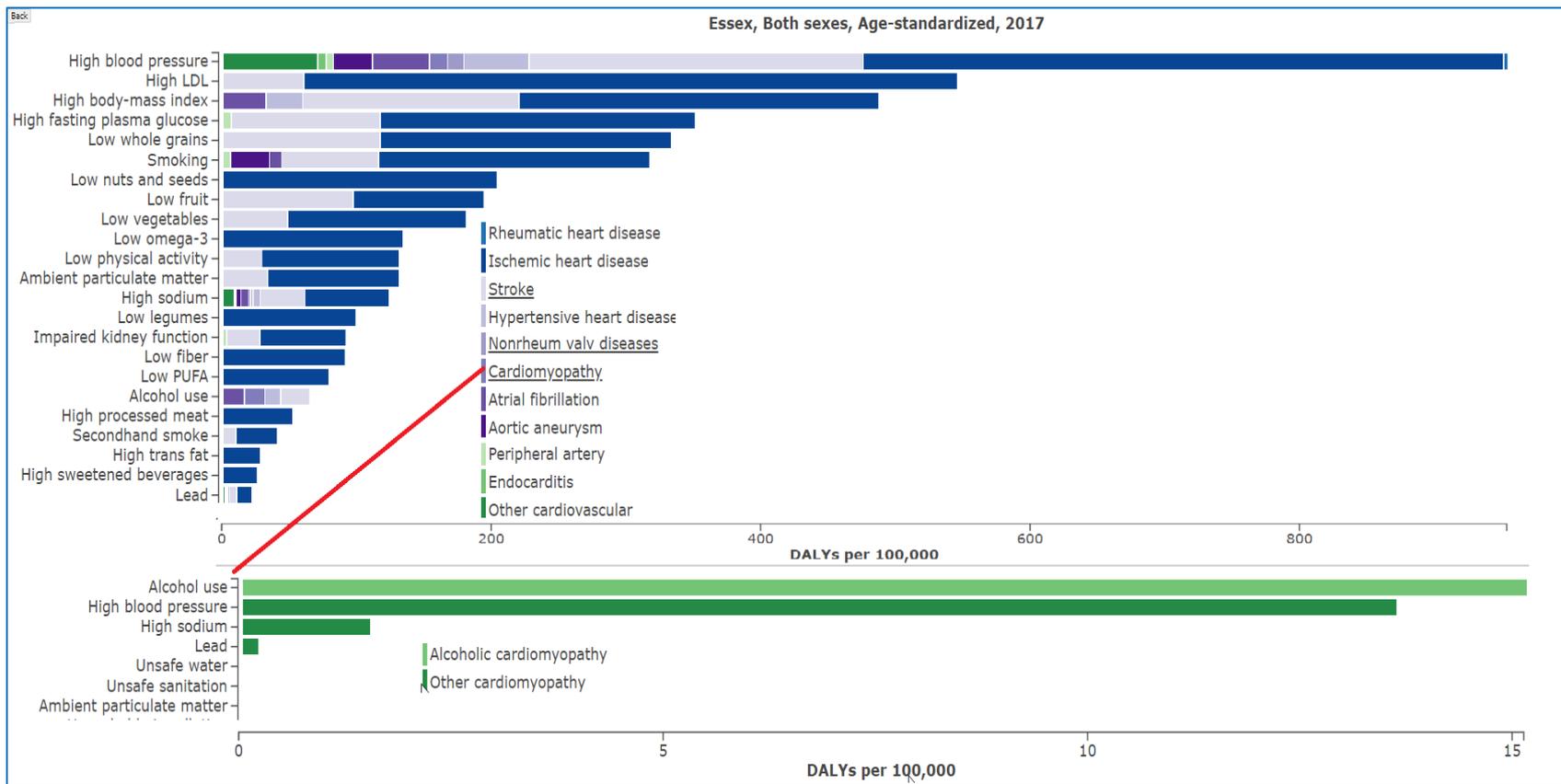
DALYs due to drug use disorders, 2019: Western and Central Europe



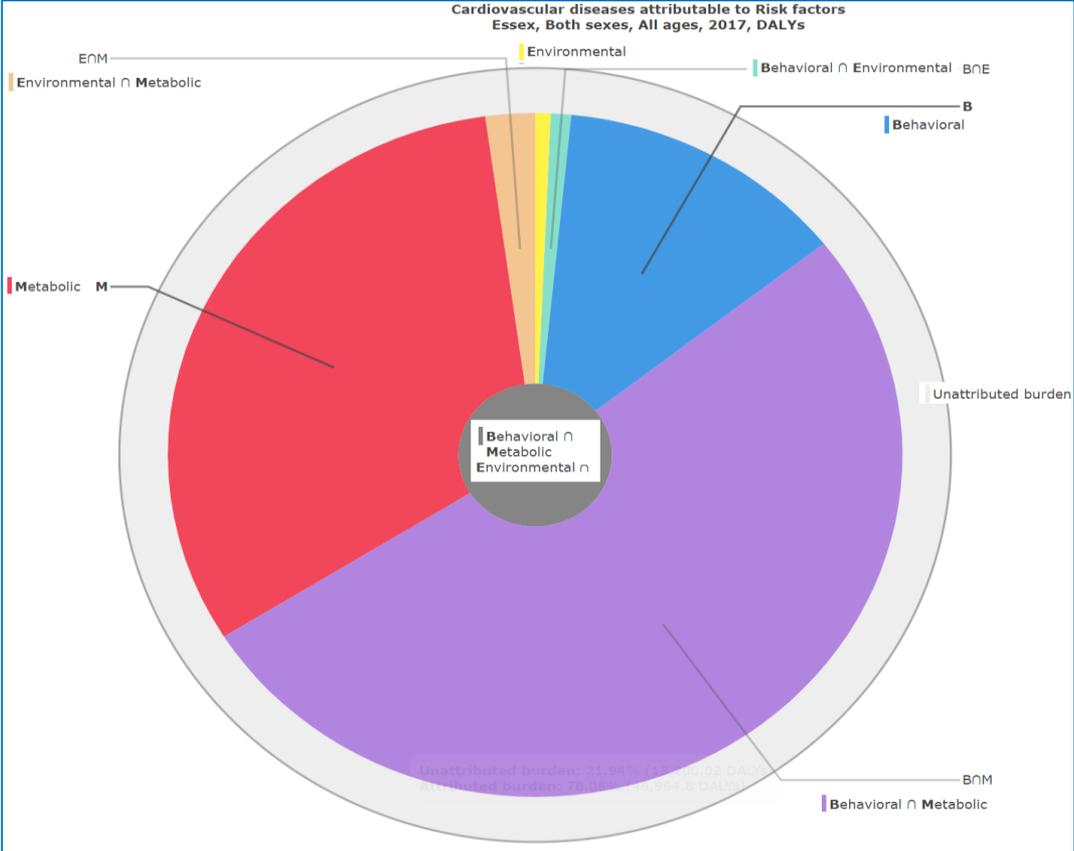
Age standardized DALYs rate for all causes, 2019: Poland by Voivodeship



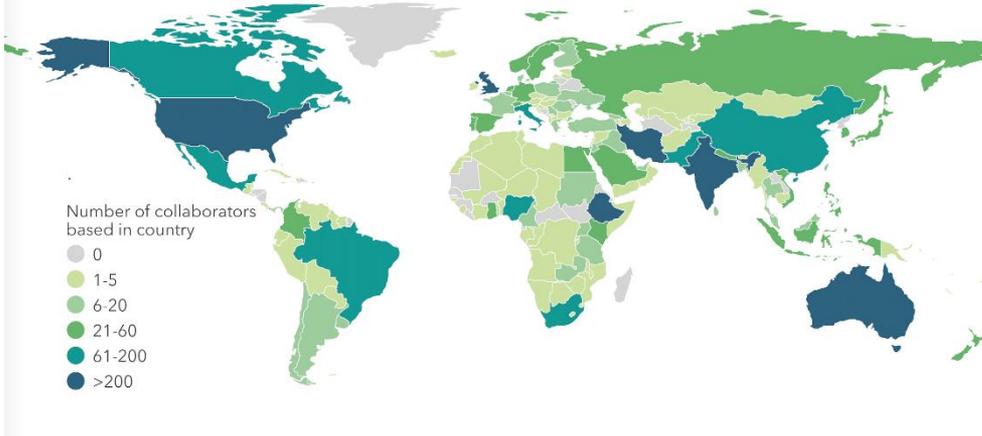
Cardiovascular diseases attributable to risk factors Essex, East England: United kingdom both sexes, DALYs rate



Cardiovascular diseases attributable to risk factors Essex, East England: United kingdom, both sexes, DALYs



GBD Collaborator Network



February 2020: 5,030 collaborators
(from 147 countries and territories)

- **980 collaborators** either based **in Europe** or with a primary and secondary affiliation in Europe.

Goals of the Network:

1. Improve the **rigor** of the data, methods, and results.
2. Drive **equity** in science.
3. Build **trust** and acceptance in the results.
4. Inform **health policy** and improve lives.
5. Build **capacity** for burden of disease science.

How to join:

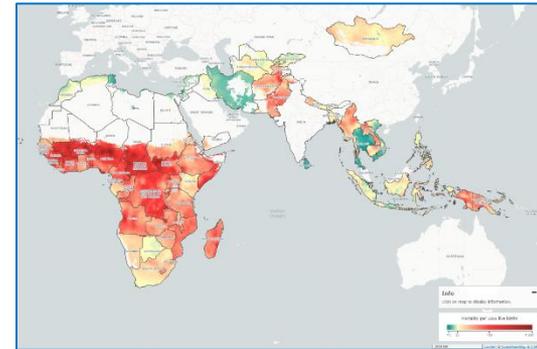
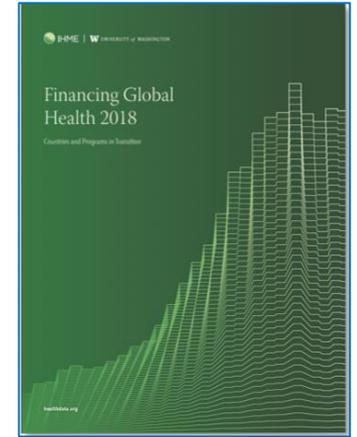
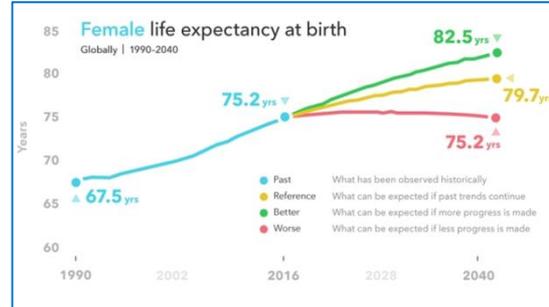
<http://www.healthdata.org/gbd/call-for-collaborators>

Proposed areas of support & collaboration:

- **Two regional workshops** for COST Action Burden EU Network: late 2020/early 2021?
 - Full technical GBD Workshop (it would also cover all of the key focus areas of Burden EU COST-Action WG groups)
 - Policy Translation Workshop
 - Proposed participants: members of COST Action Burden EU Network, several other GBD collaborators from Europe, other key stakeholders.
- Supporting countries and the Network members with the **technical aspects of BoD analysis**:
 - IHME can offer support with **disease modelling, garbage code redistribution for countries**, supporting COST Action members with a **creation of a software that can help improve the BoD estimation process**.
 - **Widening the scope of the subnational BoD analysis**, depending on the country's policy priorities.

IHME's major projects:

- Global Burden of Disease Study (GBD)
- Local Burden of Disease (LBD)
- Future Health Scenarios (FHS)
- Disease Expenditure (DEX)
- Malaria Modeling Consortium (MMC)



Questions, comments, suggestions?

Thank you for your time and attention!

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