Global Burden of Disease

Understanding GBD data

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GLOBAL BURDEN OF DISEASE (GBD)

✓ GBD is the most comprehensive worldwide epidemiological study

✓ Led by the Intitute of Health Metrics and Evaluation (IHME), University of Washington

✓ Quantifies and compares health loss due to illness, death, injury and risk factors by age, sex, location and time.

✓ All estimates are Global, Regions, Countries, and subnational (Brazil - 27 states)

✓ Trends from 1990 to the present year

✓ Allows comparisons between populations

✓ All rates are adjusted and standardized

✓ The GBD Brazil network has been collaborating with IHME in the identification and data sources, review of models and estimates, validation and publication of results for Brazil.

• (http://www.healthdata.org/gbd)

Components of the GBD estimation process

1-Mortality from all causes:

Estimating the number and mortality rate by age and sex, is a fundamental stage in calculating the disease burden

2-Causes of death

Estimating specific causes of death by age and sex is important to inform health policies and interventions. The 2017 GBD cause list includes 282 causes of death.
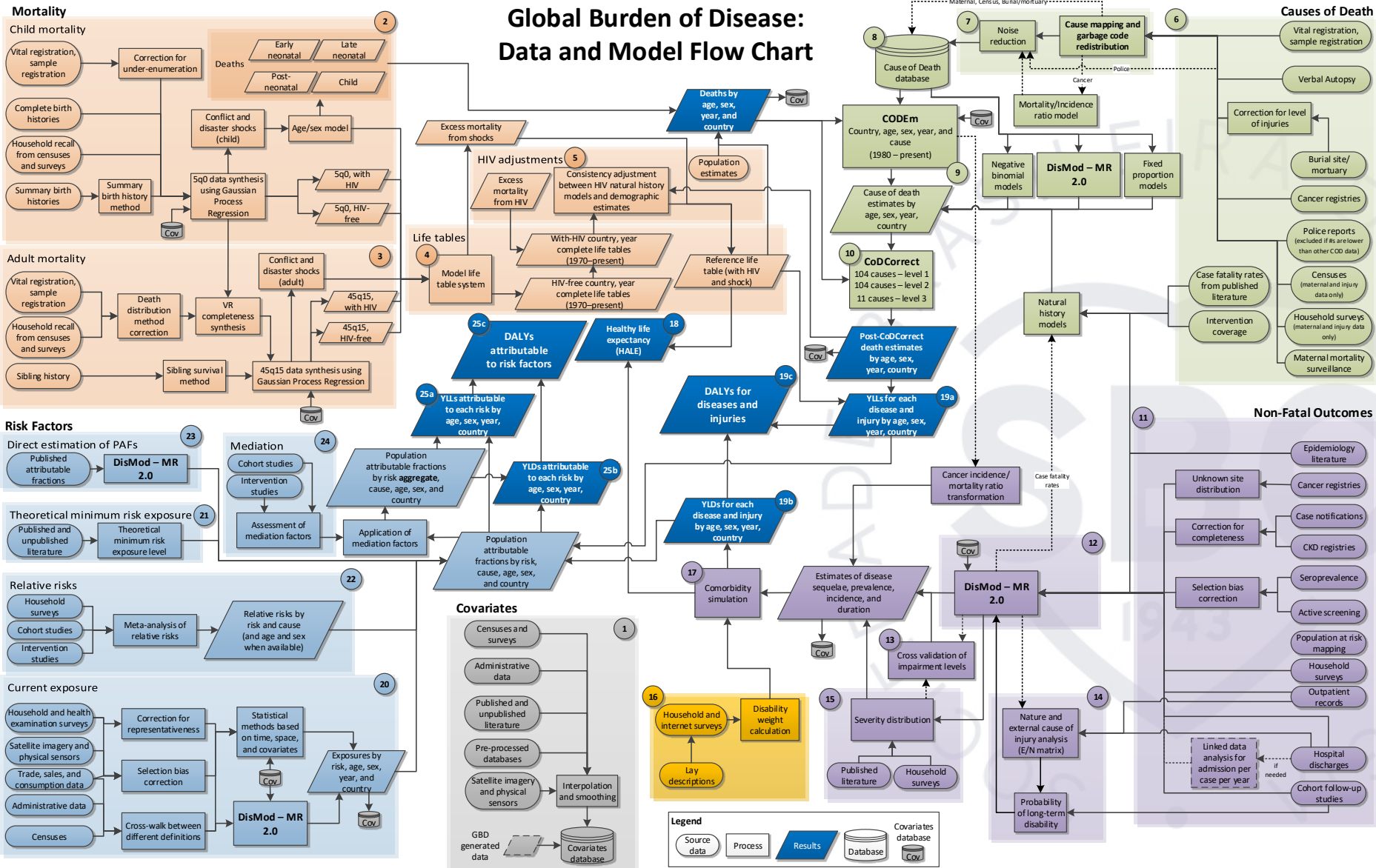
YLLs, DALYs, YLDs, HALE

4-Risk factors

Quantifying the disease burden caused by different risk factors provides an explanation of the loss of health due to the risk factors. In 2017, 84 risk factors were included (510 cause and risk pairs)
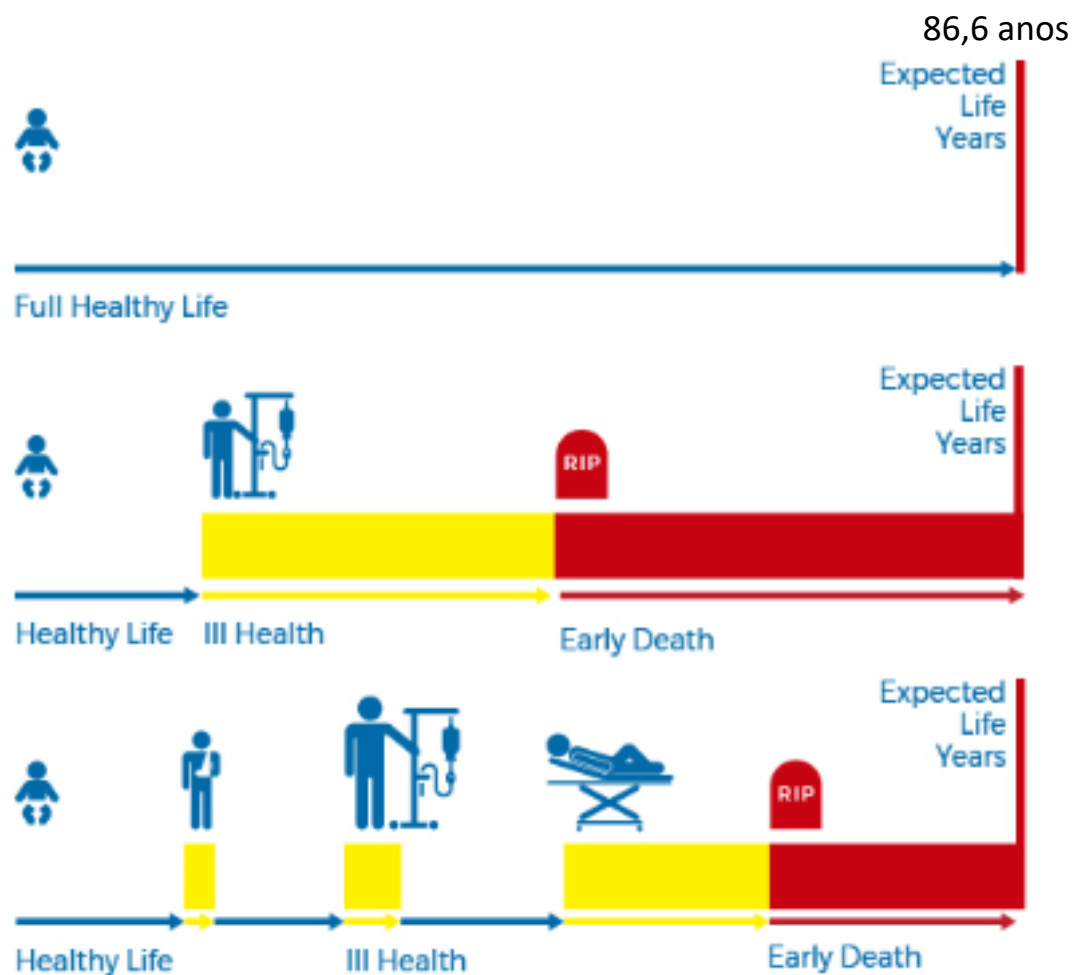
3-Non-fatal outcomes

Sequelae are estimated for all causes of GBD that cause disabilities. 360 diseases and conditions are analyzed, 345 of which are non-fatal causes and 3228 sequelae.

Global Burden of Disease: Data and Model Flow Chart

Metrics for all years, countries, sex and age

- Deaths
- Mortality rates, adjusted, standardized
- Incidence
- Prevalence
- Years of life lost due to premature death (YLL)
- Years of life lived with disability (YLD)
- Disability-adjusted life years lost (DALY)
- Life expectancy
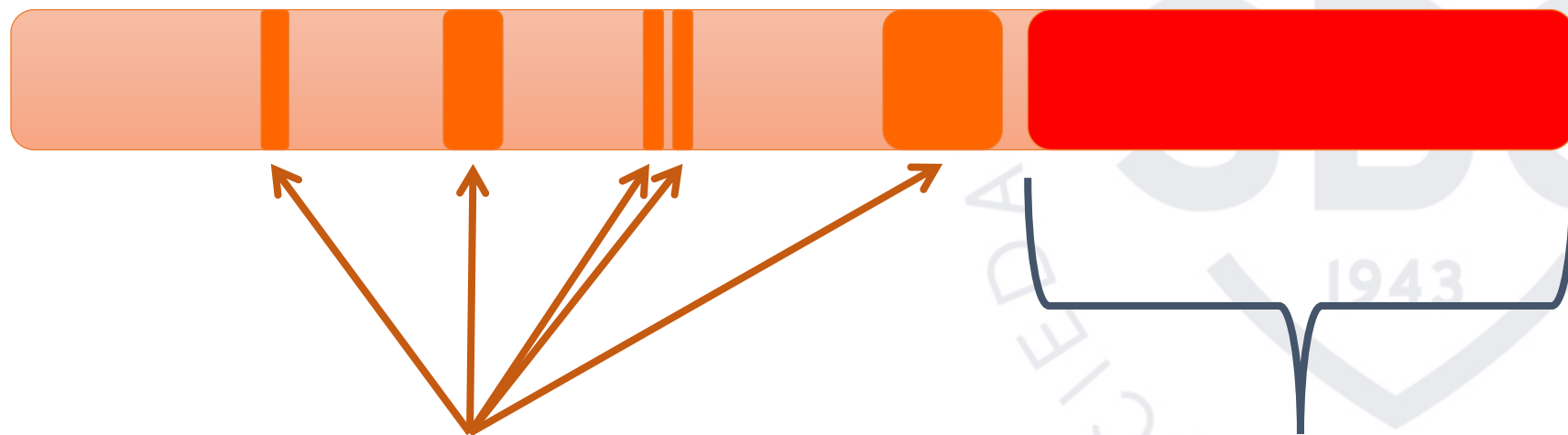- Healthy life expectancy (HALE)

Basic concepts of the GBD study

Basic concepts of the GBD study

DALY = YLL + YLD

YLL = years of life lost due to premature death

YLD = years of life lived with disability

YLD: number of years of life without health, weighted by the severity of each disease

YLL: number of years that have not been lived to achieve full life expectancy

Hierarchy of causes

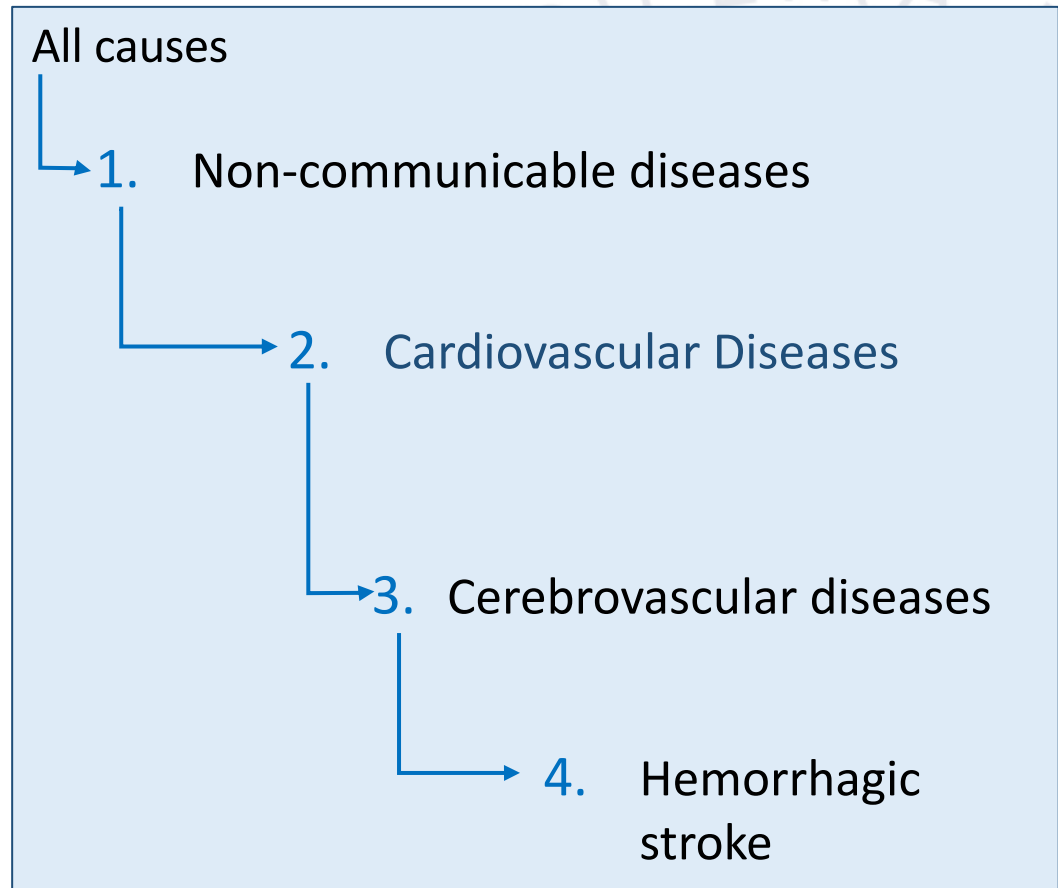Group I (Transmissible, maternal, neonatal and nutritional)

Exp: Diarrhea / LRI / other, Dengue, Flu

Group II (Non-communicable diseases)
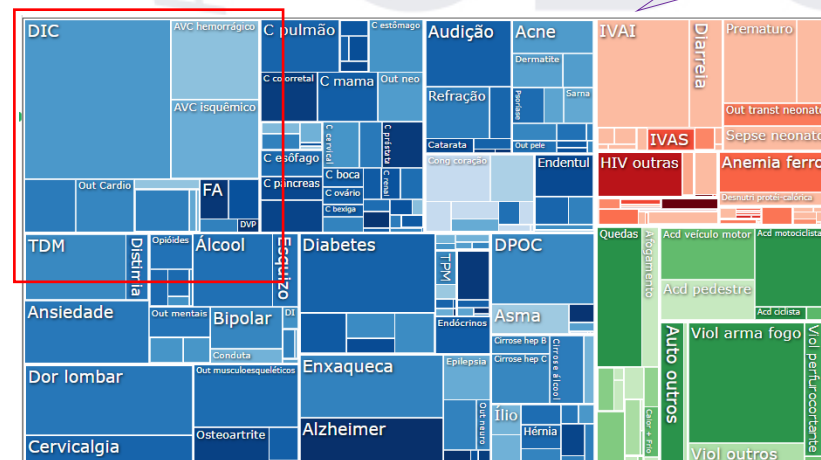
Exp: Cardiovascular, Cancer, Mental disorders, COPD

Group III (External causes)

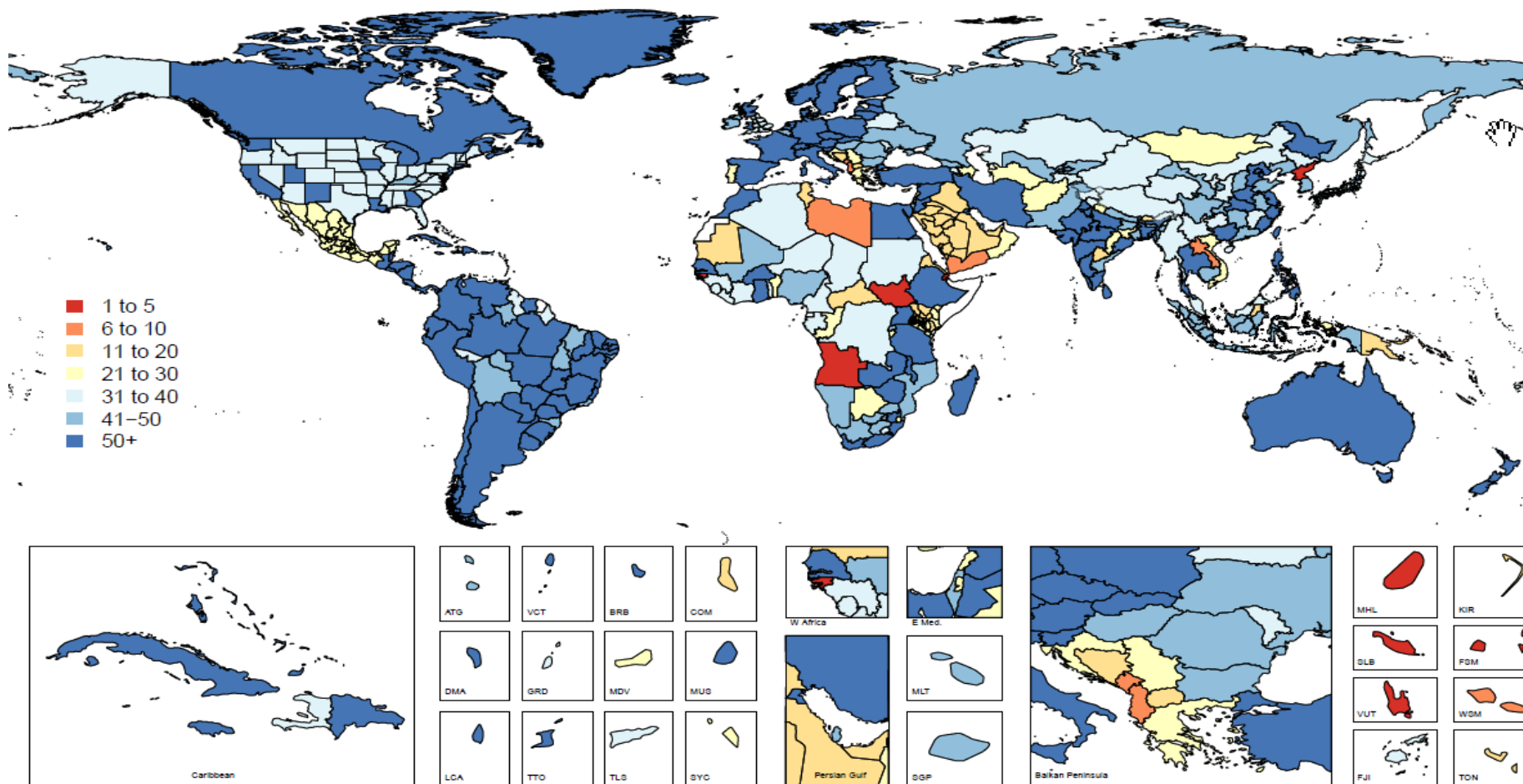Exp: Unintentional, Traffic accidents, self-inflicted injuries, forces of nature

All causes

1. Non-communicable diseases

2. Cardiovascular Diseases

3. Cerebrovascular diseases

4. Hemorrhagic stroke

Cause fraction for 2017 in Brazil all ages both sexes on 4 levels

DATA SOURCES IN THE WORLD

1 to 5
6 to 10
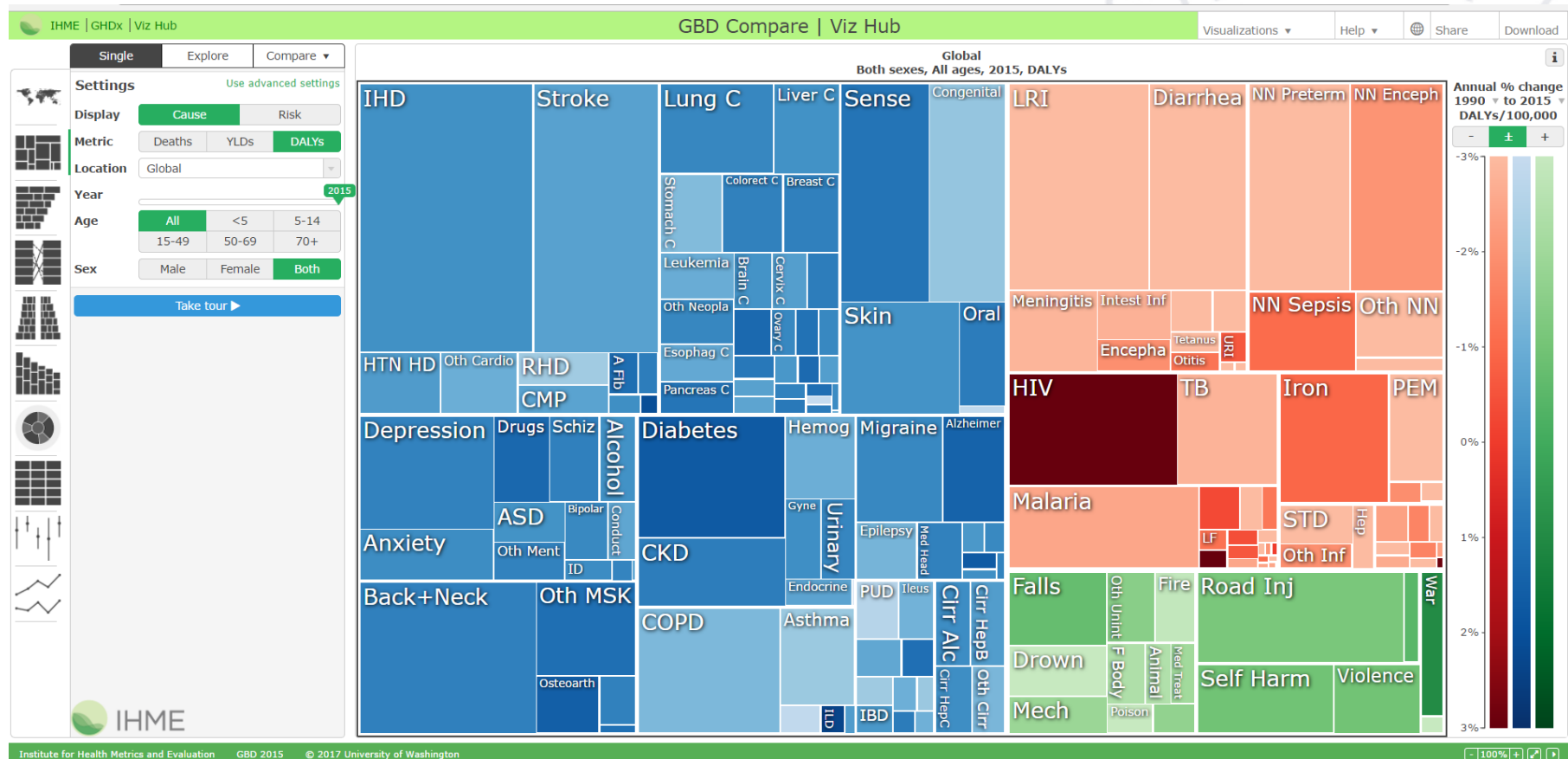11 to 20
21 to 30
31 to 40
41–50
50+

More than 100,000 data sources.
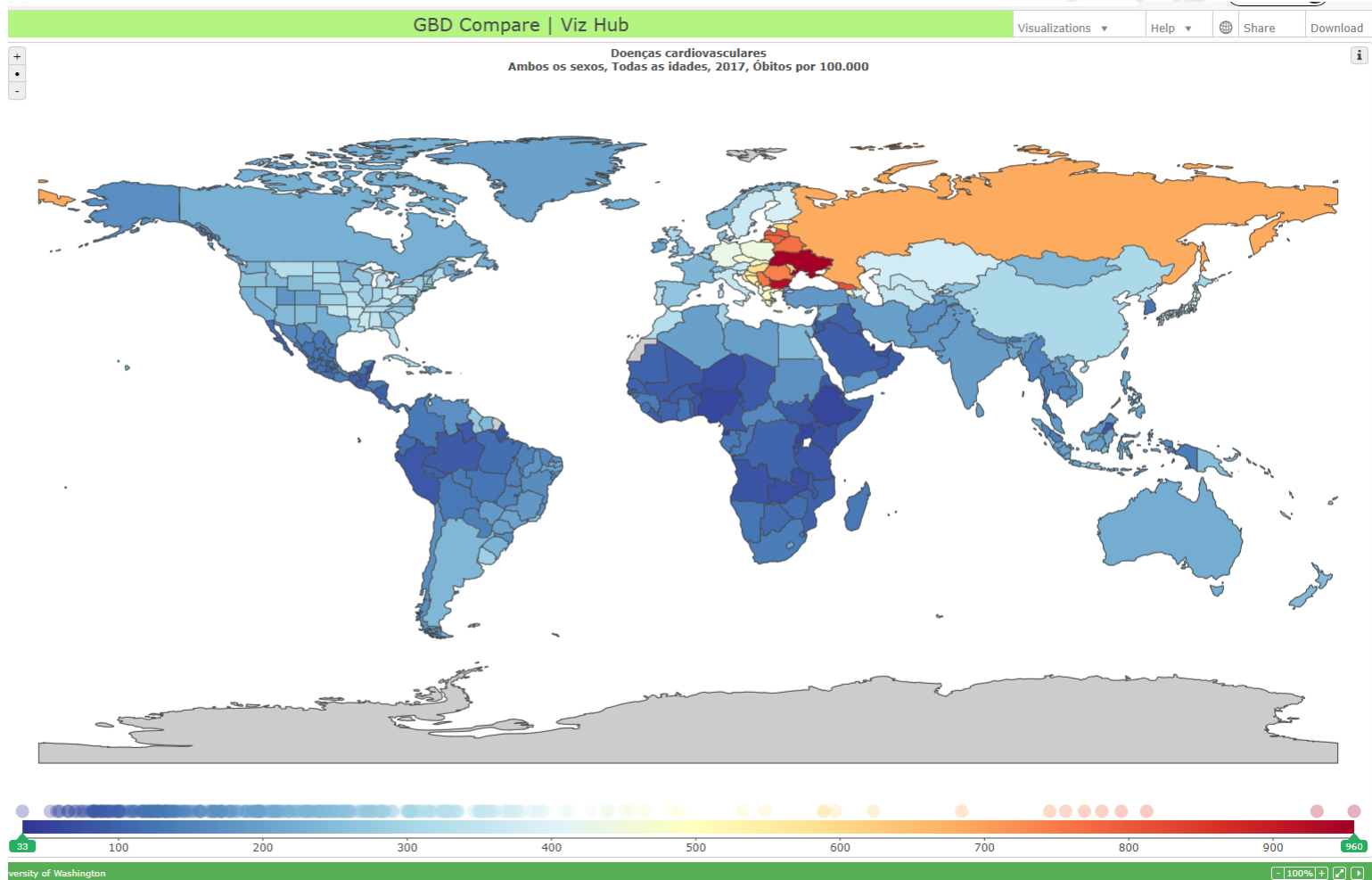Each year New Sources are added

Source data Brazil

Health Information Systems and Health Surveys

- Mortality Information System (SIM)

- Hospital Information System (SIH)

- Aggravated Notification Information System (SINAN)

- Information System on Live Nascidos (SINASC)

- **National surveys:**

- PNS

- *VIGITEL*

- *PeNSE*

- *Pesquisa Nacional de Saúde Bucal*

- *PNAD*
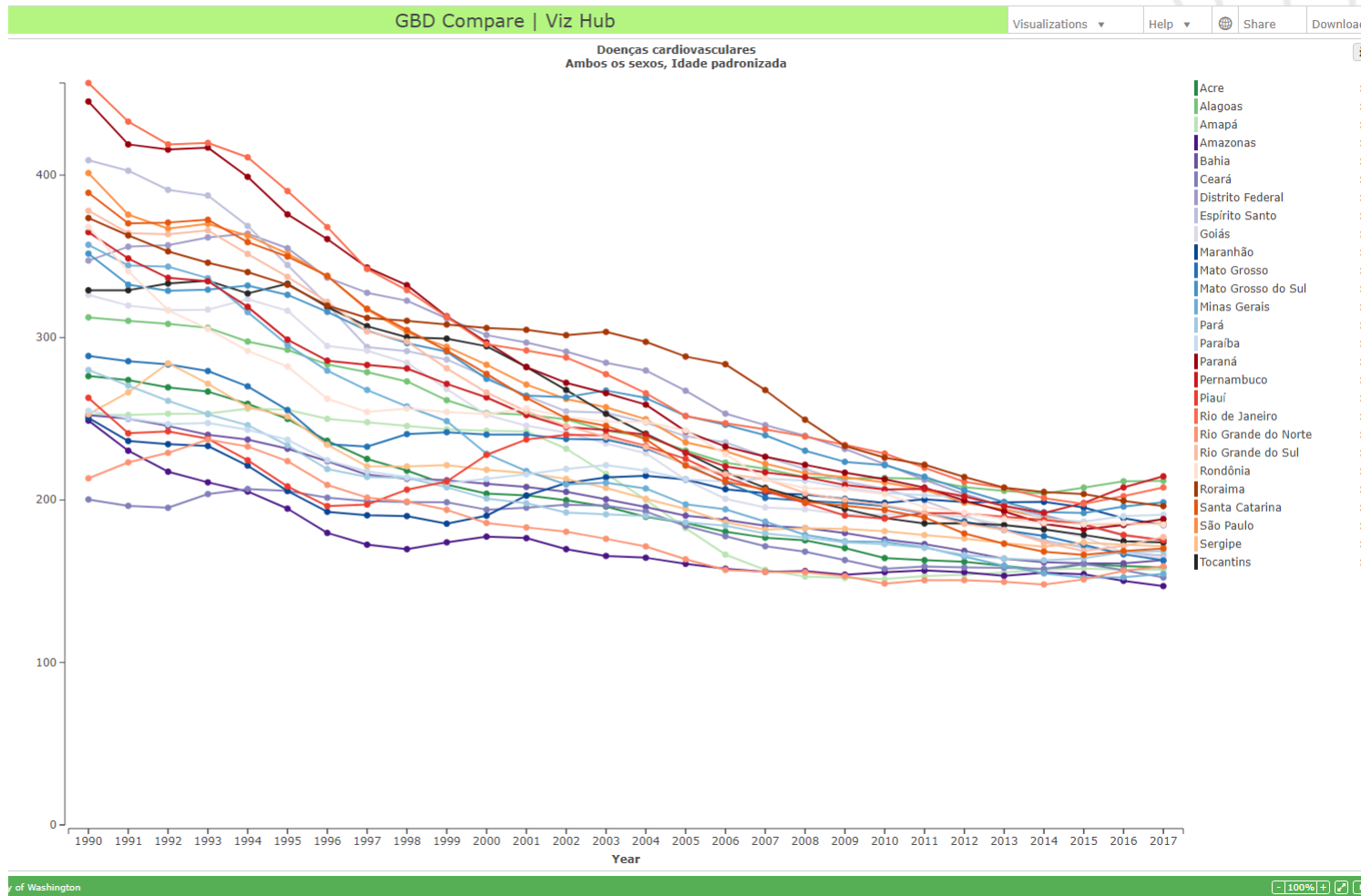
- *Publicações com dados nacionais (articles)*
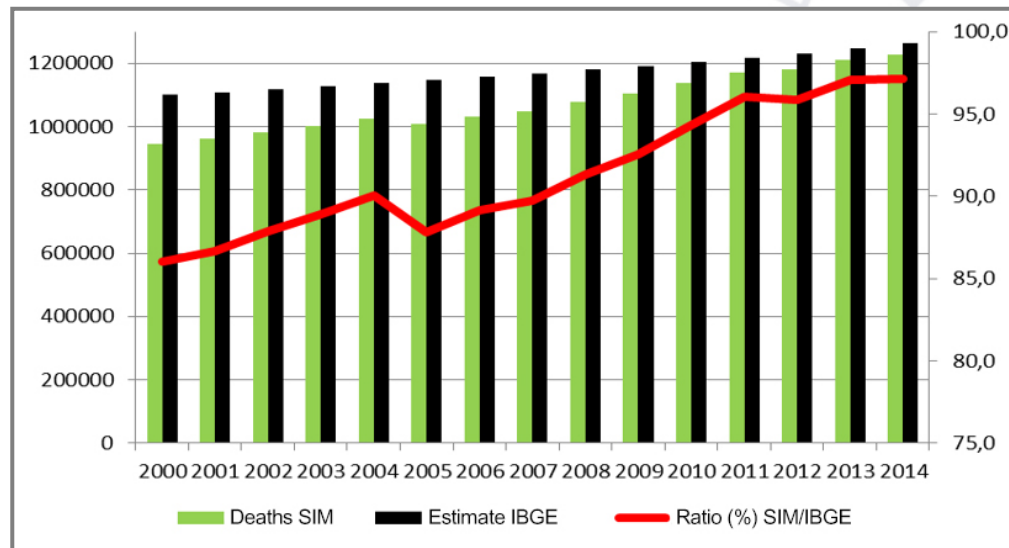
GBD Compare: The gateway to GBD

Map view

Time Series

National Mortality Information System
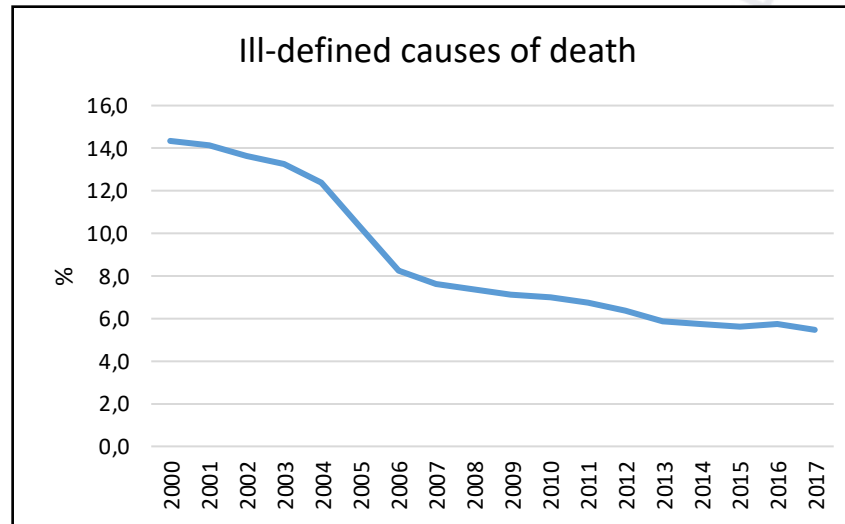
Underreporting rates

Underreporting is 2% overall in Brazil
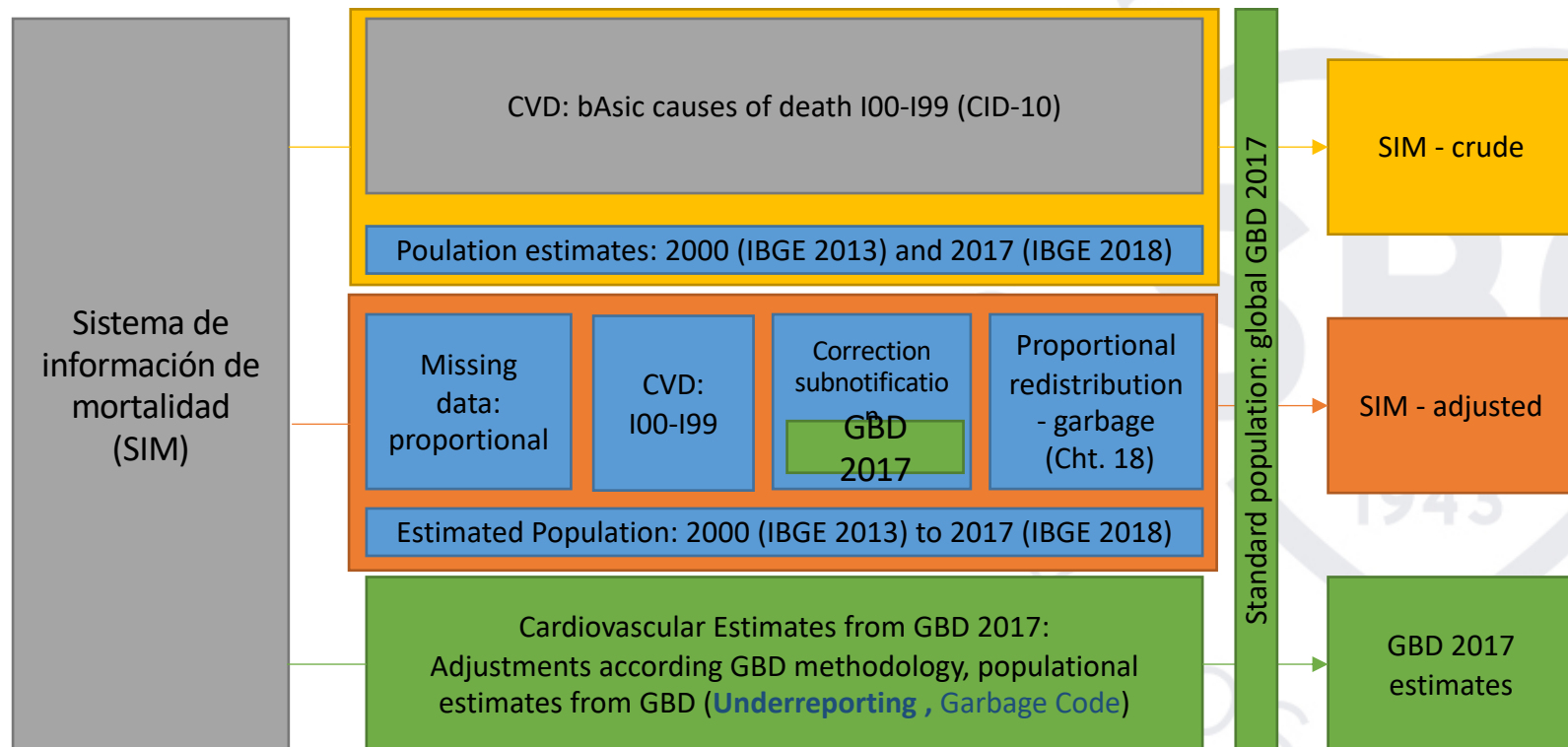
National Mortality Information System

Proportion of Ill-defined codes - garbage codes from Chapter 18 (R codes)
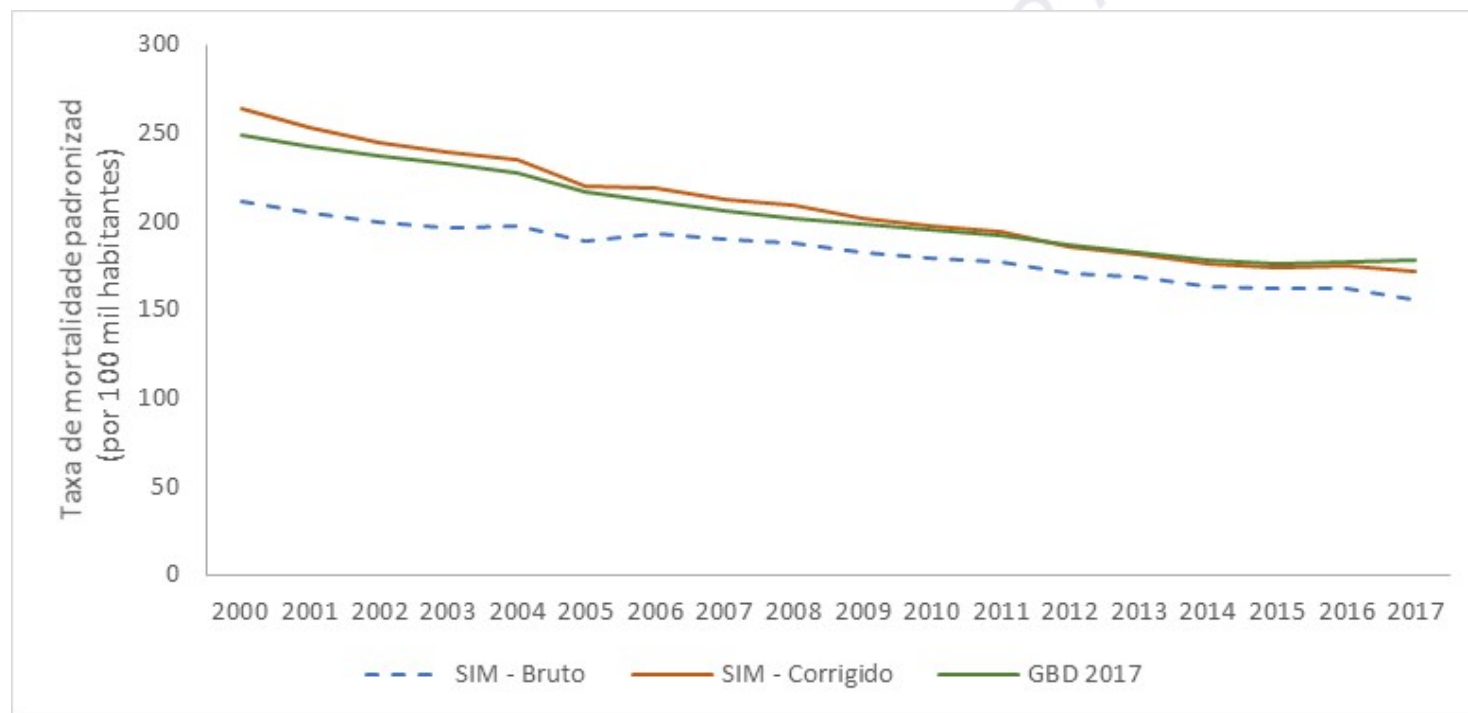

Ill-defined causes of death

Mortality information system (SIM) Differences between gross, adjusted estimates and GBD
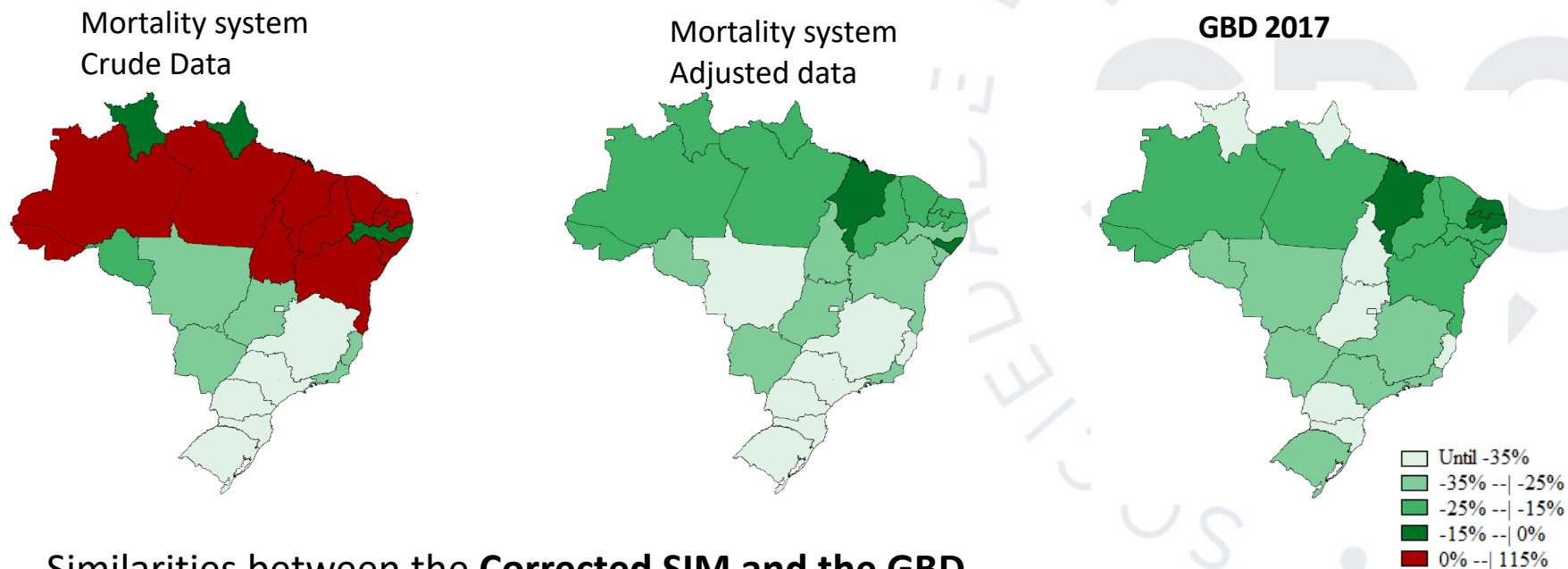
Standardized cardiovascular disease mortality rates according to the Crude and Corrected SIM and the GBD Study 2017. Brazil, 2000 to 2017. Sources: SIM and Brazil GBD Study 2017.
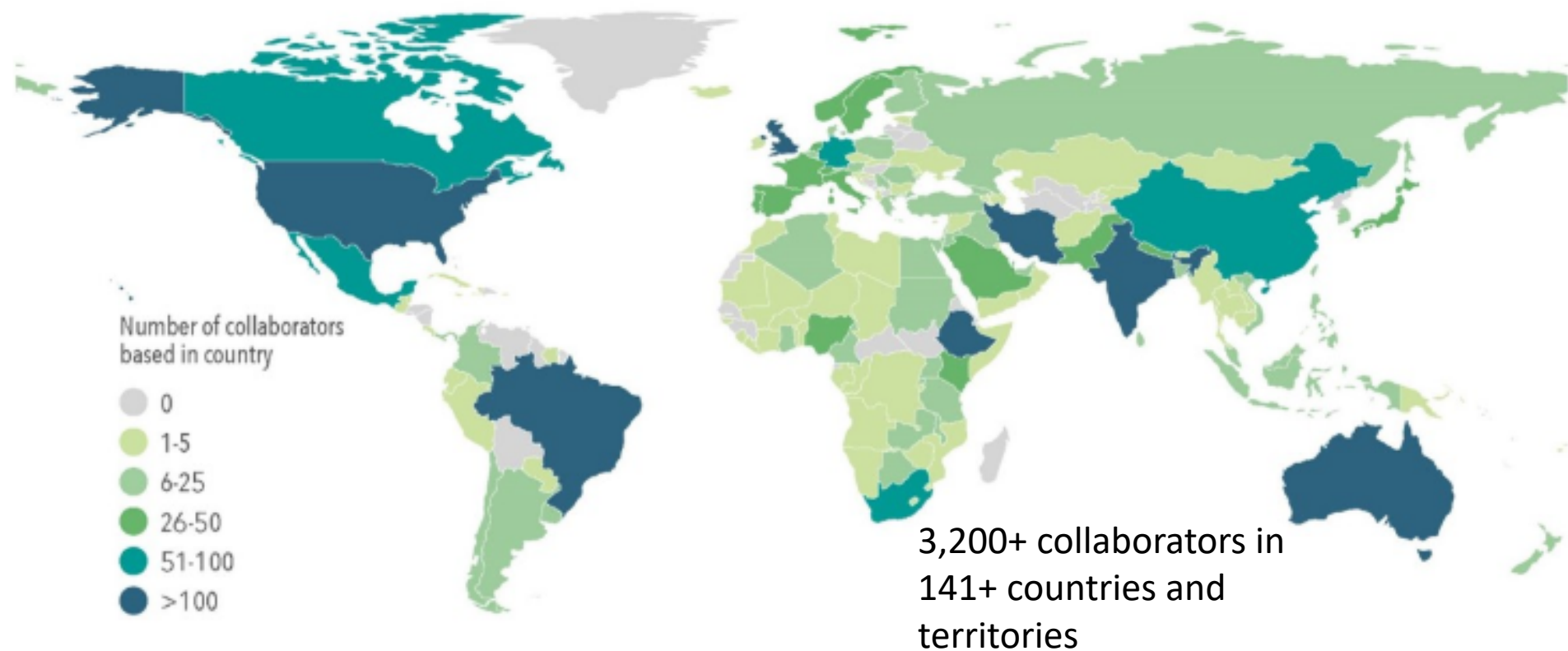
MALTA, Deborah Carvalho; TEIXEIRA, Renato; OLIVEIRA, Gláucia Maria Moraes de   RIBEIRO, Antonio L.. **Mortalidade por Doenças Cardiovasculares Segundo o Sistema de Informação sobre Mortalidade e as Estimativas do Estudo Carga Global de Doenças no Brasil, 2000-2017.***ABC*--2020. ISSN 1678-4170. https://doi.org/10.36660/abc.20190867.

Changes in the age-standardized mortality rate between 2017

Mortality system
Crude Data

Mortality system
Adjusted data

GBD 2017

Until -35%
-35% --| -25%
-25% --| -15%
-15% --| 0%
0% --| 115%

Similarities between the **Corrected SIM and the GBD Study 2017**. However, the use of the Crude SIM data is not recommended

MALTA et al. **Mortalidade por Doenças Cardiovasculares Segundo o Sistema de Informação sobre Mortalidade e as Estimativas do Estudo Carga Global de Doenças no Brasil, 2000-2017.** *ABC.* 15--2020. ISSN 1678-4170. https://doi.org/10.36660/abc.20190867.

GBD COLLABORATOR NETWORK

Number of collaborators based in country
- 0
- 1-5
- 6-25
- 26-50
- 51-100
- >100

3,200+ collaborators in 141+ countries and territories

Rede GBD Brasil and IAC meeting, Rio de Janeiro 31 October 2018.

Thanks!
Deborah Malta
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