

Demonstration: Introduction to GBD Compare

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So this video is meant to be an overview of a tool that I use quite frequently in my research and teaching called **GBD Compare**. It is an online tool to visualize results from the Global Burden of Disease (GBD) study published by the Institute for Health Metrics and Evaluation.

As mentioned in the lectures, the GBD study is an important source of information on health statistics for all countries. It provides estimates for a range of different causes of death and disability around the world, as well as risk factors. It gives really important information for individuals who want to understand health trends in their countries, plan interventions, assess progress on health systems and policy issues, and, for NCDs, understand the evolving and growing burden of disease.

So this video is an orientation to the tool with a focus on NCDs, but not exclusive to that.

Getting Started with the Tool

The first thing you need to do when you get into this tool, which is at this website also linked in the course, is to get an account. It is a free account, but they want you to register.

After you log in to the GBD Compare tool, this is the landing page, which is personally not my favorite page because it is not the place I go first for information. But this is a tree map, or a square pie chart, showing the breakdown of different causes of death and disability. It defaults to the world average.

Let me show you, in order of frequency and usefulness, the tabs that I use in this tool and some examples.

Understanding the Cause and Risk Factor Hierarchies

The first thing I think is important to understand is the **cause hierarchy** and the **risk factor hierarchy** in the GBD study.

The cause hierarchy is basically a nested structure of different causes grouped into three main groups:

- Group 1: communicable, maternal, neonatal, and nutritional diseases
- Group 2: non-communicable diseases (NCDs)
- Group 3: injuries

Within these groups are subgroups, called level two. For example: cardiovascular diseases, cancers, mental health conditions, maternal and neonatal disorders.

As you go further down:

- Level three divides causes further, for example cardiovascular disease into stroke vs ischemic heart disease
- Level four is the most detailed level, such as ischemic stroke vs intracerebral hemorrhage

The same idea applies to risk factors. They are grouped into behavioral, environmental, and metabolic risk factors, with further subcategories like dietary risks and tobacco.

Basic vs Advanced Settings

Another important feature is the difference between **basic** and **advanced settings**.

Basic settings are for simple use. Advanced settings give more control over measures, age groups, and outputs. I generally recommend using advanced settings.

Using the Plot Tab for Single Estimates

Now let's start with the **plot tab**, which I use most frequently.

This is where I go to quickly look up numbers for a country.

For example, if we want ischemic heart disease mortality in Indonesia:

1. Select "Causes of death and injury"
2. Search for ischemic heart disease
3. Select the measure, such as deaths
4. Choose the location (Indonesia)

You then choose:

- Age group and sex
- Metric (rate vs number)

For example, a crude death rate across all ages can be switched to a total number of deaths.

You can also select specific age groups, such as 50–69 years, where rates are typically higher.

Age Standardization

Another key measure is the **age-standardized death rate**.

GBD standardizes using the global population for the most recent year. This allows comparisons across countries but not necessarily across studies using different standard populations.

Using the Map Tab for Cross-Country Comparisons

The **map tab** is the second most useful feature.

Here you can see how a metric varies across countries.

For example, age-standardized mortality from ischemic heart disease shows:

- Higher rates in places like Egypt and Central Asia
- Lower rates in East Asia and Western Europe

You can:

- Click countries to highlight them
- Filter by thresholds (for example, rates above 200 per 100,000)
- Change years to observe trends over time
- View annual percentage change

Comparing Countries Over Time

The **line plot feature** allows comparisons across countries.

For example:

- Indonesia vs Kenya
- Regional comparisons such as African Union regions

You can also download charts or raw data for use in presentations.

Patterns Tab: Age and Cause Patterns

The **patterns tab** shows how disease burden varies by age.

For example:

- Ischemic heart disease rates across age groups
- Contributions of sub-causes within a category like cardiovascular disease

You can also compare:

- Countries
- Years
- Sex

Tree Map: Distribution of Causes

The landing page tree map shows proportions of causes of death or DALYs.

For example, in Indonesia:

- Stroke accounts for about 18 percent of deaths
- Liver cirrhosis about 5 percent
- COVID-19 still contributed significantly in 2025

You can also explore:

- Changes over time
- Specific age groups or sexes
- Focus on NCDs alone

Risk Factor Analysis

You can switch from causes to **risk factors**.

This shows:

- Contribution of risk factors to disease
- For example, tobacco contributes to cardiovascular disease, cancer, diabetes, and respiratory disease

You can also explore:

- Air pollution (ambient vs household)
- Behavioral vs environmental risks

Arrow Diagram: Rankings Over Time

The **arrow diagram** shows how rankings of diseases or risk factors change over time.

For example:

- Shifts in importance between 1990 and 2023
- Breakdown into more detailed levels (level one vs level two)

This helps track epidemiological transitions.

Risk Burden Visualization

The **risk burden tab** shows how different risk factors contribute to disease burden.

For example:

- High systolic blood pressure is a leading risk factor
- Tobacco includes smoking, secondhand smoke, and chewing tobacco

You can explore deeper levels of detail in the hierarchy.

GBD Results Tool for Raw Data

Finally, if you want numerical data, use the **GBD Results Tool**.

This allows you to:

- Select multiple causes and locations
- Download full datasets
- Build tables for analysis

Closing

So hopefully that gives you an overview of the GBD Results tool and mostly the GBD Compare tool, and how you can use that in your research and practice.