

THE GBD APPROACH TO TRACKING HEALTH PROGRESS AND CHALLENGES

For decision-makers striving to create evidence-based policy, the GBD approach provides numerous advantages over other epidemiological studies. These key features are further explored in this report.

A CRITICAL RESOURCE FOR INFORMED POLICYMAKING

To ensure a health system is adequately aligned to a population's true health challenges, policymakers must be able to compare the effects of different diseases that kill people prematurely and cause ill health. The original GBD study's creators developed a single measurement, disability-adjusted life years (DALYs), to quantify the number of years of life lost as a result of both premature death and disability. One DALY equals one lost year of healthy life. DALYs will be referred to by their acronym, as "years of healthy life lost," and "years lost due to premature death and disability" throughout this publication. Decision-makers can use DALYs to quickly compare the impact caused by conditions such as cancer and depression since the conditions are assessed using a comparable metric. Considering the number of DALYs instead of causes of death alone provides a more accurate picture of the main drivers of poor health. Thanks to the use of this public health monitoring tool, GBD 2010 researchers found that in most countries, as mortality declines, disability becomes increasingly important. Information about changing disease patterns is a crucial input for decision-making, as it illustrates the challenges that individuals and health care providers are facing in different countries.

In addition to comparable information about the impact of fatal and non-fatal conditions, decision-makers need comprehensive data on the causes of ill health that are most relevant to their country. The hierarchical GBD cause list (available on IHME's website at <http://ihmeuw.org/gbdcauselist>) has been designed to include the diseases, injuries, and sequelae that are most relevant for public health policymaking. To create this list, researchers reviewed epidemiological and cause of death data to identify which diseases and injuries resulted in the most ill health. Inpatient and outpatient records were also reviewed to understand the conditions for which patients sought medical care. For example, researchers added chronic kidney disease to the GBD cause list after learning that this condition accounted for a large number of hospital visits and deaths.

GBD provides high-quality estimates of diseases and injuries that are more rigorous than those published by disease-specific advocates. GBD was created in part due to researchers' observation that deaths estimated by different disease-specific studies added up to more than 100% of total deaths when summed. The GBD approach ensures that deaths are counted only once. First, GBD counts the total number of deaths in a year. Next, researchers work to assign a single cause to each death using a variety of innovative methods (see Annex). Estimates of cause-specific mortality are then compared to estimates of deaths from all causes to ensure that the cause-

specific numbers do not exceed the total number of deaths in a given year. Other components of the GBD estimation process are interconnected with similar built-in safeguards, such as for the estimation of impairments that are caused by more than one disease.

Beyond providing a comparable and comprehensive picture of causes of premature death and disability, GBD also estimates the disease burden attributable to different risk factors. The GBD approach goes beyond risk factor prevalence, such as the number of smokers or heavy drinkers in a population. With comparative risk assessment, GBD incorporates both the prevalence of a given risk factor as well as the relative harm caused by that risk factor. It counts premature death and disability attributable to high blood pressure, tobacco and alcohol use, lack of exercise, air pollution, poor diet, and other risk factors that lead to ill health.

The flexible design of the GBD machinery allows for regular updates as new data are made available and epidemiological studies are published. Similar to the way in which a policymaker uses gross domestic product data to monitor a country's economic activity, GBD can be used at the global, national, and local levels to understand health trends over time.

Policymakers in Brazil, Colombia, Mexico, Norway, Saudi Arabia, and the United Kingdom are exploring collaborations with IHME to adopt different aspects of the GBD approach. In the past, many countries in the Latin American and Caribbean region have carried out burden of disease studies, including Brazil, Chile, Colombia, Costa Rica, Cuba, Ecuador, Mexico, Peru, and Uruguay. In this region, GBD serves as an important tool for decision-making in health along with other tools such as cost effectiveness studies of health interventions, social values, and political economy. Box 3 contains some decision-makers' and policy-influencers' reflections about the value of using GBD tools and results to inform policy discussions.

Box 3: Views on the value of GBD for policymaking

"While the GBD 2010 offers significant epidemiologic findings that will shape policy debates worldwide, it also limns the gaps in existing disease epidemiology knowledge and offers new ways to improve public health data collection and assessment."

Dr. Paul Farmer, *Chair, Department of Global Health and Social Medicine, Harvard Medical School*

"With a subnational burden of disease study, Mexico was able to see clearly where it should focus its limited health resources. Those findings led to a major health reform that transformed the approach to improving population health through universal coverage." **Julio Frenk**, *Dean of Harvard School of Public Health and former Minister of Health in Mexico*

"At UNICEF we've always had a focus on metrics and outcomes as a driver of the work we do. We welcome the innovation, energy, and attention that this work is bringing to the importance of holding ourselves accountable to meaningful outcomes and results."

Dr. Mickey Chopra, *UNICEF Chief of Health/Associate Director of Programmes*

GBD data visualization tools (see Box 4) on the IHME website allow users to interact with the results in a manner not seen in past versions of the study. Users report that the visualization tools provide a unique, hands-on opportunity to learn about the health problems that different countries and regions face, allowing them to explore seemingly endless combinations of data. The following list illustrates the range of estimates that can be explored using the GBD data visualization tools:

- Changes between 1990 and 2010 in leading causes of death, premature death, disability, and DALYs as well as changes in the amount of health loss attributable to different risk factors across age groups, sexes, and locations.
- Rankings for 1990 and 2010 of the leading causes of death, premature death, disability, and DALYs attributable to risk factors across different countries and regions, age groups, and sexes.
- Changes in trends for 21 cause groups in 1990 and 2010 in different regions, sexes, and metrics of health loss.
- The percentage of deaths, premature deaths, disability, or DALYs in a country or region caused by myriad diseases and injuries for particular age groups, sexes, and time periods.
- The percentage of health loss by country or region attributable to specific risk factors by age group, sex, and time period.

In addition to promoting understanding about the major findings of GBD, these visualization tools can help government officials build support for health policy changes, allow researchers to visualize data prior to analysis, and empower teachers to illustrate key lessons of global health in their classrooms.

To use the GBD data visualization tools, visit www.ihmeuw.org/GBDcountryviz.

Box 4: GBD data visualization tools

For the first time in the history of GBD research, IHME has developed many free data visualization tools that allow individuals to explore health trends for different countries and regions. The visualization tools allow people to view GBD estimates through hundreds of different dimensions. Only a few examples are explored in the figures throughout this document. We encourage you to visit the IHME website to use the GBD data visualization tools and share them with others.

THE EGALITARIAN VALUES INHERENT IN GBD

When exploring the possibility of incorporating GBD measurement tools into their health information systems, policymakers should consider the egalitarian values on which this approach is founded.

The core principle at the heart of the GBD approach is that everyone should live a long life in full health. As a result, GBD researchers seek to measure the gap between this ideal and reality. Calculation of this gap requires estimation of two different components: years of life lost due to premature death (YLLs) and years lived with disability (YLDs).

To measure years lost to premature death, GBD researchers had to answer the question: “How long is a ‘long’ life?” For every death, researchers determined that the most egalitarian answer to this question was to use the highest life expectancy observed in the age group of the person who died. The Annex contains more information about the estimation of YLLs.

In order to estimate years lived with disability, or YLDs, researchers were confronted with yet another difficult question: “How do you rank the severity of different types of disability?” To determine the answer, researchers created disability weights based on individuals’ perceptions of the impact on people’s lives from a particular disability, everything from tooth decay to schizophrenia.

GBD REGIONAL CLASSIFICATIONS

GBD 2010 created regions based on two criteria: epidemiological similarity and geographic closeness. The GBD regional groupings differ from the World Bank regional classification system. More information about GBD regional classifications can be found on the IHME website: www.ihmeuw.org/gbdfaq.

Rather than using the GBD regional classifications, this report provides findings based on the countries in World Bank’s regional definition of Latin America and the Caribbean. Figures reflect World Bank regional classifications. GBD, however, does not produce estimates for territories or countries with fewer than 50,000 people or countries that have only recently come into existence.