

USING GBD TO ASSESS COUNTRIES' HEALTH PROGRESS

Differences in population growth and ages across countries can make a country with a younger population appear better in terms of health performance than a country with an older population. Similarly, countries with low population growth will add less disease burden over time than countries with a fast-growing population. Researchers can remove the impact of these factors to isolate what is important for comparisons of health performance using age-standardized rates of DALYs and YLLs.

GBD can be used to compare and contrast disease patterns across countries. Figure 27 shows age-standardized causes of DALYs per 100,000 people in select countries in sub-Saharan Africa. The leading causes of premature death and disability are aggregated. For example, causes such as low back pain and neck pain are grouped into the category musculoskeletal disorders. For some of the poorer countries, like Guinea-Bissau and Liberia, rates of communicable, newborn, nutritional, and maternal conditions exceeded 40,000 age-standardized DALYs for every 100,000 people in 2010, with malaria accounting for most of the burden rates.

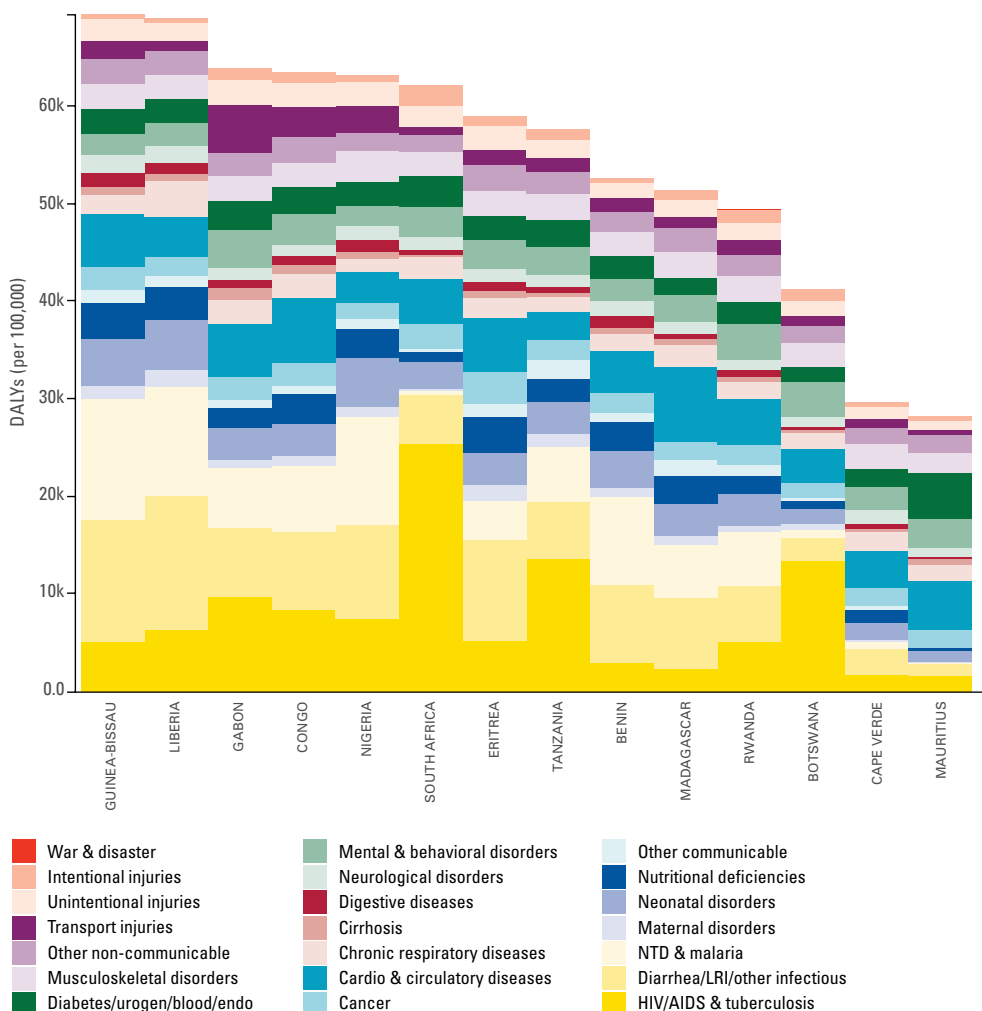
For countries classified as upper-middle income, such as Botswana and South Africa, if their rates exceed 10,000 age-standardized DALYs per 100,000 people, usually they are experiencing particularly severe HIV/AIDS epidemics, which account for a substantial amount of health loss. Otherwise, upper-middle-income countries feature much lower rates of communicable, newborn, nutritional, and maternal conditions, with Cape Verde and Mauritius both having age-standardized DALY rates less than 8,000 per 100,000 people. Notably, several countries record relatively high age-standardized rates of DALYs due to transport injuries; Gabon, for example, had about 4,500 age-standardized DALYs associated with transport injuries per 100,000 people. For context, more DALYs were caused by road injuries in Gabon in 2010 than diarrheal diseases and meningitis combined. All countries had sizeable rates of DALYs from non-communicable diseases, underscoring the double burden of disease from both communicable and non-communicable diseases that many sub-Saharan Africa countries now face.

The GBD approach affords countries a unique opportunity to explore their success in improving health outcomes over time. GBD can also be used to better understand how fast a country's health is improving relative to similar countries. This type of progress assessment is called benchmarking. Benchmarking is a tool that can help countries put their health achievements in context and identify areas for improvement. IHME invites countries interested in collaborating on benchmarking exercises to contact us.

As examples of a benchmarking exercise, Figures 28 and 29 show levels of years of life lost, or YLLs, in countries of the region, ranked relative to regional averages in 2010. Figure 28 includes countries within sub-Saharan Africa that have received a

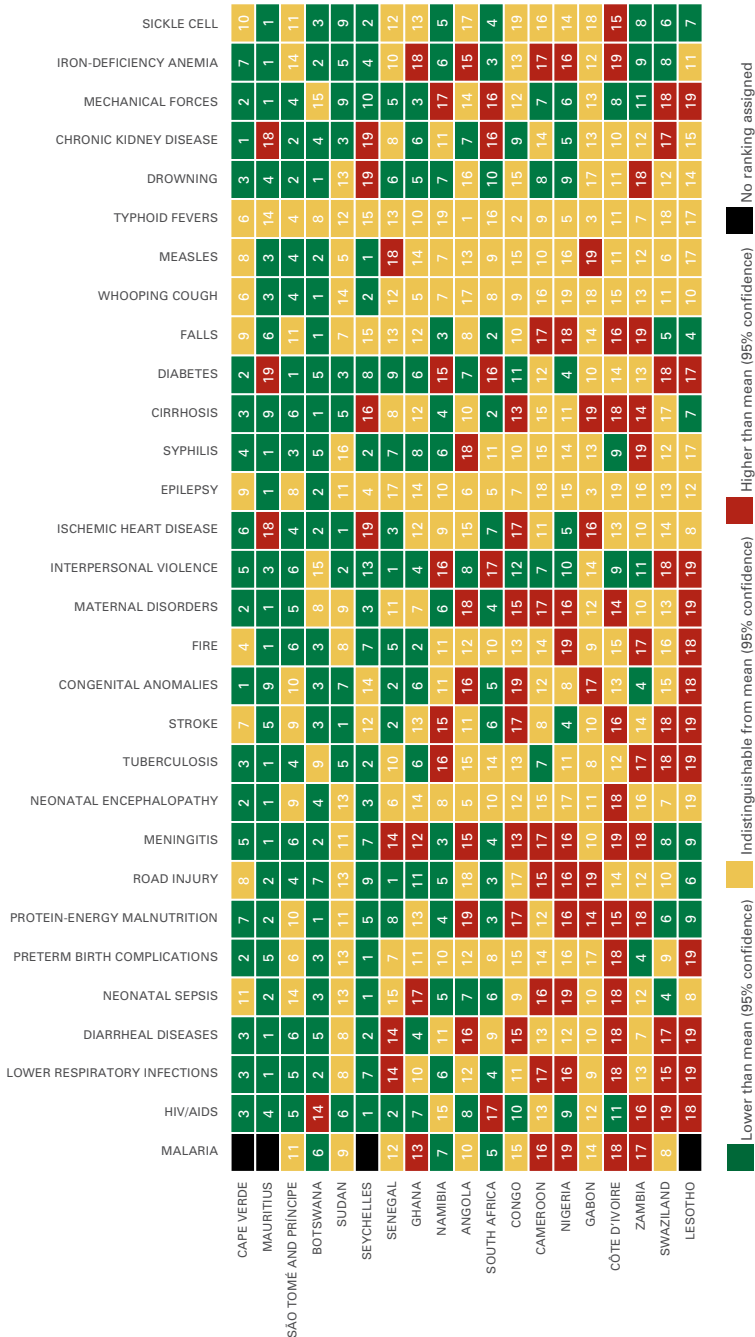
lower- or upper-middle-income designation, while Figure 29 features all countries categorized as low income by the World Bank. For these figures, regional averages are based on income categories, such that the average for Figure 28 is computed from trends in lower- and upper-middle-income countries and Figure 29 rankings are generated based on the “subregional” average for low-income countries in sub-Saharan Africa. The columns are arranged by the top 30 causes of YLLs in this subset of sub-Saharan African countries. For each cause, rankings are coded to reflect each country’s level of age-standardized YLLs relative to the others. The best performers

Figure 27: Age-standardized DALY rates across select countries in sub-Saharan Africa, 2010



Note: The size of the colored portion in each bar represents number of age-standardized DALYs per 100,000 people attributable to each cause. The causes are aggregated. For example, musculoskeletal disorders include low back pain and neck pain. To view an interactive version of this figure, visit IHME's website: <http://ihmeuw.org/gbdcausepattern>.

Figure 28: Causes of leading years of life lost, lower- and upper-middle-income countries in sub-Saharan Africa, relative to region average, 2010



Lower than mean (95% confidence) Indistinguishable from mean (95% confidence) Higher than mean (95% confidence) No ranking assigned

Note: The columns are ordered by the absolute number of YLLs for that particular year. The numbers indicate the rank across countries for each cause in terms of age-standardized YLL rates, with 1 as the best performance and 19 as the worst.

for each cause are in green while the worst performers for each cause appear in red; yellow indicates that for the given cause, the country's rank is not statistically distinguishable from the subregional average in 2010. Black indicates no ranking was assigned due to zero YLLs from a given cause.

Among the lower- and upper-middle-income countries in Figure 28, the smaller island countries like Cape Verde, São Tomé and Príncipe, and the Seychelles generally performed better than the lower- and upper-middle-income subregion as a whole. The exceptions are ischemic heart disease, cirrhosis, drowning, and chronic kidney disease in the Seychelles, for which the country performed significantly worse than the rest of subregion. Conversely, the Seychelles performed significantly better than the rest of the subregion for HIV/AIDS. None of these lower- and upper-middle-income countries universally performed worse than the rest of the subregion; however, by comparison, Côte d'Ivoire and Lesotho each feature far more red designations, indicating that significantly more years of life are lost in these countries than the region as a whole for conditions like lower respiratory conditions, diarrheal diseases, and stroke. Interestingly, no significant differences were found across countries for typhoid fevers.

Of the low-income countries featured in Figure 29, Kenya, Mauritania, and Rwanda generally performed better than the rest of the low-income subregion, posting significantly fewer years of life lost for most conditions except for interpersonal violence in Rwanda and HIV/AIDS in Kenya. Mauritania and Comoros performed the best in the subregion on malaria and HIV/AIDS, respectively. When looking at sub-Saharan Africa's greatest driver of premature death, Burkina Faso, Mali, and Mozambique had significantly more years of life lost to malaria than the rest of the subregion. Similarly, a number of countries experienced significantly more health loss due to HIV/AIDS than the rest of subregion: Central African Republic, Kenya, Malawi, Tanzania, Uganda, and Zimbabwe. For neonatal sepsis, fire, whooping cough, and typhoid fevers, no country performed significantly worse than subregional averages for YLLs.

Among increasingly burdensome non-communicable diseases like stroke and ischemic heart disease, four countries consistently documented significantly less health loss than the rest of the subregion: Ethiopia, Kenya, Mozambique, and Tanzania. Madagascar, however, performed significantly worse than the rest of the subregion for these two cardiovascular conditions. Across all low-income countries in sub-Saharan Africa, the Central African Republic appeared to have the most population health challenges, with significantly more life lost to 13 diseases than the regional average, most of which were either communicable conditions or injuries. Nonetheless, this country still performed better than average across the subregion for three diseases: neonatal sepsis, typhoid fevers, and epilepsy.

To further illustrate how benchmarking can be implemented at the country level, IHME is currently working with public health experts in the United Kingdom to explore changes in population health over time and to compare its health performance

Figure 29: Causes of leading years of life lost, low-income countries in sub-Saharan Africa, relative to region average, 2010



Note: The columns are ordered by the absolute number of YLLs for that particular year, with greatest burden on the left. The numbers indicate the rank across countries for each cause in terms of age-standardized YLL rates, with 1 as the best performance and 27 as the worst.

to other countries with similar and higher levels of health spending. Through close collaboration with decision-makers at the National Health Service and Public Health England, the IHME-UK benchmarking project is examining the context in which health progress has occurred, such as the UK's provision of universal health coverage and its implementation of numerous public health interventions.

For the UK, GBD estimates of life expectancy and healthy life expectancy (HALE), YLLs, YLDs, and DALYs will provide a detailed and comprehensive picture of changes in health outcomes over time. Comparing GBD estimates across countries will elucidate areas of health where the UK performs both better and worse than its peers. In addition, analysis of potentially modifiable risk factors can shed light on ways that public health policy could address major causes of ill health and premature death. The IHME-UK benchmarking study aims to identify key opportunities to speed up the pace of health improvements in the nation.