

THE GLOBAL ECONOMIC COST OF CANCER

L I V E S T R O N G ®



ABOUT THE GLOBAL ECONOMIC COST OF CANCER REPORT

Cancer is taking an enormous human toll around the world and is a growing threat in low- to middle-income countries. And little has been known about what that toll means in dollars, until now.

The American Cancer Society and LIVE**STRONG** joined together to conduct a landmark study of the economic cost of all causes of death globally, including cancer and other noncommunicable and communicable diseases.

Cancer is the world's leading cause of death, followed by heart disease and stroke. This critical new joint report, authored by Dr. Rijo John and Dr. Hana Ross of the American Cancer Society, shows that cancer also has the greatest economic impact from premature death and disability of all causes of death worldwide. This data provides compelling evidence that balancing the world's global health agenda to address cancer will not only save millions of lives, but also billions of dollars.

EXECUTIVE SUMMARY

THE OVERALL ECONOMIC IMPACT

For the first time, research has shown that cancer has the most devastating economic impact of any cause of death in the world.

The total economic impact of premature death and disability from cancer worldwide was \$895 billion in 2008. This figure represents 1.5 percent of the world's gross domestic product (GDP). This economic toll from cancer is nearly 19 percent higher than heart disease, the second leading cause of economic loss (\$895 billion and \$753 billion, respectively). This analysis did not include direct medical costs, which would further increase the total economic cost caused by cancer.

The lost years of life and productivity caused by cancer represent the single largest drain on the global economy, compared to other causes of death, including HIV/AIDS and other infectious diseases.

The first-of-its-kind analysis of the global economic impact of cancer is contained in this report released by the American Cancer Society and **LIVESTRONG**. The landmark economic study comes at a time when cancer and other noncommunicable diseases are gaining more attention from health ministers around the world and in the wake of the U.N. General Assembly call for a high-level meeting on the issue in September 2011.

Death and disability from lung cancer, colon/rectal cancer, and breast cancer account for the largest economic costs on a global scale. In low-income countries, cancers of the mouth and throat, cervix, and breast have the greatest impact. While this report focuses on the economic burden of cancer globally, the burden on individuals and families is also profound, especially in low- and middle-income countries where the loss of income due to sickness or death can quickly undermine family finances. Targeted prevention and treatment strategies aimed at these and other preventable forms of cancer not only could save lives, but also improve economic development prospects in many nations.

These and other findings in the report are more important than ever in light of the fact that cancer is projected to become the leading cause of death

worldwide, followed by heart disease and stroke. There were an estimated 7.6 million deaths from cancer in 2008. Sixty percent of those deaths and more than half of the estimated 12.4 million cases of cancer diagnosed each year take place in developing countries, yet little study has been focused on the economic impact of the disease in countries where preventable forms of cancer are taking a disproportionate toll.

Although the exact economic impact of cancer and other noncommunicable diseases is not completely understood, there is little doubt that the impact is immense. The research, based on death and disability from 17 forms of cancer among 188 member nations of the World Health Organization (WHO), confirms this conclusion. The \$895 billion removed from the economy amounts to 1.5 percent of the total global GDP.

DISTRIBUTION OF ECONOMIC IMPACT

As expected, the impact is not evenly distributed among the nations.

For instance, while the United States has the highest economic loss from cancer in absolute dollars, the disease costs the country 1.73 percent of its GDP. But cancer in Hungary, with its much smaller population and domestic economy, takes an economic toll that is 3.05 percent of its GDP. Twenty-five nations are losing more than 2 percent of their GDP to deaths and disability caused by cancer. Nearly half of all countries studied are losing more than 1 percent of GDP to the disease. The WHO and global health experts believe that significant costs from cancer could be mitigated by targeted, cost-effective interventions that have worked in more affluent nations.

The study further confirms that the “silent pandemic” of cancer is spreading through low- and middle-income countries. Without a substantive global response, it could overwhelm public health systems, threaten social structures, and undermine economic development efforts.

Cancers of the lung, bronchus, and trachea by far account for the largest drain – nearly \$180 billion – on the global economy. That’s not surprising, given that smokers die an average of 15 years earlier than nonsmokers. If current trends continue, tobacco will kill seven million people annually by 2020 and eight million per year by 2030, with more than 80 percent of the deaths taking place in low- to middle-income countries. One-third of those deaths are the result of cancers.

Unfortunately, tobacco kills thousands of nonsmokers every year as well – among them an estimated 200,000 who are exposed to secondhand smoke in the workplace.

Because the death and disability toll from lung cancer remains high across income levels of nearly all nations, efforts like the WHO Framework Convention on Tobacco Control (FCTC) could have a significant impact in reducing economic losses. The WHO FCTC is an international treaty signed by 168 countries to regulate the sale and marketing of tobacco products.

Success at tobacco control could pay other dividends in both public health and economic development, the research concludes. Intervention programs targeted to reduce tobacco use could also produce favorable results in controlling cardiovascular and respiratory diseases.

Another finding in the report illustrates the heavy burden individuals in less affluent nations must bear due to the lack of awareness and effective interventions for some types of cancer. Despite the fact that most cases of cervical cancer can be prevented or treated effectively, 274,000 women die from the disease yearly. Approximately 241,000 of these deaths are among women in low- and middle-income nations.

The economic impact of cancer of the cervix in low-income countries is equally disproportionate and compelling, the analysis shows.

Among nations classified by the World Bank as low income, cervical cancer accounts for more than 10 percent of the economic loss, second only to mouth and throat cancers.

Unfortunately, the majority of women in low-income countries do not have access to care that can prevent the onset of cervical cancer or detect it early enough for a cure. As a result, many women are diagnosed too late to benefit from lifesaving treatment. In contrast, a large proportion of women living in high-income countries have benefited from routine screening and treatment modalities for more than 50 years, and, as a result, cervical cancer rates have dropped dramatically in those nations.

Young women in developed countries have also gained access to a vaccine against the most common strains of human papillomavirus (HPV). This potentially lifesaving tool will further strengthen their chances of leading longer, healthier lives. But to date, the price of this vaccine is out of reach to individuals in all but the wealthiest nations.

These findings should give added emphasis to the WHO's initiatives to expand cervical cancer prevention and control programs in developing nations.

IMPLICATIONS FOR BALANCING THE GLOBAL HEALTH AGENDA

In recent years, the global health agenda had been dominated by traditional public health issues such as HIV/AIDS, TB, and malaria; maternal and child health; and malnutrition. These efforts are noble and should not be diminished because of the threat these serious conditions continue to pose to individuals and public health.

But, as more data like this is accumulated, we must press for additional resources to combat cancer and to build a more balanced global health portfolio that includes health promotion, policy reform, prevention, and treatment of all noncommunicable diseases. In addition, strengthening health systems will make efforts to reduce the burden of both communicable and noncommunicable diseases more effective and sustainable.

We are all aware of the profound suffering and loss cancer causes among individuals and families. With the publication of this report, we are beginning to comprehend the toll the disease is taking on economic productivity worldwide. If we act quickly, we have the opportunity to avert needless deaths and suffering from cancer and to reduce its devastating economic impact.

HIGHLIGHTS FROM THE REPORT

- The total economic impact of premature death and disability from cancer worldwide was \$895 billion in 2008. This figure, which does not include direct costs of treating cancer, represents 1.5 percent of the world's GDP.
- Using a formula accepted by public health researchers and economists to measure the global burden of disease, there were 83 million years of "healthy life" lost due to death and disability from cancer in 2008.
- The top three cancers that account for the highest number of healthy life years lost were lung cancer (15.5 percent), stomach cancer (9.6 percent), and liver cancer (8.6 percent).
- The top three cancers that caused the most economic impact globally were lung cancer (\$188 billion), colon/rectum cancer (\$99 billion), and breast cancer (\$88 billion).
- Cancer causes the highest economic loss of all of the 15 leading causes of death worldwide. The economic toll from cancer is nearly 20 percent higher than heart disease, the second leading cause of economic loss (\$895 billion and \$753 billion, respectively).

HOW THE STUDY WAS CONDUCTED

Previous studies on the economic impact of diseases have been limited to a handful of high-income countries. There have been very few attempts to quantify the economic loss due to cancer or other diseases on a global basis. This study amounts to the first substantive effort to do so.

For this study, researchers used computations taken from the WHO that combine the death and disability dimensions of illness into a single summary, called a DALY (disability-adjusted life year), for 17 types of cancer, as well as the 15 leading causes of death. DALYs are a measure to describe the overall burden of diseases.

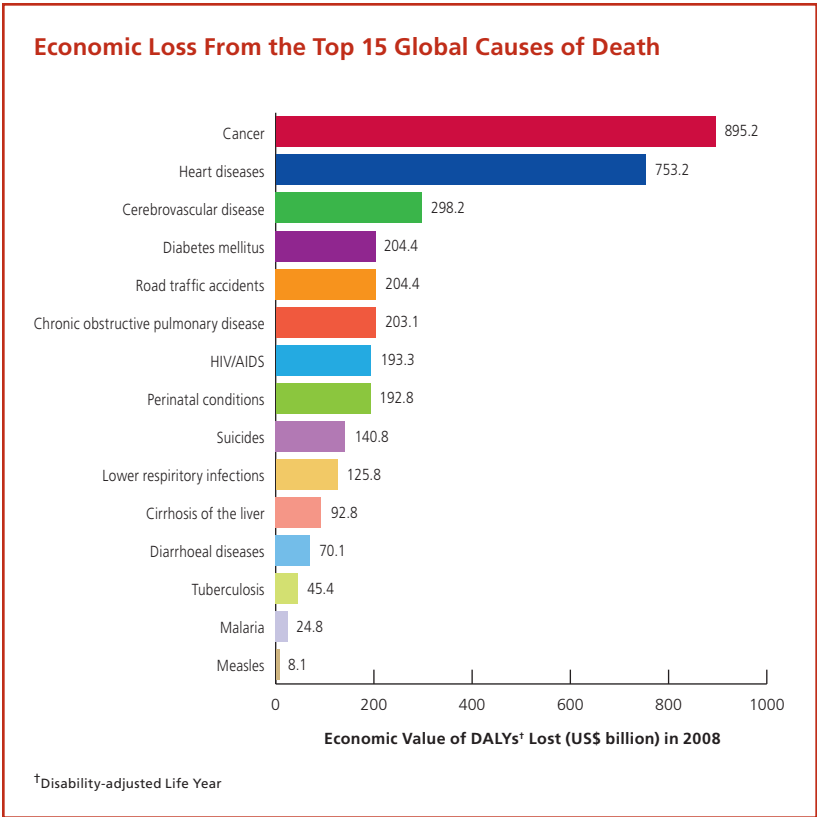
Simply put, a DALY is the sum of years of life lost by a patient due to premature death, as well as the years a patient lived with a disability resulting from a disease. The use of DALYs is not without criticism – the disability weights associated with some diseases can highly influence the score for certain diseases; the WHO and other global health groups employ the method.

The next step was to estimate the economic value of a year of healthy life in order to measure the overall impact of healthy lives lost to death and disability. This study uses a method employed by the WHO Commission on Macroeconomics and Health, which makes the assumption that each disability-adjusted life year can be valued at one year of the per-capita GDP for the nation being studied. Since the economic value of DALYs in this study would obviously be affected by the size of the country's per-capita GDP, the researchers decided to present these values as a percentage of each country's GDP. By using this measurement, comparisons between each country can be more meaningful. DALYs are widely used by the WHO and other groups to calculate the disease burden and are available for most countries in the world.

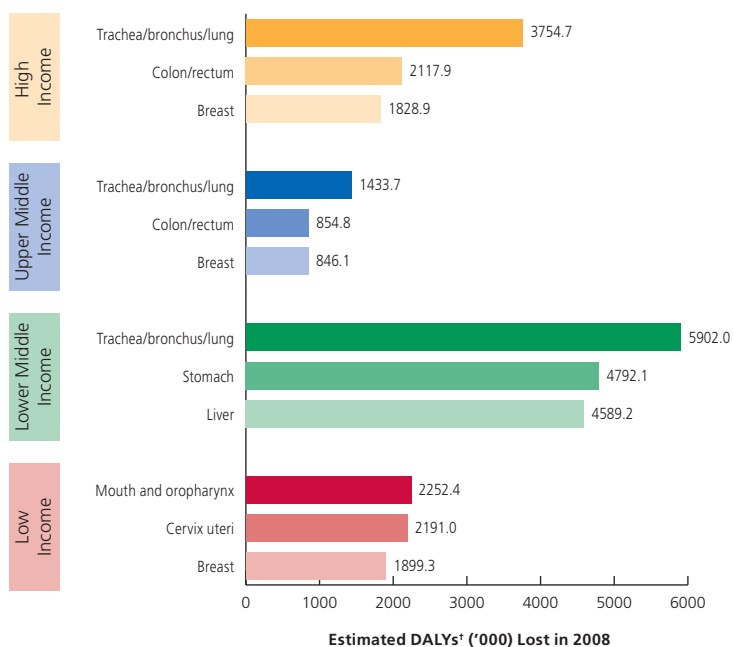
In addition, the researchers classified all countries they studied into one of four income categories as recognized by the World Bank's World Development Report of 2004. This adjustment allows for a better understanding and comparison for which cancers had the highest economic impact for countries in each of the four classifications: high-income countries, upper middle-income countries, lower middle-income countries

and low-income countries. The sum of the economic losses across these four groups was used to arrive at the world total, and it is expressed in 2008 U.S. dollars.

All data on DALYs and death rates was obtained from the WHO Global Burden of Disease estimates for 2004 for member countries and 2008 for the four aggregated country income groups.

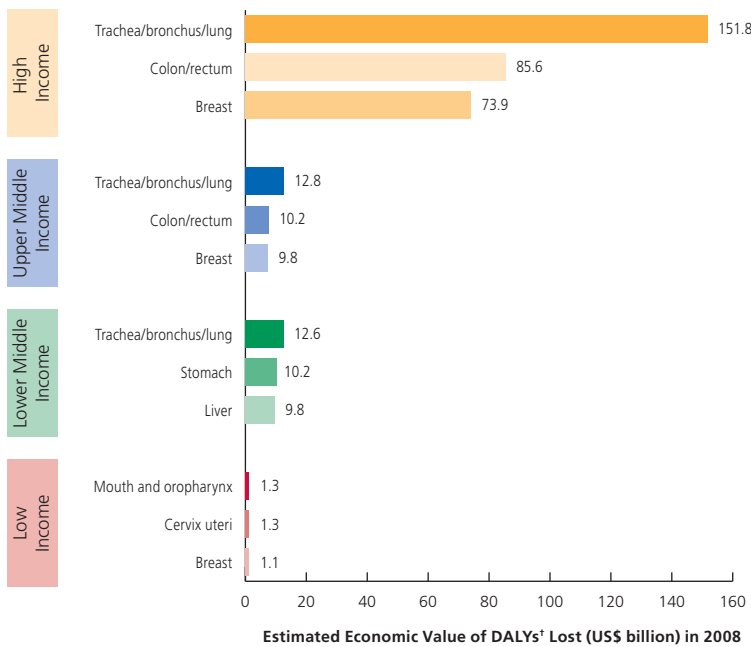


Top 3 Cancer Sites for Country-income Groups by DALYs Lost



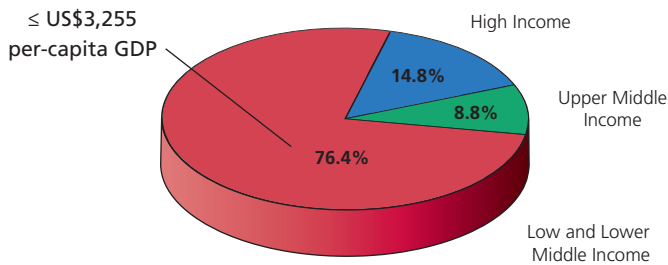
[†]Disability-adjusted Life Year

Top 3 Cancer Sites for Country-income Groups by Economic Value Lost



[†]Disability-adjusted Life Year

Distribution of World Population by Country-income Group



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