



# Measuring Mortality in the Democratic Republic of Congo

In an effort to scientifically document and monitor the scale and scope of the crisis in the Democratic Republic of Congo, the International Rescue Committee conducted a series of five mortality surveys in the country over seven years, in conjunction with some of the world's leading epidemiologists. The initial survey in 2000 found that 1.7 million people had died from conflict-related causes since war erupted in 1998. In the fifth and most recent study completed in 2007, the Burnet Institute of Australia and the IRC estimated that the conflict and its aftermath caused a total of 5.4 million deaths.

## Purpose Of Surveys

Violent conflict broke out in Congo in August of 1998 and quickly spread, leading to mass population displacement. The IRC and other aid groups began

providing emergency aid to people fleeing the fighting. More than a year into the crisis, the only death toll being cited was the unsourced figure of 100,000 reported by a prominent newspaper—a figure that relief organizations on the ground recognized as a gross underestimate.

As an aid agency with large programs in Congo, the IRC was deeply concerned that the crisis was not receiving international attention and humanitarian assistance in proportion to the immense need. Partnering with leaders in field epidemiology, the IRC set out to measure

the human cost of the war using standard and internationally accepted data collection methods most appropriate for estimating mortality in a conflict setting.

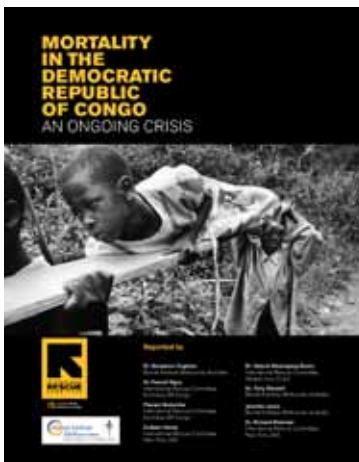
The IRC hoped that reliable mortality data would reveal the growing humanitarian crisis and lead to more international engagement to end the conflict, increased resources to address emergency and long-term needs and improved security to protect innocent civilians. The IRC also intended to use its findings to help guide its humanitarian programs and serve as a similar resource for the aid community.

## Methodology

To estimate war-related mortality, the IRC and experienced field epidemiologists compared how many deaths had actually occurred during the various survey periods and how many deaths would have occurred without the war. To find out how many deaths had occurred, we used a method called cluster sampling. This method is routinely used in public health studies in the west and developing countries, and it is the most widely used survey tool in complex humanitarian settings.

In each of our studies, top epidemiologists from the United States, Australia and Congo trained, led and closely supervised teams of local health professionals who fanned out across Congo, often traveling through thick jungle and forest, to conduct thousands of house-to-house interviews in randomly selected “clusters”. The teams surveyed as many as 14,000 households in one survey and 19,500 in the largest, making these mortality studies among the most extensive ever conducted in a conflict setting.

Indeed, there are other valid and reliable tools for determining mortality. Some rely on analyzing population statistics, including birth and death rates, to deduce mortality. But this kind of analysis is extremely difficult in a place like Congo, which has incomplete and unreliable records and where an extraordinary number of births and deaths go unrecorded. Other mortality research in Congo has been based on voter rolls, which we find inappropriate as it excludes children. The IRC firmly believes that direct surveys, which rely on gathering mortality data through face-to-face interviews, are the best way to estimate mortality rates in Congo. **continued >**



## Calculating Excess Deaths

To estimate the number of conflict-related deaths in Congo, one must begin with a baseline estimate of mortality for Congo prior to the war. The IRC and its partners analyzed all available statistics including the national mortality rate reported by Congo's government from a 1984 census (1.3 deaths per 1,000 per month), the pre-war baseline mortality estimate used by UNICEF (1.2) and the average mortality rate for similarly poor sub-Saharan African countries (1.5). The IRC ultimately chose to use the average crude mortality rate for sub-Saharan Africa—a higher and therefore more conservative rate than the other two.

To estimate how many deaths were caused by the war, we subtract the number of deaths that would have taken place without the war from the number of deaths that occurred, as measured by our population surveys. Using a higher pre-war mortality rate, as we did, resulted in a lower estimate of the total number of excess deaths.

## Key Findings

**Humanitarian crisis and conflict continue to take a devastating toll in Congo.** The 2007 study concluded that conflict and humanitarian crisis have taken the lives of an estimated 5.4 million people since 1998 or 45,000 every month. The toll combines figures from the four previous studies with data from the most recent one. Children under the age of five bear the heaviest burden, accounting for nearly 50% of deaths, even though they comprise only 19% of the population.

**The overwhelming majority of deaths are caused by preventable and treatable diseases, not violence.** In the final survey period in 2007 (prior to a sharp rise in violence in the eastern Kivu Provinces) less than 1% of excess deaths were directly due to violence as compared to 8% in the first survey in 2000. All five surveys found that the vast majority of people were dying from conditions such as malaria, diarrhea, pneumonia and malnutrition. These so-called indirect deaths are the byproducts of a conflict that uprooted masses of people and collapsed the economy and health systems. All of these conditions are easily preventable and treatable when people have access to health services and nutritious food.

**Insecurity has a powerful effect on death from both violent and non-violent causes.** Deaths from all causes were highest in insecure districts. When there's violence, people often are forced to flee their homes and seek refuge in forests where they lack shelter, food and medicine or in crowded and unsanitary camps. Farmers can't till their land and produce food, markets don't operate, trade stops, clinics are looted and closed, water sources deteriorate, vaccinations cease, humanitarian aid is hampered. The public health consequences are obvious—increased rates of disease, malnutrition and death. Our research demonstrated that if such effects of insecurity were removed in Congo's eastern provinces, mortality, over time, would reduce to almost normal levels.

## Elevated mortality persists even after a war ends.

When war destroys a country, there is no quick fix. Recovery is a protracted process and can take many years, especially when conflict is superimposed on decades of neglect and political and economic decline as in the case of Congo (where the war officially ended in 2003). It takes years to restart lifesaving programs, revive economic opportunities and rebuild basic systems, including health services, that were destroyed.

## Validation

The surveys' methodology, analysis and findings were subjected to intense peer review, presented at numerous scientific conferences and universities and confirmed by numerous public health experts. Three of the studies were published in respected scientific journals, including the prestigious *Lancet*.

The mortality rates documented in these studies were consistent with numerous, smaller scale surveys carried out in Congo by other international agencies and institutions. A survey conducted in 2005 by Médecins Sans Frontières, for example, found mortality rates consistent with the IRC/Burnet findings, as did a review of all 82 known mortality surveys carried out in Congo between 2000 and 2006 that was published by the Centre for Research on the Epidemiology of Disasters (CRED). Overall, there is overwhelming evidence that mortality rates in Congo were dramatically elevated during the war and its aftermath.

The IRC believes constructive debate is necessary to refine and advance the science of collecting and analyzing data in countries impacted by war. We maintain academic partnerships with several institutions, including the Center for Disease Control and Prevention and the World Health Organization and regularly engage their experts for this purpose.

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## Limitations

**Access and Security Issues.** Conducting surveys in a country as vast, logistically challenging and insecure as Congo is no easy task. Our initial surveys were conducted while a war was raging. The IRC and its partner epidemiologists sometimes had to make assumptions and extrapolations when some facts were unknown. For example, we had to make assumptions about death rates in several regions that were simply too violent to access. In each step of the analysis, we made deliberately conservative assumptions so as not to overstate the death toll.

**Margin of error.** The IRC's mortality figures are estimates based on standard and established research and analysis methods. However, it is not an exact science. Like any surveys of population samples, such as opinion polls, there is imprecision and thus, a margin of error associated with our figures. In the 2007 IRC-Burnett survey, our estimated figure of the total number of deaths associated with the conflict and its aftermath was 5.4 million. The true number could be as low as 3.1 million or as high as 7.6 million. While the precise number will never be known—it is clear that millions of people died unnecessarily because of the war.

## Impact

The surveys conducted by the IRC and its partners provide hard evidence of the sustained human impact of war in Congo and have led to increased attention on the crisis by policy makers, donors, humanitarian actors, advocates and the public.

**Policy.** The data has helped guide policy on a range of security, protection and humanitarian issues affecting Congo. The survey's findings have been referenced in policy documents by the United Nations, the World Bank, the European Union and other donor nations.

**Funding.** International humanitarian funding for aid and development in Congo increased by 500% after publication of the first survey in 2000, with US contributions increasing 26-fold. There have been gradual increases since that time, although funding continues to be insufficient in proportion to need.

**Humanitarian Response.** The IRC shared and discussed its findings with other agencies to help target and scale up humanitarian aid and development programs.

**The International Rescue Committee** is one of the largest providers of humanitarian aid in Congo—supporting more than three million Congolese in seven provinces with emergency, recovery and development assistance. We respond to new outbreaks of violence, providing medicine, water, sanitation and supplies to the newly displaced. We provide health care, train health workers, repair and rebuild health centers and supply them with equipment and drugs. We support programs to train teachers, build and aid schools and ensure they have water and proper sanitation. We are a leader in aiding survivors of rape—delivering medical care, counseling and economic support services to thousands of women and girls and helping communities prevent sexual violence. The IRC also works in more than 1,250 war-devastated villages—helping them to identify and address needs and carry out long-term recovery projects. For more information visit the [IRC.org/congocrisis](http://IRC.org/congocrisis).