

More than half a million Iraqis have been killed since invasion

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More than half a million Iraqi people, about one in 40 of the country's population, have died from violent causes since the March 2003 invasion, a study in the *Lancet* says.

The figures in the paper, which was published online ahead of print publication on 12 October, are based on a cross sectional survey involving 1849 households with 12 801 people in 47 clusters throughout Iraq (www.thelancet.com, doi: 10.1016/S0140-6736(06)69491-9).

The survey looked at the number of deaths between January 2002 and July 2006. In the sample 629 violent deaths were reported, 82 before the invasion and 547 since the invasion. The researchers found that mortality had risen sharply in every year since the invasion.

The researchers, from Johns Hopkins Bloomberg School of Public Health, Baltimore, and Baghdad's al Mustansiriya University, estimate that Iraq has had 654 965 (95% confidence interval 392 979 to 942 636) excess deaths in the last three years as a consequence of the war. They estimate that 601 027 (426 369 to 793 663) Iraqis have died violently since the invasion.

Most of the victims of violence were men aged 15 to 44 years. The most common cause of violent death was gunshot, although the number of car bomb fatalities has risen recently. The interviewers asked to see death certificates in 87% of cases, and these were produced by 90% of the respondents who were asked.

Thirty one per cent of the deaths were attributed to coalition forces. Although the proportion of deaths caused by coalition forces has fallen in the past two years, the crude number has climbed.

The violence has grown steadily over the three years, and the number of deaths has been particularly high in the past 12 months, says the study's lead author, Gilbert Burnham. The findings indicate that Iraqis may currently be being killed at a rate of about 1000 a day, he says.

The survey is the second undertaken in Iraq by the team. Like the first, its results are well in excess of estimates that are based on passive surveillance. The first study, published in November 2004 (*Lancet* 2004;364:1857-64), estimated that 100 000 excess deaths had occurred since the March 2003 invasion, although the confidence interval was very wide.

President Bush dismissed the new study, saying that "the methodology has been pretty well discredited." He did not specify the precise nature of the methodological flaws.

The UK government objected to the study's "extrapolation technique, from a relatively small sample," the prime minister's official spokesman said. He added that the government believed that mortality figures should be taken from the Iraqi Health Ministry and no one else.

The Iraqi Health Ministry's figures are purportedly drawn from hospitals all over Iraq and the Baghdad morgue but are widely believed to contain major gaps. The latest report of the United Nations Assistance Mission in Iraq noted that the ministry had reported July's casualties in the notoriously violent province of al Anbar as being zero. The Iraqi government had not replied to questions about this at the time the *BMJ* went to press.

Dr Burnham said the ministry's figures could not be trusted. He said the ministry is controlled by the Sadr organisation, whose armed wing, the Mehdi army, is believed by US commanders to be heavily implicated in death squad activity. The *Washington Post* recently reported that the health ministry has its own death squads, who kidnap and murder Sunni patients in Baghdad hospitals (30 Aug, p A01).

In September, when the Baghdad morgue released figures that seemed to contradict optimistic assessments by US commanders, the Iraqi government banned it from further direct communication with the press.

Les Roberts, a co-author of the *Lancet* study, dismissed the criticism from the British and US governments. Both governments had cited his previous survey on the Congo war, which used the same methods, he said—including Mr Blair, who referred to them at the Labour party conference in 2001.

Professor Ronald Waldman, a Columbia University epidemiologist, defended the Hopkins methodology as "absolutely standard and solid", adding: "I am in Geneva right now teaching exactly the same method to WHO researchers.

"This is the most accurate, scientifically based measure we have," he said. "None of the other counts are scientifically-based." He said in previous wars, passive surveillance had only detected a small fraction of deaths.

Dr Bradley Woodruff, an epidemiologist at the Centers for Disease Control, said the Hopkins study methods are used by the US government "to measure everything from vaccination programmes to nutrition status."

But Jum Bassim Irheim, director of emergency medicine at Diwaniyah University Hospital in Iraq, said he thought the figure of 600 000 to be "exaggerated."

“Yes, there is daily extraordinary violence, but not enough to reach 600 000 deaths. We, in the medical community, know what happens in casualties and mortality. So we think that there are political causes that pushed the authors to write this,” he said.

Diwaniyah, a Shiite town south of Baghdad, has seen fighting between Shiite militias and US forces in two major incursions. It is listed as an area of moderate violence in the *Lancet* study.

(See Analysis and comment [10.1136/bmj.38986.476782.68](https://doi.org/10.1136/bmj.38986.476782.68).)