

CRED CRUNCH

“Disaster Data: A Balanced Perspective”

June 2006

The ratio of injuries to deaths in acute natural disasters is a useful indicator for many purposes. It describes a disaster type by the epidemiological profile of its immediate impact on populations. For instance, a high injury to death ratio could be expected in certain types of disasters such as cyclones, and a lower one in earthquakes where people tend to die or survive. While injuries in earthquakes are serious, they are rarely widespread.

Earthquakes, the most frequent acute disasters, were responsible for almost 27% of all deaths from natural disasters over the last 30 years. This is the highest proportion of deaths from any disaster type, with droughts coming in a close second with 25%. The top 10 earthquake disasters by number of persons killed (table 2) represent 84% of all earthquake-related deaths from 1976 to 2005, highlighting the catastrophic impact of these large events.

Previous research on earthquakes by epidemiologists has indicated that 3.0 to 3.5 injured to one death may be the expected ratio. The ratio calculated from the EM-DAT database generates a ratio of 2.6, which is below the figure estimated by the studies and indicates an under-reporting of injuries in the regular impact reporting process. Further research to establish how these ratios can vary as a function of the different characteristics of the event, such as by time of day, the type of disaster, or the definitions of injury will increase our understanding of the impacts.

The integration of epidemiology with engineering, architecture, the social sciences and other fields of the medical sciences is essential to develop the knowledge base on the risks of injury and mortality from earthquakes and on the methods to mitigate these. Furthermore, epidemiology can assist decision-makers in identifying the relief supplies, equipment, and qualified personnel that are necessary to respond effectively to earthquakes.

In conclusion, injury to death ratios if validated from future epidemiological studies would provide useful insights for preparedness and planning in high risk zones.

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Director

Earthquake¹ disasters: Summary

	1976-2005	1996-2005
No. of earthquakes	711	281
No. of countries impacted	94	58
No. of people killed	598,165	162,986
No. of people affected	90 million	39 million
Economic damages (US\$)	305 billion	94 billion

Table 1: countries with greatest earthquake¹ occurrence: 1976-2005

Country	No. of earthquakes	No. killed	No. affected	Economic damages (US\$)
China	82	244,344	20.7 million	8 billion
Iran	67	100,851	2 million	10.9 billion
Indonesia	66	6,496	1.8 million	0.8 billion
Turkey	38	24,371	6.1 million	16 billion
Japan	28	5,794	3.2 million	132 billion
Afghanistan	24	9,202	0.6 million	1.7 billion
Greece	21	340	0.9 million	7.2 billion
United States	21	145	0.06 million	25 billion
Italy	20	5,714	0.7 million	30 billion
Mexico	20	9,738	2.5 million	4.7 billion

Top 10 earthquake¹ disasters: 1976-2005

Table 2: By number of persons killed

Country	Date	Magnitude ²	No. of people killed
China	August 28, 1976	7.8	242,000
Pakistan	October 8, 2005	7.6	73,338
Iran	June 21, 1990	7.3	40,000
Iran	December 26, 2003	6.6	26,796
Iran	September 16, 1978	7.7	25,000
Armenia	December 7, 1988	6.9	25,000
Guatemala	February 4, 1976	7.5	23,000
India	January 26, 2001	7.7	20,005
Turkey	August 17, 1999	7.4	17,127
India	September 29, 1993	6.4	9,748

1: Excludes tsunamis

2: Richter magnitude scale

Top 10 earthquake¹ disasters: 1976-2005(continued)

Table 3: By number of persons affected

Country	Date	Magnitude ²	No. of people affected
India	August 21, 1988	7.0	20 million
India	January 26, 2001	7.7	6.3 million
China	February 3, 1996	7.0	5 million
Guatemala	February 4, 1976	7.5	5 million
China	November 1, 1999	5.6	3 million
Pakistan	October 8, 2005	7.6	2.9 million
Japan	August 8, 1988	5.8	2.6 million
Mexico	September 19, 1985	8.1	2.1 million
China	January 15, 2000	5.9	1.9 million
Armenia	December 7, 1988	6.9	1.6 million

Table 4: By reported economic damages

Country	Date	Magnitude ²	Economic damages (in 2006 US\$)
Japan	January 17, 1995	7.2	132 billion
Italy	November 23, 1980	7.2	49 billion
Japan	October 23, 2004	6.6	30 billion
Armenia	December 7, 1988	6.9	24 billion
United States	January 17, 1994	6.6	23 billion
China	August 28, 1976	7.8	20 billion
Taiwan	September 21, 1999	7.6	17 billion
Italy	May 6, 1976	6.5	13 billion
Algeria	October 10, 1980	7.4	13 billion
Iran	June 21, 1990	7.3	12 billion

CRED News

June 16-17, 2006: Joint UN International Strategy for Disaster Reduction/CRED/UN University Workshop on the Human Impact of the Tsunami and Disaster Risk Reduction - Bangkok.

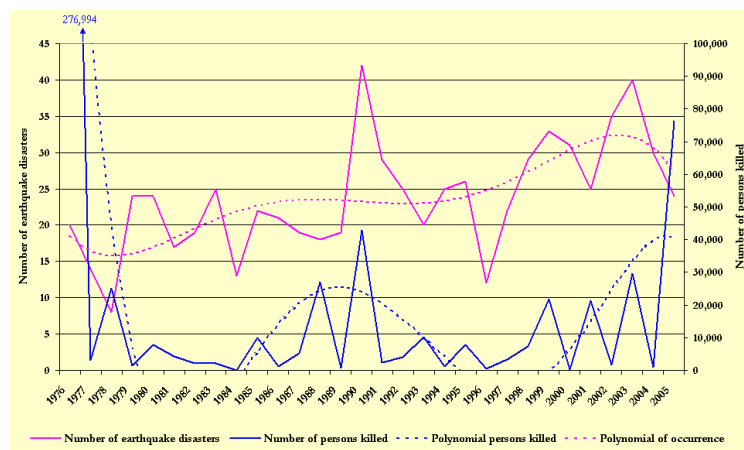
June 12, 2006: Report released on the "Risk Factors for Mortality and Injury: Post-Tsunami Epidemiological Findings from Tamil Nadu".

May 2006: Proceedings available from the "Workshop to improve the compilation of reliable data on disaster occurrence and impact".

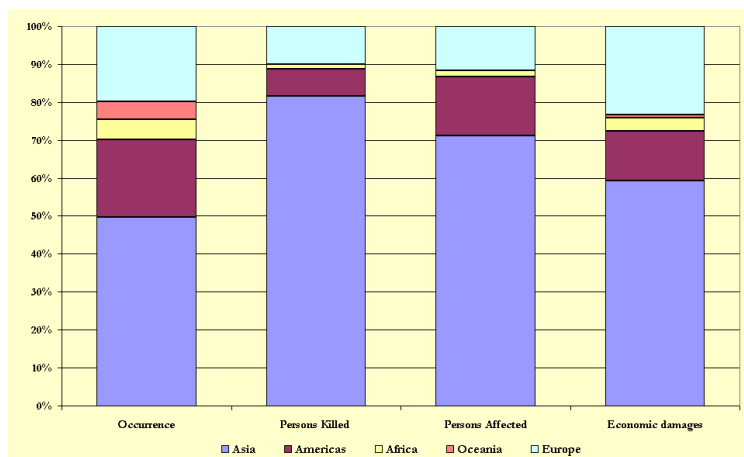
April 2006: Report released on "An analytical review of selected data sets on natural disasters and impacts"

For access to these documents, please consult www.cred.be

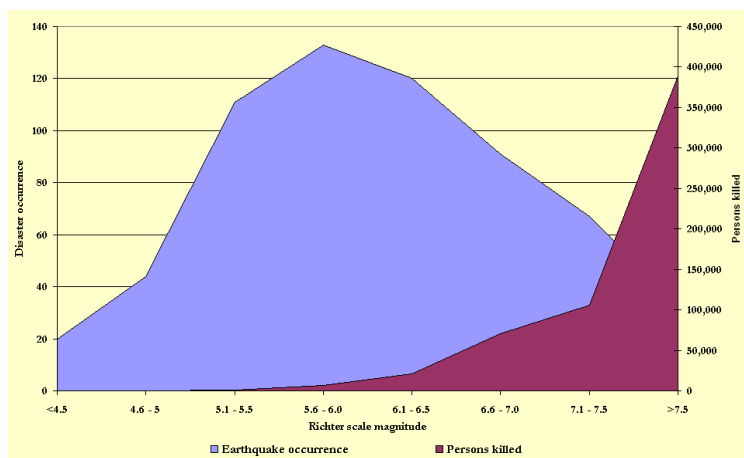
Trend in earthquake¹ disaster occurrence and impact: 1976 – 2005



Proportion of earthquake¹ occurrence and impacts by continent: 1976-2005



Earthquake disaster¹ occurrence and mortality relative to magnitude: 1976-2005



Please note that disaster data are subject to change as validation and cross-referencing of the sources is undertaken and as new information becomes available. For any enquiries, please contact cred-crunch@em-dat.net