

# CRED CRUNCH

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“Disaster Data: A Balanced Perspective”

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## Earthquake disasters

In the EM-DAT database, disasters caused by seismic activity include both earthquakes (ground shaking) and tsunamis. Their unpredictable nature and vast impact makes them one of the most lethal kinds of disasters. Earthquakes were responsible for 29% of natural disaster-related deaths in the last 30 years, but accounted for 58% of fatalities in the last decade, mainly due to the absence of major droughts since 2000. 56% of all earthquakes happened in Asia, causing 90% of global earthquake fatalities. Single major earthquake disasters can have a tremendous impact. The top 10 earthquakes with the largest number killed account for 82% of all earthquake-related deaths from 1980 to 2009.

The epidemiological profile of disasters can provide insight into the immediate impact on populations. Earthquakes show a high ratio of people killed to injured, indicating a pattern where people either die or survive, without widespread injuries. In earlier investigations, a ratio of one killed for every three people injured has been estimated<sup>a,b</sup>. Further research is needed to clarify the role of other earthquake characteristics, such as time of occurrence, distance to epicentre, secondary events triggered by the earthquake, building types, and access to medical care. Only an interdisciplinary approach, including geo-hazard, engineering, socio-economic and medical sciences, can capture the full impact of earthquakes on society.

In conclusion, epidemiological research can assist decision-makers in effective earthquake disaster management.

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a. Alexander D. “Death and injury in earthquakes”. *Disasters*, 9, 1985.

b. De Ville de Goyet C. “Earthquake in Guatemala: Epidemiological evaluation of relief effort”. *Pan American Health Organization Bulletin*. 10(2) 1976.

## Top 10 earthquake<sup>1</sup> disasters by no. affected: 1980-2009

| Country   | Date         | Magnitude | No. affected (million) |
|-----------|--------------|-----------|------------------------|
| China     | May 12, 2008 | 7.9       | 46.0                   |
| India     | Aug 21, 1988 | 7.0       | 20.0                   |
| India     | Jan 26, 2001 | 7.7       | 6.3                    |
| Pakistan  | Oct 8, 2005  | 7.6       | 5.1                    |
| China     | Feb 3, 1996  | 7.0       | 5.1                    |
| Indonesia | May 27, 2006 | 6.3       | 3.2                    |
| China     | Nov 1, 1999  | 5.6       | 3.0                    |
| Indonesia | Sep 30, 2009 | 7.6       | 2.5                    |
| Mexico    | Sep 19, 1985 | 8.1       | 2.1                    |
| China     | Jan 15, 2000 | 5.9       | 1.9                    |

1. tsunamis included  
2. in 2009 US\$ value

## Earthquake disasters<sup>1</sup>: summary

|  | 1980-2009 | 2000-2009 |
|--|-----------|-----------|
| No. earthquakes                          | 753       | 290       |
| No. countries affected                   | 101       | 73        |
| No. killed                               | 617,293   | 453,553   |
| No. affected (million)                   | 140.2     | 82.6      |
| Econ. damage (billion US\$) <sup>2</sup> | 592.2     | 182.9     |

## Countries with greatest earthquake<sup>1</sup> occurrence: 1980-2009

| Country       | No. of earthquakes | No. killed | No. affected (million) | Economic damages (billion US\$) |
|---------------|--------------------|------------|------------------------|---------------------------------|
| China         | 94                 | 89,852     | 86.5                   | 88.6                            |
| Indonesia     | 74                 | 178,742    | 8.4                    | 11.3                            |
| Iran          | 62                 | 74,020     | 1.8                    | 10.4                            |
| Turkey        | 34                 | 20,495     | 5.9                    | 22.8                            |
| Japan         | 31                 | 5,753      | 0.8                    | 145.7                           |
| Afghanistan   | 25                 | 9,175      | 0.5                    | 0.03                            |
| United States | 23                 | 145        | 0.1                    | 38.6                            |
| Peru          | 22                 | 1,095      | 1.3                    | 0.9                             |
| Greece        | 20                 | 244        | 0.3                    | 6.7                             |
| Pakistan      | 20                 | 74,278     | 6.5                    | 5.2                             |

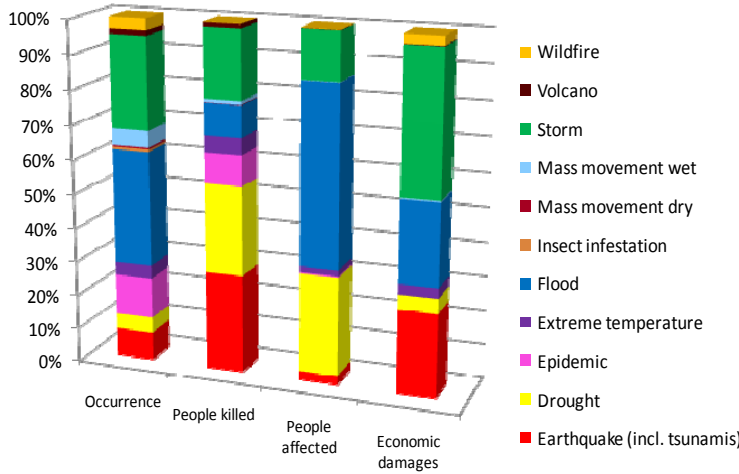
## Top 10 earthquake<sup>1</sup> disasters by no. killed: 1980-2009

| Country   | Date         | Magnitude | No. killed |
|-----------|--------------|-----------|------------|
| Indonesia | Dec 26, 2004 | 9.0       | 165,708    |
| China     | May 12, 2008 | 7.9       | 87,476     |
| Pakistan  | Oct 8, 2005  | 7.6       | 73,338     |
| Iran      | Jun 21, 1990 | 7.3       | 40,000     |
| Sri Lanka | Dec 26, 2004 | 9.0       | 35,399     |
| Iran      | Dec 26, 2003 | 6.6       | 26,796     |
| Russia    | Dec 7, 1988  | 6.9       | 25,000     |
| India     | Jan 26, 2001 | 7.7       | 20,005     |
| Turkey    | Aug 17, 1999 | 7.4       | 17,127     |
| India     | Dec 26, 2004 | 9.0       | 16,389     |

All figures presented in the CRED CRUNCH come from “EM-DAT: The OFDA/CRED International Disaster Database”

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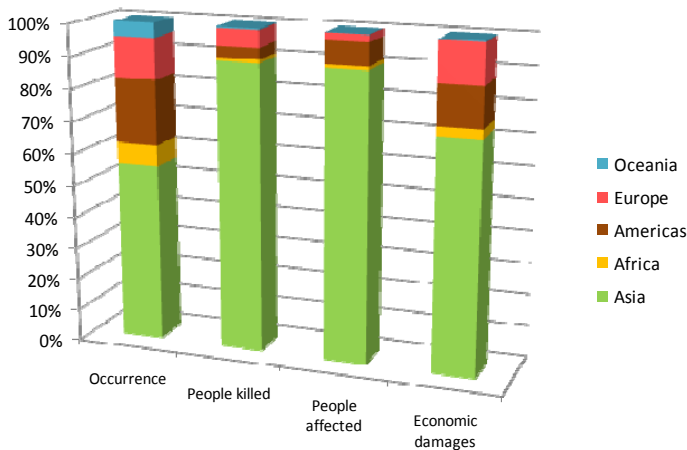
### Reported earthquake<sup>1</sup> occurrence and impacts relative to other natural disasters: 1980-2009



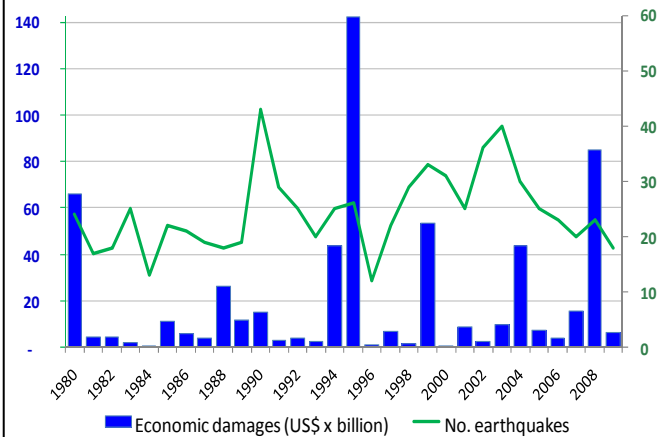
### Top 10 earthquake<sup>1</sup> disasters by economic damages: 1980-2009

| Country       | Date         | Magnitude | Econ. damage (billion US\$) <sup>2</sup> |
|---------------|--------------|-----------|--|
| Japan         | Jan 17, 1995 | 7.2       | 140.4                                    |
| China         | May 12, 2008 | 7.9       | 84.4                                     |
| United States | Jan 17, 1994 | 6.6       | 43.3                                     |
| Japan         | Oct 23, 2004 | 6.6       | 31.7                                     |
| Turkey        | Aug 17, 1999 | 7.4       | 25.7                                     |
| Italy         | Nov 23, 1980 | 7.2       | 51.9                                     |
| Taiwan        | Sep 21, 1999 | 7.6       | 18.1                                     |
| Russia        | Dec 7, 1988  | 6.9       | 25.3                                     |
| Japan         | Jul 16, 2007 | 6.8       | 12.9                                     |
| Iran          | Jun 21, 1990 | 7.3       | 13.1                                     |

### Reported earthquake<sup>1</sup> occurrence and impacts:



### Trend in earthquake<sup>1</sup> occurrence and economic damages: 1980-2009



1. tsunamis included  
2. in 2009 US\$ value

## CRED News

- CRED is pleased to present the 2010 Summer Course on Assessing Public Health in Emergency Situations (APHES). This course will take place on July 5-16, 2010 in Brussels, Belgium. More information at [www.aphes.be](http://www.aphes.be).
- CRED and Munich Re co-organized the International Workshop on Geocoding in Global Databases on February 25-26, 2010. More details at [www.cred.be](http://www.cred.be).
- Members of the MICRODIS Project consortium ([www.microdis-eu.be](http://www.microdis-eu.be)) will host a Special Session on Integrated Impacts of Floods in Indonesia, Vietnam and the UK during the International Disaster and Risk Conference (IDRC) Global Risk Forum in Davos, Switzerland on Monday May 31, 2010 from 13h-14h30 (Pischa Room).

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 [contact@emdat.be](mailto:contact@emdat.be) or visit [www.emdat.be](http://www.emdat.be)