

# Information and methodology of sigma explorer data

## How to use sigma-explorer.com

There is a [short video](#) explaining the main functionalities.

## Nat cat database: Terms and selection criteria

### Selection criteria

*sigma* has been publishing tables listing major losses since 1970. Thresholds with respect to casualties – the number of dead, missing, severely injured, and homeless – also make it possible to tabulate events in regions where the insurance penetration is below average.

[Thresholds for insured losses and casualties in 2015](#)

For the 2015 reporting year, the lower loss thresholds were set as follows:

Insured losses (claims):

Maritime disasters	USD 19.7 million
Aviation	USD 39.3 million
Other losses	USD 48.8 million

or Total losses: USD 97.7 million

or Casualties:

Dead or missing	20
Injured	50
Homeless	2000

### Adjustment for inflation, changes to published data, information

*sigma* converts all losses for the occurrence year not given in USD into USD using the end-of-year exchange rate. To adjust for inflation, these USD values are extrapolated using the US consumer price index to give current (2015) values.

[Losses are determined using year-end exchange rates and are then adjusted for inflation.](#)

This can be illustrated by examining the insured property losses arising from the floods which occurred in the UK between 29 October and 10 November 2000:

Insured loss at 2000 prices: USD 1045.7million

Insured loss at 2015 prices: USD 1438.8 million

Alternatively, were one to adjust the losses in the original currency (GBP) for inflation and then convert them to USD using the current exchange rate, one would end up with an insured loss at 2015 prices of USD 1 427 million, 1% less than with the standard *sigma* method. The reason for the difference is that the value of the GBP declined by almost 1% against the USD in the period 2000-2015, i.e. less than the difference in inflation between the US (37.6%) and the UK (37.6%) over the same period.

[Alternative methods of adjusting for inflation, by comparison](#)

Floods UK 29 October - 10 November 2000	GBPm	Exchange rate		US inflation	
		USD/GBP	USDm	USDm	
Original loss	700.0	1.494	1,045.7	1,045.7	
Level of consumer price index 2000	93.1			100.0	
Level of consumer price index 2015	128.0			137.6	
Inflation factor	1.376			1.376	
Adjusted for inflation to 2015	963.2	1.482	1,427.4	1,438.8	
Comparison			99%	100%	

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Changes to loss amounts of previously published events are updated in the *sigma* database.

Only public information used for man-made disasters

Newspapers, direct insurance and reinsurance periodicals, specialist publications and other reports are used to compile this study.

Exchange rates used when converting total damage and/or insured losses

If changes to the loss amounts of previously published events become known, *sigma* takes these into account in its database. However, these changes only become evident when an event appears in the table of the 40 most costly insured losses or the 40 disasters with the most fatalities since 1970 (See Tables 10 and 11 of the respective *sigma*).

In the chronological lists of all man-made disasters, the insured losses are not shown for data protection reasons. However, the total of these insured losses is included in the list of major losses in 2015 according to loss category. *sigma* does not provide further information on individual insured losses or about updates made to published data.

## Sources

Information is collected from newspapers, direct insurance and reinsurance periodicals, specialist publications (in printed or electronic form) and reports from insurers and reinsurers.<sup>1</sup> In no event shall Swiss Re be liable for any loss or damage arising in connection with the use of this information (see the copyright information inside back cover).

## Exchange rate used,<sup>2</sup> national currency per USD

Country	Currency	Exchange rate, end 2015
Australia	AUD	1.3745
Canada	CAD	1.3892
China	CNY	6.4937
Europe	EUR	0.9203
United Kingdom	GBP	0.6784
Georgia	GEL	2.3949
Indonesia	IDR	13795.0000
India	INR	66.2200
Iran	IRR	29855.0000
Japan	JPY	120.2750
Myanmar	MMK	1302.5000
Malawi	MWK	658.3500
New Zealand	NZD	1.4607
Philippines	PHP	46.9200
Pakistan	PKR	104.8700
Russia	RUB	73.0821
Saudi Arabia	SAR	3.7533
Thailand	THB	36.0350
Taiwan	TWD	32.9750
US	USD	1.0000

Source: Swiss Re, *sigma* catastrophe database

<sup>1</sup> Natural catastrophes in the US: those *sigma* figures which are based on estimates of Property Claim Services (PCS), a unit of the Insurance Services Office, Inc (ISO), are given for each individual event in ranges defined by PCS. The estimates are the property of ISO and may not be printed or used for any purpose, including use as a component in any financial instruments, without the express consent of ISO.

<sup>2</sup> The losses for 2015 were converted to USD using these exchange rates. No losses in any other currencies were reported.

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## World insurance: Methodology and Data

The premium data in sigma-explorer *sigma* is based on the direct premium volume of insurance companies, regardless of whether they are privately or state owned. Premiums paid to state social insurers are not included. Life and non-life premium volume in 147 countries is examined. Detailed information on the largest 88 countries in terms of total insurance premium volume can be found in the statistical appendix.

Country classifications generally follow IMF conventions.

The designation of the economies mentioned in this *sigma* as "advanced" or "emerging" is generally in keeping with the conventions of the International Monetary Fund (IMF). Advanced economies include the US, Canada, Western Europe (excluding Turkey), Israel, Oceania, Japan and the other advanced Asian economies (Hong Kong, Singapore, South Korea and Taiwan). All other countries are classified as "emerging" and generally correspond to the IMF's "emerging and developing" economies.<sup>3</sup>

Data sources

The insurance data and estimates contained in the study originate primarily from national supervisory authorities and, in some cases, from insurance associations. Macroeconomic data was sourced from the International Financial Statistics of the IMF, Oxford Economics and IHS Datainsights.

Data revisions

Figures for past years are adjusted as new information becomes available. The data in sigma-explorer is updated after the publication of the world insurance sigma at the end of June on [www.swissre.com/sigma](http://www.swissre.com/sigma).

Definition of premium income

Sigma-explorer premium data is based on information concerning the premiums written for direct business by all registered insurers. This means:

1. Direct insurance premiums, including commissions and other charges, are considered prior to cession to a reinsurance company.
2. Domestic insurers – regardless of their ownership – and domestic branches of foreign insurers are regarded as domestically domiciled business units. By contrast, business undertaken by the foreign branches of domestic insurers is not regarded as domestic business.
3. Business that has been written in the domestic market includes premiums for cover of domestic risks as well as those covering foreign risks, as long as they are written by domestic insurers (cross-border business).

Health insurance is allocated to non-life business.

Life and non-life business areas in sigma explorer are categorised according to standard EU and OECD conventions: health insurance is allocated to non-life insurance, even if it is classified differently in the individual countries.

Density and penetration do not include cross-border business.

Only premium income from domestic risks is used to calculate insurance penetration and density. Cross-border business is not included. This has a significant effect in Luxembourg, Italy and Ireland.

Growth rates in local currency are adjusted for inflation.

Real growth rates are calculated using premiums in local currencies and adjusted for inflation using the consumer price index for each country. Regional aggregated growth rates are calculated using the previous year's premium volumes and converted into US dollars at market exchange rates. The same procedure applies to the economic aggregates, where the previous year's nominal GDP figures in US dollars are used as weights.

Figures are converted into US dollars to facilitate international comparisons.

Using the average exchange rate for the financial year, premium volumes are converted into US dollars to facilitate comparisons between markets and regions.<sup>4</sup> Where no premium data is available (indicated by "na." for the local currency value in the tables), the premium income in US dollars is estimated assuming a constant ratio of insurance

<sup>3</sup> The only exceptions are the Czech Republic, Estonia, Slovenia and Slovakia.

<sup>4</sup> In Egypt, India, Iran, Japan, South Korea and Malaysia, the financial year is not the same as the calendar year. Precise details about the differences in dates are given in the notes to the statistical appendix.

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premiums to GDP. Regional growth rates are calculated using a weighted average of the real growth rates of the individual countries. The weighting is based on the relevant premiums of the previous year in USD.

The statistical appendix of the world insurance sigma contains additional calculations and the macroeconomic data used for currency conversions.

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