

HTML CODE FOR NATURAL DISATSTER

```
<!doctype html><html><head><meta name="viewport" content="width=device-width, initial-
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natural disasters?"/><link rel="canonical" href="https://ourworldindata.org/natural-disasters"/><link
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768x459.png"/><link
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Data"/><meta name="citation_author" content="Hannah Ritchie"/><meta name="citation_author"
content="Max Roser"/></head><body class=""><header class="site-header"><div class="wrapper site-
navigation-bar"><div class="site-logo"><a href="/">Our World<br/> in Data</a></div><nav class="site-
navigation"><div class="topics-button-wrapper"><a href="/#entries" class="topics-button"><div
class="label">Articles <br/><strong>by topic</strong></div><div class="icon"><svg width="12"
height="6"><path d="M0,0 L12,0 L6,6 Z" fill="currentColor"></path></svg></div></a></div><div><div
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" role="img" xmlns="http://www.w3.org/2000/svg" viewBox="0 0 512 512"><path fill="currentColor"
d="M416 208c0 45.9 88.3 40 122.7 502.6 457.4c12.5 12.5 12.5 32.8 0 45.3s-
navigation">Donate</a></li></ul></div><div class="site-secondary-navigation"><ul class="site-
secondary-links"><li><a href="/charts" data-track-note="header-navigation">All charts</a></li><li><a
href="https://sdg-tracker.org" data-track-note="header-navigation">Sustainable Development Goals
Tracker</a></li></ul></div></nav><div class="header-logos-wrapper"><a
href="https://www.oxfordmartin.ox.ac.uk/global-development" class="oxford-logo"></a><a href="https://global-change-data-lab.org/" class="gcdl-logo"></a></div><div class="mobile-site-navigation"><button data-track-note="mobile-search-button"><svg aria-hidden="true" focusable="false" data-prefix="fas" data-icon="magnifying-glass" class="svg-inline--fa fa-magnifying-glass" role="img" xmlns="http://www.w3.org/2000/svg" viewBox="0 0 512 512"><path fill="currentColor" d="M416 208c0 45.9-14.9 88.3-40 122.7L502.6 457.4c12.5 12.5 12.5 32.8 0 45.3s-32.8 12.5-45.3 0L330.7 376c-34.4 25.2-76.8 40-122.7 40C93.1 416 0 322.9 0 208S93.1 0 208 0S416 93.1 416 208z" data-bbox="111 208 888 262"/></svg></button><button data-track-note="mobile-newsletter-button"><svg aria-hidden="true" focusable="false" data-prefix="fas" data-icon="envelope-open-text" class="svg-inline--fa fa-envelope-open-text" role="img" xmlns="http://www.w3.org/2000/svg" viewBox="0 0 512 512"><path fill="currentColor" d="M215.4 96H144 107.8 96v8.8V144v40.4 89L2 202.5c1.6-18.1 10.9-34.9 25.7-45.8L48 140.3V96c0-26.5 21.5-48 48-48h76.6l49.9-36.9C232.2 3.9 243.9 0 256 0s23.8 3.9 33.5 11.3L339.4 48H416c26.5 0 48 21.5 48 48v44.3l22.1 16.4c14.8 10.9 24.1 27.7 25.7 45.8L416 273.4v89V416 404.2 368 296.6 215.4z" data-bbox="111 448 888 562"/></path></svg></button><button data-track-note="mobile-hamburger-button"><svg aria-hidden="true" focusable="false" data-prefix="fas" data-icon="bars" class="svg-inline--fa fa-bars" role="img" xmlns="http://www.w3.org/2000/svg" viewBox="0 0 448 512"><path fill="currentColor" d="M0 96C0 78.3 14.3 64 32 64H416c17.7 0 32 14.3 32 32s-14.3 32-32 32H32C14.3 128 0 113.7 0 96z" data-bbox="111 562 888 616"/></path></svg></button></div></div></header><div class="alert-banner"><div class="content"><div class="text"><strong>COVID-19 vaccinations, cases, excess mortality, and much more</strong></div><a href="/coronavirus#explore-the-global-situation" data-track-note="covid-banner-click">Explore our COVID-19 data</a></div></div><main><article class="page-with-sidebar large-banner"><div class="offset-header"><header class="article-header"><div class="article-titles"><h1 class="entry-title">Natural Disasters</h1></div><div class="authors-byline"><a href="/team">by Hannah Ritchie and Max Roser</a></div><div class="blog-info">This article was first published in 2014. It was last updated in November 2021.</div><div class="tools"><a href="#licence"><svg aria-hidden="true" focusable="false" data-prefix="fab" data-icon="creative-commons" class="svg-inline--fa fa-creative-commons" role="img" xmlns="http://www.w3.org/2000/svg" viewBox="0 0 496 512"><path fill="currentColor" d="M245.83 214.87l-33.22 17.28c-9.43-19.58-25.24-19.93-27.46-19.93-22.13 0-33.22 14.61-33.22 43.84 0 23.57 9.21 43.84 33.22 43.84 14.47 0 24.65-7.09 30.57-21.26l30.55 15.5c-6.17 11.51-25.69 38.98-65.1 38.98-22.6 0-73.96-10.32-73.96-77.05 0-58.69 43-77.06 72.63-77.06 30.72-.01 52.7 11.95 65.99 35.86zm143.05 0l-32.78 17.28c-9.5-19.77-25.72-19.93-27.9-19.93-22.14 0-33.22 14.61-33.22 43.84 0 23.55 9.23 43.84 33.22 43.84 14.45 0 24.65-7.09 30.54-21.26l31 15.5c-2.1 3.75-21.39 38.98-65.09 38.98-22.69 0-73.96-9.87-73.96-77.05 0-58.67 42.97-77.06 72.63-77.06 30.71-.01 52.58 11.95 65.56 35.86zm247.56 8.05C104.74 8.05 0 123.11 0 256.05c0 138.49 113.6 248 247.56 248 129.93 0 248 113.6 248 248 0 137.87-106.62-248 248 248zm87 450.81c-112.54 0-203.7-93.04-203.7-202.81 0-105.42 85.43-203.27 203.72-203.27 112.53 0 202.82 89.46 202.82 203.26-.01 121.69-99.68 202.82-202.84" data-bbox="111 756 888 946"/>

202.82z"></path></svg>Reuse our work freely</a><a href="#citation"><svg aria-hidden="true" focusable="false" data-prefix="fas" data-icon="book" class="svg-inline--fa fa-book" role="img" xmlns="http://www.w3.org/2000/svg" viewBox="0 0 448 512"><path fill="currentColor" d="M96 0C43 0 0 43 0 96V416c0 53 43 96 96H384h32c17.7 0 32-14.3 32-32s-14.3-32-32-32V384c17.7 0 32-14.3 32-32V32c0-17.7-14.3-32-32-32H384 96zm0 384H352v64H96c-17.7 0-32-14.3-32-32s14.3-32 32-32zm32-240c0-8.8 7.2-16 16-16H336c8.8 0 16 7.2 16 16s-7.2 16-16 16H144c-8.8 0-16-7.2-16-16zm16 48H336c8.8 0 16 7.2 16 16s-7.2 16-16 16H144c-8.8 0-16-7.2-16-16s7.2-16 16-16z"></path></svg>Cite this research</a></div></header></div><div class="content-wrapper"><div class="toc-wrapper"><aside class="entry-sidebar"><nav class="entry-toc"><ul><li><a href="#" data-track-note="toc-header">Natural Disasters</a></li><li class="section"><a href="#summary" data-track-note="toc-link">Summary</a></li><li class="section"><a href="#natural-disasters-kill-tens-of-thousands-each-year" data-track-note="toc-link">Natural disasters kill tens of thousands each year</a></li><li class="section"><a href="#what-share-of-deaths-are-from-natural-disasters" data-track-note="toc-link">What share of deaths are from natural disasters?</a></li><li class="section"><a href="#number-of-deaths-from-natural-disasters" data-track-note="toc-link">Number of deaths from natural disasters</a></li><li class="subsection"><a href="#annual-deaths-from-natural-disasters" data-track-note="toc-link">Annual deaths from natural disasters</a></li><li class="subsection"><a href="#average-number-of-deaths-by-decade" data-track-note="toc-link">Average number of deaths by decade</a></li><li class="subsection"><a href="#number-of-deaths-by-type-of-natural-disaster" data-track-note="toc-link">Number of deaths by type of natural disaster</a></li><li class="section"><a href="#injuries-and-displacement-from-disasters" data-track-note="toc-link">Injuries and displacement from disasters</a></li><li class="section"><a href="#natural-disasters-by-type" data-track-note="toc-link">Natural disasters by type</a></li><li class="subsection"><a href="#earthquakes" data-track-note="toc-link">Earthquakes</a></li><li class="subsection"><a href="#volcanoes" data-track-note="toc-link">Volcanoes</a></li><li class="subsection"><a href="#landslides" data-track-note="toc-link">Landslides</a></li><li class="subsection"><a href="#famines-droughts" data-track-note="toc-link">Famines & Droughts</a></li><li class="subsection"><a href="#hurricanes-tornados-and-cyclones" data-track-note="toc-link">Hurricanes, Tornados, and Cyclones</a></li><li class="subsection"><a href="#extreme-precipitation-and-flooding" data-track-note="toc-link">Extreme precipitation and flooding</a></li><li class="subsection"><a href="#extreme-temperature-heat-cold"

data-track-note="toc-link">Extreme Temperature (Heat & Cold)</a></li><li class="subsection"><a href="#wildfires" data-track-note="toc-link">Wildfires</a></li><li class="subsection"><a href="#lightning" data-track-note="toc-link">Lightning</a></li><li class="section"><a href="#economic-costs" data-track-note="toc-link">Economic costs</a></li><li class="subsection"><a href="#global-disaster-costs" data-track-note="toc-link">Global disaster costs</a></li><li class="subsection"><a href="#disaster-costs-by-country" data-track-note="toc-link">Disaster costs by country</a></li><li class="section"><a href="#not-all-deaths-are-equal-how-many-deaths-make-a-natural-disaster-newsworthy" data-track-note="toc-link">Not all deaths are equal: How many deaths make a natural disaster newsworthy?</a></li><li class="section"><a href="#link-between-poverty-and-deaths-from-natural-disasters" data-track-note="toc-link">Link between poverty and deaths from natural disasters</a></li><li class="section"><a href="#definitions-metrics" data-track-note="toc-link">Definitions & Metrics</a></li><li class="section"><a href="#data-quality" data-track-note="toc-link">Data Quality</a></li><li class="section"><a href="#data-sources" data-track-note="toc-link">Data Sources</a></li><li class="section"><a href="#endnotes" data-track-note="toc-link">Endnotes</a></li><li class="section"><a href="#licence" data-track-note="toc-link">Licence</a></li><li class="section"><a href="#citation" data-track-note="toc-link">Citation</a></li></ul></nav><div class="toggle-toc"><button data-track-note="page-toggle-toc" aria-label="Open table of contents"><svg aria-hidden="true" focusable="false" data-prefix="fas" data-icon="bars" class="svg-inline--fa fa-bars" role="img" xmlns="http://www.w3.org/2000/svg" viewBox="0 0 448 512"><path fill="currentColor" d="M0 96C0 78.3 14.3 64 32 64H416c17.7 0 32 14.3 32 32s-14.3 32-32 32H32C14.3 128 0 113.7 0 96z" data-bbox="0 96 448 128"/>M0 256C0 238.3 14.3 224 32 224H416c17.7 0 32 14.3 32 32s-14.3 32-32 32H32C14.3 288 0 273.7 0 256z" data-bbox="0 256 448 288"/>M448 448c0 17.7 14.3 32 32 32H416c17.7 0 32 14.3 32 32s-14.3 32-32 32H32C14.3 480 0 465.7 0 448z" data-bbox="0 448 448 480"/>

disasters">Globally, disasters were responsible for 0.1% of deaths over the past decade. This was highly variable, ranging from 0.01% to 0.4%.</a></li><li><a href="https://ourworldindata.org/natural-disasters#natural-disasters-kill-tens-of-thousands-each-year">Deaths from natural disasters have seen a large decline over the past century – from, in some years, millions of deaths per year to an average of 60,000 over the past decade.</a></li><li><a href="https://ourworldindata.org/natural-disasters#number-of-deaths-by-type-of-natural-disaster">Historically, droughts and floods were the most fatal disaster events. Deaths from these events are now very low – the most deadly events today tend to be earthquakes.</a></li><li><a href="https://ourworldindata.org/natural-disasters#link-between-poverty-and-deaths-from-natural-disasters">Disasters affect those in poverty most heavily: high death tolls tend to be centered in low-to-middle income countries without the infrastructure to protect and respond to events.</a></li></ul>

</div></div><div class="wp-block-column"><div class="wp-sticky-container"></div></div></div><div class="block-wrapper" data-reactroot=""><div data-variation="full-width" data-default-open="false" class="wp-block-owid-additional-information"><h3 class="additional-information\_heading" data-track-note="additional-information-toggle"><svg aria-hidden="true" focusable="false" data-prefix="fas" data-icon="angle-right" class="svg-inline--fa fa-angle-right" role="img" xmlns="http://www.w3.org/2000/svg" viewBox="0 0 320 512"><path fill="currentColor" d="M278.6 233.4c12.5 12.5 12.5 32.8 0 45.3l-160 160c-12.5 12.5-32.8 12.5-45.3 0s-12.5-32.8 0-45.3l210.7 256 73.4 118.6c-12.5-12.5-12.5-32.8 0-45.3s32.8-12.5 45.3 0l160 160z"></path></svg>All our interactive charts on Natural Disasters</h3><div aria-hidden="true" class="rah-static rah-static--height-zero" style="height:0;overflow:hidden"><div style="transition:opacity 250ms ease 0ms;-webkit-transition:opacity 250ms ease 0ms;opacity:0"><div class="content">

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[<span>Average acres burned per wildfire in the United States</span></a></li><li class=""><a href="https://ourworldindata.org/grapher/death-rates-from-disasters"><span>Death rate from natural disasters</span></a></li><li class=""><a href="https://ourworldindata.org/grapher/death-rates-natural-disasters"><span>Death rates from natural disasters</span></a></li><li class=""><a href="https://ourworldindata.org/grapher/earthquake-deaths"><span>Deaths from earthquakes</span></a></li><li class=""><a href="https://ourworldindata.org/grapher/share-deaths-from-natural-disasters"><span>Deaths from natural disasters as a share of total deaths</span></a></li><li class=""><a href="https://ourworldindata.org/grapher/number-of-deaths-from-natural-disasters"><span>Deaths from natural disasters by type</span></a></li><li class=""><a href="https://ourworldindata.org/grapher/decadal-average-death-rates-from-natural-disasters"><span>Decadal average: Death rates from natural disasters</span></a></li><li class=""><a href="https://ourworldindata.org/grapher/decadal-deaths-disasters-type"><span>Decadal average: Number of deaths from natural disasters</span></a></li><li class=""><a href="https://ourworldindata.org/grapher/direct-disaster-economic-loss"><span>Direct disaster economic loss</span></a></li><li class=""><a href="https://ourworldindata.org/grapher/direct-disaster-loss-as-a-share-of-gdp"><span>Direct disaster economic loss as a share of GDP</span></a></li><li class=""><a href="https://ourworldindata.org/grapher/direct-economic-loss-attributed-to-disasters"><span>Direct economic loss attributed to disasters</span></a></li><li class=""><a href="https://ourworldindata.org/grapher/disaster-risk-reduction-progress"><img](https://ourworldindata.org/grapher/acres-burned-per-wildfire-usa)

[Disaster risk reduction progress score](https://ourworldindata.org/grapher/exports/disaster-risk-reduction-progress.svg)

[Drought severity index](https://ourworldindata.org/grapher/drought-severity-index-us)

[Economic damage by natural disaster type](https://ourworldindata.org/grapher/economic-damage-from-natural-disasters)

[Fatality rates due to lightning in the US](https://ourworldindata.org/grapher/fatality-rates-due-to-lightning-in-the-us)

[Fatality rates in the US due to weather events](https://ourworldindata.org/grapher/fatality-rates-in-the-us-due-to-weather-events)

[Frequency of North Atlantic hurricanes](https://ourworldindata.org/grapher/frequency-north-atlantic-hurricanes)

[Global damage costs from natural disasters](https://ourworldindata.org/grapher/damage-costs-from-natural-disasters)

[Global disaster losses as a share of GDP](https://ourworldindata.org/grapher/global-disaster-losses-gdp-share)

[Global economic losses from disasters as a share of GDP](https://ourworldindata.org/grapher/economic-losses-from-disasters-share-gdp)

[Global injuries from natural disasters](https://ourworldindata.org/grapher/number-injured-from-disasters)

[Global natural disaster death rates](https://ourworldindata.org/grapher/natural-disaster-death-rates)

affected-by-natural-disasters"><span>Global number affected by natural disasters</span></a></li><li class=""><a href="https://ourworldindata.org/grapher/global-precipitation-anomaly"><span>Global precipitation anomaly</span></a></li><li class=""><a href="https://ourworldindata.org/grapher/natural-disasters-by-type"><span>Global reported natural disasters by type</span></a></li><li class=""><a href="https://ourworldindata.org/grapher/weather-losses-share-gdp"><span>Global weather disaster losses as a share of GDP</span></a></li><li class=""><a href="https://ourworldindata.org/grapher/how-many-deaths-does-it-take-for-a-disaster-in-different-continents-to-receive-news-coverage"><span>How many deaths does it take for a disaster in different continents to receive news coverage?</span></a></li><li class=""><a href="https://ourworldindata.org/grapher/how-many-deaths-does-it-take-for-a-disaster-to-receive-news-coverage"><span>How many deaths does it take for a disaster to receive news coverage?</span></a></li><li class=""><a href="https://ourworldindata.org/grapher/hurricane-landfalls-us"><span>Hurricane landfalls in the United States</span></a></li><li class=""><a href="https://ourworldindata.org/grapher/intensity-error"><span>Intensity error</span></a></li><li class=""><a href="https://ourworldindata.org/grapher/largest-impact-craters"><span>Largest confirmed impact craters on Earth by diameter</span></a></li><li class=""><a href="https://ourworldindata.org/grapher/near-earth-asteroids-discovered-over-time"><span>Near-Earth asteroids discovered over time</span></a></li><li class=""><a href="https://ourworldindata.org/grapher/news-coverage-of-disasters"><img src="https://ourworldindata.org/grapher/exports/news-coverage-of-disasters.svg" loading="lazy" data-



no-lightbox="true" data-no-img-formatting="true" width="850" height="600"><span>News coverage of disasters</span></a></li><li class=""><a href="https://ourworldindata.org/grapher/news-coverage-of-disasters-by-continent"><span>News coverage of disasters, by continent</span></a></li><li class=""><a href="https://ourworldindata.org/grapher/number-homeless-from-natural-disasters"><span>Number left homeless from natural disasters</span></a></li><li class=""><a href="https://ourworldindata.org/grapher/deaths-and-missing-persons-due-to-natural-disasters"><span>Number of deaths and missing persons due to natural disasters</span></a></li><li class=""><a href="https://ourworldindata.org/grapher/natural-disaster-deaths-ihme"><span>Number of deaths from natural disasters</span></a></li><li class=""><a href="https://ourworldindata.org/grapher/deaths-from-natural-disasters-by-type"><span>Number of deaths from natural disasters by type</span></a></li><li class=""><a href="https://ourworldindata.org/grapher/deaths-from-volcanic-eruptions"><span>Number of deaths from volcanic eruptions</span></a></li><li class=""><a href="https://ourworldindata.org/grapher/significant-earthquakes"><span>Number of known significant earthquakes</span></a></li><li class=""><a href="https://ourworldindata.org/grapher/local-govts-risk-reduction"><span>Number of local governments that adopt disaster risk reduction strategies</span></a></li><li class=""><a href="https://ourworldindata.org/grapher/number-of-natural-disaster-events"><span>Number of recorded natural disaster events</span></a></li><li class=""><a href="https://ourworldindata.org/grapher/significant-volcanic-eruptions"><span>Number of significant volcanic eruptions</span></a></li><li class=""><a href="https://ourworldindata.org/grapher/wildfire-numbers-usa"><span>Number of wildfires in the United States</span></a></li><li class=""><a href="https://ourworldindata.org/grapher/internally-displaced-persons-from-disasters"><span>People displaced internally by natural disasters</span></a></li><li class=""><a href="https://ourworldindata.org/grapher/cyclone-power-dissipation-index"><span>Power Dissipation Index (PDI) of North Atlantic cyclones</span></a></li><li class=""><a href="https://ourworldindata.org/grapher/precipitation-anomaly"><span>Precipitation anomaly in the United States</span></a></li><li class=""><a href="https://ourworldindata.org/grapher/legislative-provisions-for-managing-disaster-risk"><span>Score of adoption and implementation of national strategies for managing disaster risk</span></a></li><li class=""><a href="https://ourworldindata.org/grapher/extreme-one-day-precipitation-usa"><span>Share of US land area that experienced extreme one-day precipitation</span></a></li><li class=""><a href="https://ourworldindata.org/grapher/unusually-high-precipitation-usa"><span>Share of US land area with unusually high annual precipitation</span></a></li><li class=""><a href="https://ourworldindata.org/grapher/high-summer-temp-usa"><span>Share of US land area with unusually high summer temperatures</span></a></li><li class=""><a href="https://ourworldindata.org/grapher/low-winter-temps-usa"><span>Share of US land area with unusually low winter temperatures</span></a></li><li class=""><a href="https://ourworldindata.org/grapher/local-gov-disaster-strategies"><span>Share of local governments that adopt and implement local disaster risk reduction strategies</span></a></li><li class=""><a href="https://ourworldindata.org/grapher/hurricane-track-error"><span>Track error</span></a></li><li class=""><a href="https://ourworldindata.org/grapher/acres-burned-



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<span class="label">Click to open interactive version</span>

</div>

</a>

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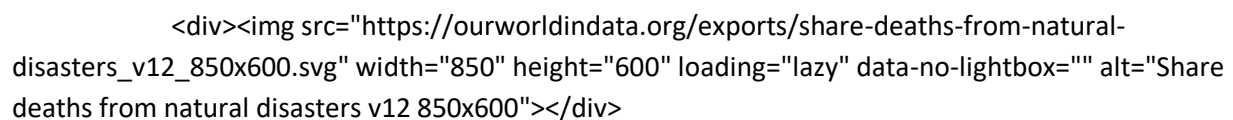
What share of deaths are from natural disasters?

Globally, over the past decade, natural disasters accounted for an average of 0.1% of total deaths. This was, however, highly variable to high-impact events and ranged from 0.01% to 0.4% of total deaths.

In the map shown here you can explore these trends by country over the past few decades. Using the timeline on the chart you can observe changes across the world over time, or by clicking on a country you can see its individual trend.

What we observe is that for most countries the share of deaths from natural disasters are very low in most years. Often it can be zero – with no loss of life to disasters – or well below 0.01%. But we also see clearly the effects of low-frequency but high-impact events: in 2010, more than 70% of deaths in Haiti were the result of the [Port-au-Prince earthquake](https://en.wikipedia.org/wiki/2010_Haiti_earthquake).

<https://ourworldindata.org/grapher/share-deaths-from-natural-disasters>



hand-pointer



recent decade, this has often been less than 10,000). Even in peak years with high-impact events, the death toll has not exceeded 500,000 since the mid-1960s. </p><p>This decline is even more impressive when we consider the rate of <a href="https://ourworldindata.org/world-population-growth">population growth</a> over this period. When we correct for population – showing this data in terms of death rates (measured per 100,000 people) – we see an even greater decline over the past century. This chart can be viewed <strong><a href="https://ourworldindata.org/explorers/natural-disasters?facet=none&Disaster+Type=All+disasters&Impact=Deaths&Timespan=Annual&Per+capita=true&country=~OWID\_WRL">here</a></strong>.</p><p>The annual number of deaths from natural disasters is also available by country since 1990. This can be explored in the interactive map.</p></div><div class="wp-block-column"><div class="wp-sticky-container"><figure data-explorer-src="https://ourworldindata.org/explorers/natural-disasters?facet=none&Disaster+Type=All+disasters&Impact=Deaths&Timespan=Annual&Per+capita=false&country=~OWID\_WRL&hideControls=true" style="width: 100%; height: 600px; border: 0px none;"><div class="loading-indicator"><span style="border-color:#333"></span></div></figure><figure data-explorer-src="https://ourworldindata.org/explorers/natural-disasters?tab=map&facet=none&Disaster+Type=All+disasters&Impact=Deaths&Timespan=Annual&Per+capita=false&country=~OWID\_WRL&hideControls=true" style="width: 100%; height: 600px; border: 0px none;"><div class="loading-indicator"><span style="border-color:#333"></span></div></figure></div></div><h3 id="average-number-of-deaths-by-decade">Average number of deaths by decade<a class="deep-link" href="#average-number-of-deaths-by-decade"></a></h3><div class="wp-block-columns is-style-sticky-right"><div class="wp-block-column"><p>In the chart we show global deaths from natural disasters since 1900, but rather than reporting annual deaths, we show the annual average by decade. The data for this chart can be found in the table presented <a href="https://ourworldindata.org/ofdacred-international-disaster-data/">here</a>.</p><p>As we see, over the course of the 20th century there was a significant decline in global deaths from natural disasters. In the early 1900s, the annual average was often in the range of 400,000 to 500,000 deaths. In the second half of the century and into the early 2000s, we have seen a significant decline to less than 100,000 – at least five times lower than these peaks. <br><br>This decline is even more impressive when we consider the rate of <a href="https://ourworldindata.org/world-population-growth">population growth</a> over this period. When we correct for population – showing this data in terms of death rates (measured per 100,000 people) – then we see a more than 10-fold decline over the past century. This chart can be viewed <a href="https://ourworldindata.org/grapher/decadal-average-death-rates-from-natural-disasters?country=~OWID\_WRL">here</a>.</p></div><div class="wp-block-column"><div class="wp-sticky-container"><figure data-grapher-src="https://ourworldindata.org/grapher/decadal-deaths-disasters-type?country=OWID\_WRL~" class="grapherPreview">

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</svg></span>

<span class="label">Click to open interactive version</span>

</div>

</a>

</figure></div></div><h3 id="number-of-deaths-by-type-of-natural-disaster">Number of deaths by type of natural disaster<a class="deep-link" href="#number-of-deaths-by-type-of-natural-disaster"></a></h3><div class="wp-block-columns is-style-sticky-right">

<div class="wp-block-column">

<p>With almost minute-by-minute updates on what's happening in the world, we are constantly reminded of the latest disaster. These stories are, of course, important but they do not give us a sense of how the toll of disasters has changed over time.&nbsp;</p>

<p>For most of us, it is hard to know whether any given year was a particularly deadly one in the context of previous years.</p>

p>To understand the devastating toll of disasters today, and in the past, we have built a <a href="https://ourworldindata.org/explorers/natural-disasters">Natural Disasters Data Explorer</a>



which provides estimates of fatalities, displacement and economic damage for every country since 1900. This is based on data sourced from EM-DAT; a project that undertakes the important work of building these incredibly detailed histories of disasters.<sup>2</sup>

In this visualization I give a sense of how the global picture has evolved over the last century. It shows the estimated annual death toll – from all disasters at the followed by a breakdown by type. The size of the bubble represents the total death toll for that year.

I've labeled most of the years with the largest death tolls. This usually provokes the follow-up question: "Why? What event happened?". So I've also noted large-scale events that contributed to the majority – but not necessarily all – of the deaths in that year.

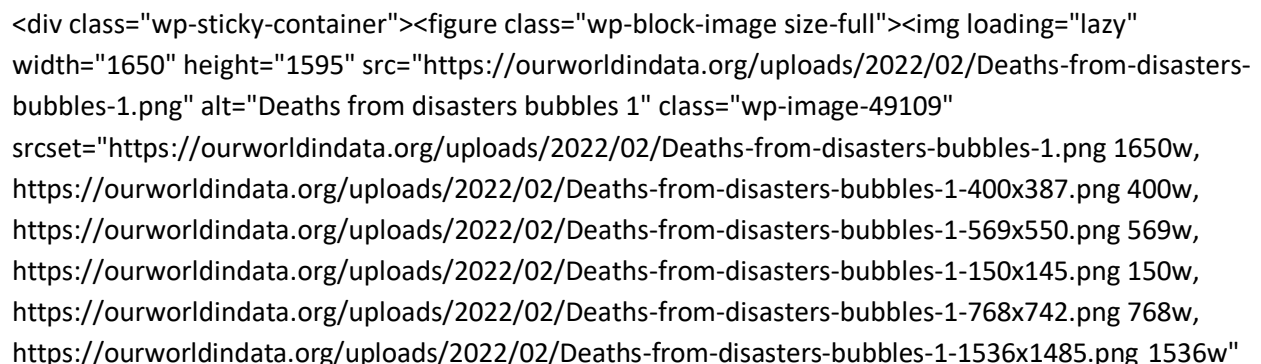
For example, the estimated global death toll from storms in 2008 was approximately 141,000. 138,366 of these deaths occurred in Cyclone Margis, which struck Myanmar, and is labeled on the chart.

What we see is that in the 20th century, it was common to have years where the death toll was in the millions. This was usually the result of major droughts or floods. Often these would lead to famines. My colleague Joe Hasell looks at the long history of famines [here](https://ourworldindata.org/famines).

Improved food security, resilience to other disasters, and better national and international responses mean that the world has not experienced death tolls of this scale in many decades. Famines today are usually driven by civil war and political unrest.

In most years, the death toll from disasters is now in the range of 10,000 to 20,000 people. In the most fatal years – which tend to be those with major earthquakes or cyclones – this can reach tens to hundreds of thousands.

This trend does not mean that disasters have become less frequent, for less intense. It means the world today is much better at preventing deaths from disasters than in the past. This will become increasingly important in our response and adaptation to [climate change](https://ourworldindata.org/climate-change).

A visualization showing the estimated annual death toll from disasters from 1900 to the present. The size of the bubble represents the total death toll for that year. The chart shows a significant increase in death tolls in the early 20th century, peaking in the 1940s and 1950s, followed by a decline and then a sharp increase in the late 20th century, peaking in the 1990s and 2000s. The chart is titled "Deaths from disasters bubbles 1" and is located at the bottom of the page.

sizes="(max-width: 1650px) 100vw, 1650px" data-high-res-  
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</div></section><section><div class="section-heading"><div class="wrapper"><div><h2 id="injuries-and-displacement-from-disasters">Injuries and displacement from disasters<a class="deep-link" href="#injuries-and-displacement-from-disasters"></a></h2></div></div></div><div class="wp-block-columns is-style-sticky-right"><div class="wp-block-column"><p>Human impacts from natural disasters are not fully captured in mortality rates. Injury, homelessness, and displacement can all have a significant impact on populations.</p><p>The visualisation below shows the number of people displaced internally (i.e. within a given country) from natural disasters. Note that these figures report on the basis of new cases of displaced persons: if someone is forced to flee their home from natural disasters more than once in any given year, they will be recorded only once within these statistics.</p><p>Interactive charts on the following global impacts are available using the links below:</p><ul><li><strong><a href="https://ourworldindata.org/explorers/natural-disasters?tab=map&facet=none&Disaster+Type=All+disasters&Impact=Injuries&Timespan=Decadal+average&Per+capita=false&country=~OWID\_WRL" target="\_blank" rel="noreferrer noopener">Injuries</a></strong>: number of people injured is defined as “People suffering from physical injuries, trauma or an illness requiring immediate medical assistance as a direct result of a disaster.”</li><li><strong><a href="https://ourworldindata.org/explorers/natural-disasters?tab=map&facet=none&Disaster+Type=All+disasters&Impact=Homeless&Timespan=Decadal+average&Per+capita=false&country=~OWID\_WRL" target="\_blank" rel="noreferrer noopener">Homelessness</a></strong>: &nbsp;number of people homeless is defined as “Number of people whose house is destroyed or heavily damaged and therefore need shelter after an event.”</li><li><a href="https://ourworldindata.org/explorers/natural-disasters?tab=map&facet=none&Disaster+Type=All+disasters&Impact=Affected&Timespan=Decadal+average&Per+capita=false&country=~OWID\_WRL" target="\_blank" rel="noreferrer noopener"><strong>Affected</strong></a>: &nbsp;number of people affected is defined as “People requiring immediate assistance during a period of emergency, i.e. requiring basic survival needs such as food, water, shelter, sanitation and immediate medical assistance.”</li><li><a href="https://ourworldindata.org/explorers/natural-disasters?tab=map&facet=none&Disaster+Type=All+disasters&Impact=Total+affected&Timespan=Decadal+average&Per+capita=false&country=~OWID\_WRL" target="\_blank" rel="noreferrer noopener"><strong>Total number affected</strong></a>: &nbsp;total number of people affected is defined as “the sum of the injured, affected and left homeless after a disaster.”</li></ul></div><div class="wp-block-column"><div class="wp-sticky-container"><figure data-grapher-src="https://ourworldindata.org/grapher/internally-displaced-persons-from-disasters" class="grapherPreview">

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<span class="label">Click to open interactive version</span>

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[<svg aria-hidden="true" focusable="false" data-prefix="fas" data-icon="arrow-down" class="svg-inline--fa fa-arrow-down" role="img" xmlns="http://www.w3.org/2000/svg" viewBox="0 0 384 512"><path fill="currentColor" d="M169.4 470.6c12.5 12.5 32.8 12.5 45.3 0l160-160c12.5-12.5 12.5-32.8 0-45.3s-32.8-12.5-45.3 0l224 370.8 224 64c0-17.7-14.3-32-32-32s-32 14.3-32 32l0 306.7l54.6 265.4c-12.5-12.5-32.8-12.5-45.3 0s-12.5 32.8 0 45.3l160 160z"></path></svg><span>Landslides</span></a></li><li><a href="#famines-droughts"><svg aria-hidden="true" focusable="false" data-prefix="fas" data-icon="arrow-down" class="svg-inline--fa fa-arrow-down" role="img" xmlns="http://www.w3.org/2000/svg" viewBox="0 0 384 512"><path fill="currentColor" d="M169.4 470.6c12.5 12.5 32.8 12.5 45.3 0l160-160c12.5-12.5 12.5-32.8 0-45.3s-32.8-12.5-45.3 0l224 370.8 224 64c0-17.7-14.3-32-32-32s-32 14.3-32 32l0 306.7l54.6 265.4c-12.5-12.5-32.8-12.5-45.3 0s-12.5 32.8 0 45.3l160 160z"></path></svg><span>Famines & Droughts</span></a></li><li><a href="#hurricanes-tornados-and-cyclones"><svg aria-hidden="true" focusable="false" data-prefix="fas" data-icon="arrow-down" class="svg-inline--fa fa-arrow-down" role="img" xmlns="http://www.w3.org/2000/svg" viewBox="0 0 384 512"><path fill="currentColor" d="M169.4 470.6c12.5 12.5 32.8 12.5 45.3 0l160-160c12.5-12.5 12.5-32.8 0-45.3s-32.8-12.5-45.3 0l224 370.8 224 64c0-17.7-14.3-32-32-32s-32 14.3-32 32l0 306.7l54.6 265.4c-12.5-12.5-32.8-12.5-45.3 0s-12.5 32.8 0 45.3l160 160z"></path></svg><span>Hurricanes, Tornados, and Cyclones</span></a></li><li><a href="#extreme-precipitation-and-flooding"><svg aria-hidden="true" focusable="false" data-prefix="fas" data-icon="arrow-down" class="svg-inline--fa fa-arrow-down" role="img" xmlns="http://www.w3.org/2000/svg" viewBox="0 0 384 512"><path fill="currentColor" d="M169.4 470.6c12.5 12.5 32.8 12.5 45.3 0l160-160c12.5-12.5 12.5-32.8 0-45.3s-32.8-12.5-45.3 0l224 370.8 224 64c0-17.7-14.3-32-32-32s-32 14.3-32 32l0 306.7l54.6 265.4c-12.5-12.5-32.8-12.5-45.3 0s-12.5 32.8 0 45.3l160 160z"></path></svg><span>Extreme precipitation and flooding</span></a></li><li><a href="#extreme-temperature-heat-cold"><svg aria-hidden="true" focusable="false" data-prefix="fas" data-icon="arrow-down" class="svg-inline--fa fa-arrow-down" role="img" xmlns="http://www.w3.org/2000/svg" viewBox="0 0 384 512"><path fill="currentColor" d="M169.4 470.6c12.5 12.5 32.8 12.5 45.3 0l160-160c12.5-12.5 12.5-32.8 0-45.3s-32.8-12.5-45.3 0l224 370.8 224 64c0-17.7-14.3-32-32-32s-32 14.3-32 32l0 306.7l54.6 265.4c-12.5-12.5-32.8-12.5-45.3 0s-12.5 32.8 0 45.3l160 160z"></path></svg><span>Extreme Temperature \(Heat & Cold\)</span></a></li><li><a href="#wildfires"><svg aria-hidden="true" focusable="false" data-prefix="fas" data-icon="arrow-down" class="svg-inline--fa fa-arrow-down" role="img" xmlns="http://www.w3.org/2000/svg" viewBox="0 0 384 512"><path fill="currentColor" d="M169.4 470.6c12.5 12.5 32.8 12.5 45.3 0l160-160c12.5-12.5 12.5-32.8 0-45.3s-32.8-12.5-45.3 0l224 370.8 224 64c0-17.7-14.3-32-32-32s-32 14.3-32 32l0 306.7l54.6 265.4c-12.5-12.5-32.8-12.5-45.3 0s-12.5 32.8 0 45.3l160 160z"></path></svg><span>Wildfires</span></a></li><li><a href="#lightning"><svg aria-hidden="true" focusable="false" data-prefix="fas" data-icon="arrow-down" class="svg-inline--fa fa-arrow-down" role="img" xmlns="http://www.w3.org/2000/svg" viewBox="0 0 384 512"><path fill="currentColor" d="M169.4 470.6c12.5 12.5 32.8 12.5 45.3 0l160-160c12.5-12.5 12.5-32.8 0-45.3s-32.8-12.5-45.3 0l224 370.8 224 64c0-17.7-14.3-32-32-32s-32 14.3-32 32l0 306.7l54.6 265.4c-12.5-12.5-32.8-12.5-45.3 0s-12.5 32.8 0 45.3l160 160z"></path></svg><span>Lightning</span></a></li></ul></div></div><h3 id="earthquakes">Earthquakes<a class="deep-link" href="#earthquakes"></a></h3><div class="wp-](#landslides)

block-columns is-style-sticky-right"><div class="wp-block-column"><h4 id="earthquake-events">Earthquake events<a class="deep-link" href="#earthquake-events"></a></h4></div><div class="wp-block-column"><div class="wp-sticky-container"></div></div><div class="wp-block-columns is-style-sticky-right"><div class="wp-block-column"><p>Earthquake events occur across the world every day. The US Geological Survey (USGS) tracks and reports global earthquakes, with (close to) real-time updates which you can <strong><a href="https://earthquake.usgs.gov/earthquakes/map/" target="\_blank" rel="noopener noreferrer">find here</a></strong>.</p><p>However, the earthquakes which occur most frequently are often too small to cause significant damage (whether to human life, or in economic terms).</p><p>In the chart below we show the long history of known earthquakes classified by the <a href="https://www.ngdc.noaa.gov/nndc/struts/form?t=101650&amp;s=1&amp;d=1" target="\_blank" rel="noopener noreferrer">National Geophysical Data Center (NGDC) of the NOAA</a> as ‘significant’ earthquakes. Significant earthquakes are those which are large enough to cause notable damage. They must meet at least one of the following criteria:&nbsp;caused deaths, moderate damage (\$1 million or more), magnitude 7.5 or greater, Modified Mercalli Intensity (MMI) X or greater, or generated a tsunami.</p><p>Available data&nbsp;— which you can explore in the chart below&nbsp;— extends back to 2150 BC. But we should be aware that most recent records will be much more complete than our long-run historic estimates. An increase in the number of recorded earthquakes doesn’t necessarily mean this was the true trend over time. By clicking on a country in the map below, you can view it’s full series of known significant earthquakes.</p></div><div class="wp-block-column"><div class="wp-sticky-container"><figure data-grapher-src="https://ourworldindata.org/grapher/significant-earthquakes" class="grapherPreview">

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76,64,142.76,142.76a142.17,142.17,0,0,1-24.13,79.43A27.47,27.47,0,0,1,239.76,234.78Z"  
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<span class="label">Click to open interactive version</span>

</div>

</a>

</figure></div></div></div><div class="wp-block-columns is-style-sticky-right"><div class="wp-block-column"><h4 id="deaths-from-earthquakes">Deaths from earthquakes<a class="deep-link" href="#deaths-from-earthquakes"></a></h4></div><div class="wp-block-column"><div class="wp-sticky-container"></div></div></div><div class="wp-block-columns is-style-sticky-right"><div class="wp-block-column"><p>Alongside estimates of the number of earthquake events, the&nbsp;National Geophysical Data Center (NGDC) of the NOAA also publish estimates of the number of deaths over this long-term series. In the chart below we see the estimated mortality numbers from 2000 BC through to 2017.</p><p>These figures can be found for specific countries using the “change country” function in the bottom-left of the chart, or by selecting the “map” on the bottom-right.</p><p>At the global level we see that earthquake deaths have been a persistent human risk through time.</p></div><div class="wp-block-column"><div class="wp-sticky-container"><figure data-grapher-src="https://ourworldindata.org/grapher/earthquake-deaths" class="grapherPreview">

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srcset="https://ourworldindata.org/uploads/2018/10/Deadliest-earthquakes-750x508.png 750w, https://ourworldindata.org/uploads/2018/10/Deadliest-earthquakes-150x102.png 150w, https://ourworldindata.org/uploads/2018/10/Deadliest-earthquakes-400x271.png 400w, https://ourworldindata.org/uploads/2018/10/Deadliest-earthquakes-768x520.png 768w" sizes="(max-width: 750px) 100vw, 750px" data-high-res-srcset="https://ourworldindata.org/uploads/2018/10/Deadliest-earthquakes.png"></figure></div><div class="tableContainer"><table id="tablepress-100" class="tablepress tablepress-id-100">

<thead>

<tr class="row-1 odd">

<th class="column-1">Ranking</th><th class="column-2">Location</th><th class="column-3">Year</th><th class="column-4">Estimated death toll</th><th class="column-5">Earthquake magnitude</th><th class="column-6">Additional information</th>

</tr>

</thead>

<tbody class="row-hover">

<tr class="row-2 even">

<td class="column-1">1</td><td class="column-2">Shaanxi, China</td><td class="column-3">1556</td><td class="column-4">830,000</td><td class="column-5">8</td><td class="column-6">More than <a href="https://en.wikipedia.org/wiki/1556\_Shaanxi\_earthquake">97 counties in China</a> were affected. A 520-mile wide area destroyed. In some counties it's estimated that up to 60% of the population died. Such catastrophic losses are attributed to loess cave settlements, which collapsed as a result.</td>

</tr>

<tr class="row-3 odd">

<td class="column-1">2</td><td class="column-2">Port-au-Prince, Haiti</td><td class="column-3">2010</td><td class="column-4">316,000</td><td class="column-5">7</td><td class="column-6">Death toll is still disputed. Here we present the adopted figure by the NGDC of the NOAA (for consistency with other earthquakes); this is the figure————— reported by the Haitian government. Some sources suggest a lower figure of 220,000. In the latter case, this event would fall to 7th place in the above rankings.</td>

</tr>

<tr class="row-4 even">



|   |                 |     |         |     |                                                                                                                                                                                                                                                                                                                                                                                                                   |
|---|-----------------|-----|---------|-----|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 3 | Antakya, Turkey | 115 | 260,000 | 7.5 | Antioch (ancient ruins which lie near the modern city Antakya) and surrounding areas suffered severe damage. Apamea was <a href="https://www.sciencedirect.com/science/article/pii/S0012821X03001444">also destroyed and Beirut suffered severe damage</a> . A local <a href="https://www.earth-prints.org/bitstream/2122/908/1/01Sbeinati.pdf">tsunami was triggered</a> causing damage to the coast of Lebanon. |
|---|-----------------|-----|---------|-----|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

|   |                 |     |         |   |                                                                                                                                                                                                                                                                                      |
|---|-----------------|-----|---------|---|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 4 | Antakya, Turkey | 525 | 250,000 | 7 | Severe damage to the area of the Byzantine Empire. The earthquake caused severe damage to many buildings. However, severe damage was also <a href="https://www.earth-prints.org/bitstream/2122/908/1/01Sbeinati.pdf">caused by fires in the aftermath</a> combined with strong wind. |
|---|-----------------|-----|---------|---|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

|   |                 |      |         |     |                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
|---|-----------------|------|---------|-----|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 5 | Tangshan, China | 1976 | 242,769 | 7.5 | Reported that the earthquake risk had been greatly underestimated meaning almost all buildings and structures were designed and built without seismic considerations. Estimated that <a href="https://authors.library.caltech.edu/26539/">up to 85% of buildings collapsed</a> . Tangshan therefore large comprised of <a href="https://www.nap.edu/login.php?record_id=19764">unreinforced brick buildings</a> which resulted in a large death toll. |
|---|-----------------|------|---------|-----|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

|   |                      |      |         |         |                                                                                                                                                                       |
|---|----------------------|------|---------|---------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 6 | Gyzndzha, Azerbaijan | 1139 | 230,000 | Unknown | Often <a href="https://www.seismology.az/en/stations/5#.W7aH-ZM-eL8">termed the Ganja earthquake</a> . Much less is documented on the specific details of this event. |
|---|----------------------|------|---------|---------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------|

<td class="column-1">7</td><td class="column-2">Sumatra, Indonesia</td><td class="column-3">2004</td><td class="column-4">227,899</td><td class="column-5">9.1</td><td class="column-6">Earthquake in Indian Ocean off the coast of Sumatra resulted in a series of large tsunamis (<a href="https://soundwaves.usgs.gov/2005/03/">ranging 15 to 30 metres in height</a>). Victims across 14 countries in the regions with Indonesia being the hardest-hit, followed by Sri Lanka, India and Thailand. There was no tsunami warning system in place.</td>

</tr>

<tr class="row-9 odd">

<td class="column-1">8</td><td class="column-2">Damghan, Iran</td><td class="column-3">856</td><td class="column-4">200,000</td><td class="column-5">7.9</td><td class="column-6">Estimated that <a href="https://en.wikipedia.org/wiki/856\_Damghan\_earthquake">extent of the damage area was 220 miles long</a>. It's also hypothesised that the ancient city of Šahr-e Qumis was so badly damaged that it was abandoned after the earthquake.</td>

</tr>

<tr class="row-10 even">

<td class="column-1">8</td><td class="column-2">Gansu, China</td><td class="column-3">1920</td><td class="column-4">200,000</td><td class="column-5">8.3</td><td class="column-6">Damage occurred <a href="https://en.wikipedia.org/wiki/1920\_Haiyuan\_earthquake">across 7 provinces and regions</a>. In some cities almost all buildings collapsed, or were buried by landslides. It was reported that additional deaths occurred due to cold exposure: fear from aftershocks meant survivors tried to rely only on temporary shelters which were unsuitable for the harsh winter.</td>

</tr>

<tr class="row-11 odd">

<td class="column-1">9</td><td class="column-2">Dvin, Armenia</td><td class="column-3">893</td><td class="column-4">150,000</td><td class="column-5">Unknown</td><td class="column-6">City of Dvin was destroyed, with the collapse of most buildings, defensive walls and palaces; <a href="https://www.earth-prints.org/bitstream/2122/1795/1/22%20hasrat'yan.pdf">estimated that only 100 buildings were left standing</a>. With its city defences ruined, Dvin was <a href="https://en.wikipedia.org/wiki/893\_Dvin\_earthquake">taken over and turned into a military base</a> by Muhammad ibn Abi'l-Saj, the Sajid emir of Adharbayjan.</td>

</tr>

<tr class="row-12 even">



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76,64,142.76,142.76a142.17,142.17,0,0,1-24.13,79.43A27.47,27.47,0,0,1,239.76,234.78Z"  
transform="translate(0 -0.41)"></path>

</svg></span>

<span class="label">Click to open interactive version</span>

</div>

</a>

</figure></div></div></div><div class="wp-block-columns is-style-sticky-right"><div class="wp-  
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column"><div class="wp-sticky-container"></div></div></div><div class="wp-block-columns is-style-  
sticky-right"><div class="wp-block-column"><p>In the visualization we see the number of deaths from  
significant volcanic eruptions across the world. Using the timeline on the map we can see the frequency  
of volcanic activity deaths over time. <br><br>If we look at deaths over the past century we see several  
high-impact events: the <a href="https://en.wikipedia.org/wiki/Armero\_tragedy">Nevado del Ruiz  
eruption</a> in Colombia in 1985; the Mount Pelée eruption in Martinique in 1902; and <a  
href="https://en.wikipedia.org/wiki/1883\_eruption\_of\_Krakatoa">1883 eruption of Krakatoa</a> in  
Indonesia.</p></div><div class="wp-block-column"><div class="wp-sticky-container"><figure data-  
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```

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</svg>
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Click to open interactive version
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</figure></div></div></div><h3 id="landslides">Landslides<a class="deep-link"
href="#landslides"></h3><div class="wp-block-columns is-style-sticky-right"><div class="wp-block-
column"><p>This visualization – sourced from the NASA Socioeconomic Data And Applications Center
(SEDAC) – shows the distribution of mortality risk from landslides across the world.

As we would
expect, the risks of landslides are much greater close to highly mountainous regions with dense
neighbouring populations. This makes the mortality risk highest across the Andes region in South
America, and the Himalayas across Asia.</p></div><div class="wp-block-column"><div class="wp-sticky-
container"><div class="wp-block-image"><figure class="aligncenter"><figcaption>Global landslide mortality risk distribution – SEDAC
(NASA)<a id="ref-7" class="ref" href="#note-
7">⁷</figcaption></figure></div></div></div></div><h3 id="famines-
droughts">Famines & Droughts</h3><div
```

class="wp-block-columns is-style-sticky-right"><div class="wp-block-column"><p>We cover the history of Famines in detail in our dedicated entry <a href="https://ourworldindata.org/famines"><strong>here</strong></a>. For this research we assembled a new global dataset on famines from the 1860s until 2016.</p><p>In the visualization shown here we see trends in drought severity in the United States. Given is the annual data of drought severity, plus the 9-year average.<br><br>This is measured by the The Palmer Drought Severity Index: the average moisture conditions observed between 1931 and 1990 at a given location is given an index value of zero. A positive value means conditions are wetter than average, while a negative value is drier than average. A value between -2 and -3 indicates moderate drought, -3 to -4 is severe drought, and -4 or below indicates extreme drought.</p></div><div class="wp-block-column"><div class="wp-sticky-container"><figure data-grapher-src="https://ourworldindata.org/grapher/drought-severity-index-us" class="grapherPreview">

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</svg></span>

<span class="label">Click to open interactive version</span>

</div>

</a>

</figure></div></div></div><h3 id="hurricanes-tornados-and-cyclones">Hurricanes, Tornados, and Cyclones<a class="deep-link" href="#hurricanes-tornados-and-cyclones"></a></h3><div class="wp-block-columns is-style-sticky-right"><div class="wp-block-column"><h4 id="long-term-trends-in-deaths-from-us-weather-events">Long-term trends in deaths from US weather events<a class="deep-link" href="#long-term-trends-in-deaths-from-us-weather-events"></a></h4></div><div class="wp-block-column"><div class="wp-sticky-container"></div></div></div><div class="wp-block-columns is-style-sticky-right"><div class="wp-block-column"><p>Trends in the US provide some of the most complete data on impacts and deaths from weather events over time.<br><br>This chart shows death rates from lightning and other weather events in the United States over time. Death rates are given as the number of deaths per million individuals. Over this period, we see that on average each has seen a significant decline in death rates. This is primarily the result of improved infrastructure, predicted and response systems to disaster events.</p></div><div class="wp-block-column"><div class="wp-sticky-container"><figure data-grapher-src="https://ourworldindata.org/grapher/fatality-rates-in-the-us-due-to-weather-events" class="grapherPreview">

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</svg></span>

<span class="label">Click to open interactive version</span>

</div>

</a>

</figure></div></div></div><div class="wp-block-columns is-style-sticky-right"><div class="wp-block-column"><h4 id="intensity-of-north-atlantic-hurricanes">Intensity of North Atlantic Hurricanes<a class="deep-link" href="#intensity-of-north-atlantic-hurricanes"></a></h4></div><div class="wp-block-column"><div class="wp-sticky-container"></div></div></div><div class="wp-block-columns is-style-sticky-right"><div class="wp-block-column"><p>A key metric for assessing hurricane severity is their intensity, and the power they carry.<br><br>The visualizations here use two metrics to define this: the accumulated cyclone energy (ACE), an index that measures the activity of a cyclone season; and the power dissipation index of cyclones.</p></div><div class="wp-block-column"><div class="wp-sticky-container"></div></div></div><div class="wp-block-columns is-style-side-by-side"><div class="wp-block-column"><figure data-grapher-src="https://ourworldindata.org/grapher/ace-north-atlantic-hurricanes" class="grapherPreview">

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</svg></span>

<span class="label">Click to open interactive version</span>

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</figure></div></div><h3 id="extreme-precipitation-and-flooding">Extreme precipitation and flooding<a class="deep-link" href="#extreme-precipitation-and-flooding"></a></h3><div class="wp-block-columns is-style-sticky-right"><div class="wp-block-column"><h4 id="precipitation-anomalies">Precipitation anomalies<a class="deep-link" href="#precipitation-anomalies"></a></h4></div><div class="wp-block-column"><div class="wp-sticky-container"></div></div></div><div class="wp-block-columns is-style-sticky-right"><div class="wp-block-column"><p>In the visualization shown we see the global precipitation anomaly each year; trends in the US-specific anomaly can be found <a href="https://ourworldindata.org/grapher/precipitation-

anomaly">here</a>. </p><p>This precipitation anomaly is measured relative to the century average from 1901 to 2000. Positive values indicate a wetter year than normal; negative values indicate a drier year.</p><p>Also shown is US-specific data on the share of land area which experiences unusually high precipitation in any given year. </p></div><div class="wp-block-column"><div class="wp-sticky-container"></div></div><div class="wp-block-columns is-style-side-by-side"><div class="wp-block-column"><figure data-grapher-src="https://ourworldindata.org/grapher/global-precipitation-anomaly" class="grapherPreview">

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</figure></div></div><div class="wp-block-columns is-style-sticky-right"><div class="wp-block-column"><h4 id="precipitation-extremes">Precipitation extremes<a class="deep-link" href="#precipitation-extremes"></a></h4></div><div class="wp-block-column"><div class="wp-sticky-container"></div></div></div><div class="wp-block-columns is-style-sticky-right"><div class="wp-block-column"><p>We can look at precipitation anomalies over the course of year, however, flooding events are often caused by intense rainfall over much shorter periods. Flooding events tend to occur when there is extremely high rainfall over the course of hours or days.</p><p>The visualization here shows the extent of extreme one-day precipitation in the US. What we see is a general upwards trend in the extent of extreme rainfall in recent decades.</p></div><div class="wp-block-column"><div class="wp-sticky-container"><figure data-grapher-src="https://ourworldindata.org/grapher/extreme-one-day-precipitation-usa" class="grapherPreview">

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<span class="label">Click to open interactive version</span>

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</figure></div></div></div><h3 id="extreme-temperature-heat-cold">Extreme Temperature (Heat & Cold)<a class="deep-link" href="#extreme-temperature-heat-cold"></a></h3><div class="wp-block-columns is-style-sticky-right"><div class="wp-block-column"><p>Extreme temperature risks to human health and mortality can result from both exposure to extreme heat and cold.</p></div><div class="wp-block-column"><div class="wp-sticky-container"></div></div></div><div class="wp-block-columns is-style-sticky-right"><div class="wp-block-column"><h4 id="heatwaves-and-high-temperatures">Heatwaves and high temperatures<a class="deep-link" href="#heatwaves-and-high-temperatures"></a></h4></div><div class="wp-block-column"><div class="wp-sticky-container"></div></div></div><div class="wp-block-columns is-style-sticky-right"><div class="wp-block-column"><p>In the visualizations shown here we see long-term data on heatwaves and unusually high temperatures in the United States.</p><p>Overall we see there is significant year-to-year variability in the extent of heatwave events. What stands out over the past century of data was the <a href="https://en.wikipedia.org/wiki/1936\_North\_American\_heat\_wave">1936 North American heatwave</a> – one of the most extreme heat wave events in modern history, which coincided with the Great Depression and Dust Bowl of the 1930s.<br><br>When we look at the trajectory of unusually high



<div class="interactionNotice">

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</figure></div></div></div><h3 id="wildfires">Wildfires<a class="deep-link" href="#wildfires"></a></h3><div class="wp-block-columns is-style-sticky-right"><div class="wp-block-column"><h4 id="us-wildfires">US Wildfires<a class="deep-link" href="#us-wildfires"></a></h4></div><div class="wp-block-column"><div class="wp-sticky-container"></div></div></div><div class="wp-block-columns is-style-sticky-right"><div class="wp-block-column"><p>How are the frequency and extent of wildfires in the United States changing over time?</p><p>In the charts below we provide three overviews: the number of wildfires, the total acres burned, and the average acres burned per wildfire. This data is shown from 1983 onwards, when comparable data recording began.</p><p>Over the past 30-35 years we notice three general trends in the charts below (although there is significant year-to-year variability):</p><ul><li>on average, the annual number of wildfires has not changed much;</li><li>on average, the total acres burned has increased from the 1980s and 1990s into the 21st century;</li><li>the combination of these two factors suggest that the average acres burned *per wildfire* has increased.</li></ul><p>There has been significant media coverage of the long-run statistics of US wildfires reported by the National Interagency Fire Center (NIFC). The original statistics are available back to the year 1926. When we look at this long-term series it suggests there has been a significant decline in acres burned over the past century. However, the NIFC explicitly state:</p><blockquote class="wp-block-quote"><p>Prior to 1983, sources of these figures are not known, or cannot be confirmed, and were not derived from the current situation reporting process. As a result the figures prior to 1983 should not be compared to later data.</p></blockquote><p>Representatives from the NIFC have again confirmed (see the Carbon Brief's

coverage **<a href="https://www.carbonbrief.org/factcheck-how-global-warming-has-increased-us-wildfires" target="\_blank" rel="noopener noreferrer">here</a></strong>) that these historic statistics are not comparable to those since 1983. The lack of reliable methods of measurement and reporting mean some historic statistics may in fact be double or triple-counted in national statistics.</p><p>This means we cannot compare the recent data below with old, historic records. But it also doesn't confirm that acres burned today are higher than the first half of the 20th century. Historically, fires were an <a rel="noopener noreferrer" href="https://www.fs.fed.us/research/sustain/docs/national-reports/2003/data/documents/Indicator%2015/Indicator%2015.pdf" target="\_blank">often-used method</a> of clearing land for agriculture, for example. It's not implausible to expect that wildfires of the past may have been larger than today but the available data is not reliable enough to confirm this.</p></div><div class="wp-block-column"><div class="wp-sticky-container"></div></div></div><div class="wp-block-columns is-style-side-by-side"><div class="wp-block-column"><figure data-grapher-src="https://ourworldindata.org/grapher/wildfire-numbers-usa" class="grapherPreview">**

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strikes—wikipedia-nasa-data0-150x93.png 150w,  
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[https://ourworldindata.org/uploads/2014/06/ourworldindata\\_world-map-of-frequency-of-lightning-strikes—wikipedia-nasa-data0.png](https://ourworldindata.org/uploads/2014/06/ourworldindata_world-map-of-frequency-of-lightning-strikes—wikipedia-nasa-data0.png) 1290w" sizes="(max-width: 750px) 100vw, 750px" data-high-res-src="https://ourworldindata.org/uploads/2014/06/ourworldindata\_world-map-of-frequency-of-lightning-strikes—wikipedia-nasa-data0.png"><figcaption>World map of frequency of lightning strikes – Wikipedia (NASA data)<a id="ref-8" class="ref" href="#note-8"><sup>8</sup></a></figcaption></figure></div></div></div><section><div class="section-heading"><div class="wrapper"><div><h2 id="economic-costs">Economic costs<a class="deep-link" href="#economic-costs"></a></h2></div><div class="in-this-section"><div class="label">In this section</div><div class="border"></div></div><ul class="subheadings"><li><a href="#global-disaster-costs"><svg aria-hidden="true" focusable="false" data-prefix="fas" data-icon="arrow-down" class="svg-inline--fa fa-arrow-down" role="img" xmlns="http://www.w3.org/2000/svg" viewBox="0 0 384 512"><path fill="currentColor" d="M169.4 470.6c12.5 12.5 32.8 12.5 45.3 0l160-160c12.5-12.5 12.5-32.8 0-45.3s-32.8-12.5-45.3 0l224 370.8 224 64c0-17.7-14.3-32-32-32 14.3-32 32-32 32-32l0 306.7l54.6 265.4c-12.5-12.5-32.8-12.5-45.3 0s-12.5 32.8 0 45.3l160 160z"></path></svg><span>Global disaster costs</span></a></li><li><a href="#disaster-costs-by-country"><svg aria-hidden="true" focusable="false" data-prefix="fas" data-icon="arrow-down" class="svg-inline--fa fa-arrow-down" role="img" xmlns="http://www.w3.org/2000/svg" viewBox="0 0 384 512"><path fill="currentColor" d="M169.4 470.6c12.5 12.5 32.8 12.5 45.3 0l160-160c12.5-12.5 12.5-32.8 0-45.3s-32.8-12.5-45.3 0l224 370.8 224 64c0-17.7-14.3-32-32-32 14.3-32 32-32 32-32l0 306.7l54.6 265.4c-12.5-12.5-32.8-12.5-45.3 0s-12.5 32.8 0 45.3l160 160z"></path></svg><span>Disaster costs by country</span></a></li></ul></div></div><h3 id="global-disaster-costs">Global disaster costs<a class="deep-link" href="#global-disaster-costs"></a></h3><div class="wp-block-columns is-style-sticky-right"><div class="wp-block-column"><p>Natural disasters not only have devastating impacts in terms of the loss of human life, but can also cause severe destruction with economic costs.<br><br>When we look at global economic costs over time in <a href="https://ourworldindata.org/grapher/damage-costs-from-natural-disasters">absolute terms</a> we tend to see rising costs. But, importantly, the world – and most countries – have also <a href="https://ourworldindata.org/economic-growth">gotten richer</a>. Global gross domestic product has increased <a href="https://ourworldindata.org/grapher/world-gdp-over-the-last-two-millennia?time=1900..2015">more than four-fold</a> since 1970. We might therefore expect that for any given disaster, the absolute economic costs could be higher than in the past. </p><p>A more appropriate metric to compare economic costs over time is to look at them in relation to GDP. This is the <a href="https://sdg-tracker.org/cities#11.5.2">indicator adopted</a> by all countries as part of the UN Sustainable Development Goals to monitor progress on resilience to disaster costs.<br><br>In the chart shown here we see global direct disaster losses given as a share of GDP. There is notable year-to-year variability in costs – ranging from 0.15% to 0.5% of global GDP. In recent decades there has been no clear trending increase in damages when we take account of economic growth over this period.</p><p>This is also true when we look at damages specifically for weather-related disasters. This trend in damages relative to global GDP is also shown in the interactive chart. </p></div><div class="wp-

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<span class="label">Click to open interactive version</span>

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`</svg></span>`

`<span class="label">Click to open interactive version</span>`

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`</figure></div></div><h3 id="disaster-costs-by-country">Disaster costs by country<a class="deep-link" href="#disaster-costs-by-country"></a></h3><div class="wp-block-columns is-style-sticky-right"><div class="wp-block-column"><p>Since economic losses from disasters in relation to GDP is the <a href="https://sdg-tracker.org/cities#11.5.2">indicator adopted</a> by all countries within the UN Sustainable Development Goals, this data is also now reported for each country.<br><br>The map shows direct disaster costs for each country as a share of its GDP. Here we see large variations by country – a 100-fold difference ranging from less than 0.05% to 5%. This data can be found in absolute terms <a href="https://ourworldindata.org/grapher/direct-disaster-economic-loss?tab=chart"><strong>here</strong></a>. </p></div><div class="wp-block-column"><div class="wp-sticky-container"><figure data-grapher-src="https://ourworldindata.org/grapher/direct-disaster-loss-as-a-share-of-gdp" class="grapherPreview">`

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</svg></span>

<span class="label">Click to open interactive version</span>

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</figure></div></div></div></section> <section><div class="section-heading"><div class="wrapper"><div><h2 id="not-all-deaths-are-equal-how-many-deaths-make-a-natural-disaster-newsworthy">Not all deaths are equal: How many deaths make a natural disaster newsworthy?<a class="deep-link" href="#not-all-deaths-are-equal-how-many-deaths-make-a-natural-disaster-newsworthy"></a></h2></div></div></div><div class="wp-block-columns is-style-sticky-right"><div class="wp-block-column"><p>How many deaths does it take for a natural disaster to be newsworthy?</p><p>This is a question researchers Thomas Eisensee and David Strömberg asked in a 2007 study.<a id="ref-9" class="ref" href="#note-9"><sup>9</sup></a> </p><p>The two authors found that for every person killed by a volcano, nearly 40,000 people have to die of a food shortage to get the same probability of coverage in US televised news.<a id="ref-10" class="ref" href="#note-10"><sup>10</sup></a> </p></div><div class="wp-block-column"><div class="wp-sticky-container"></div></div></div><div class="wp-block-columns is-style-sticky-right"><div class="wp-block-column"><h4 id="the-type-of-disaster-matters">The type of disaster matters<a class="deep-link" href="#the-type-of-disaster-matters"></a></h4></div><div class="wp-block-column"><div class="wp-sticky-container"></div></div></div><div class="wp-block-columns is-style-sticky-right"><div class="wp-block-column"><p>In other words, the <em>type</em> of disaster matters to how newsworthy networks find it to be. The visualizations show the extent of this observed “news effect”. The chart shows the proportion of each type of disaster that receives news coverage, and the second shows the “casualties ratio”, which tells us—all else equal—how many casualties would make media coverage equally likely for each type of disaster.</p></div><div class="wp-block-column"><div class="wp-sticky-

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</figure></div></div><div class="wp-block-columns is-style-sticky-right"><div class="wp-block-column"><p>The study, which primarily set out to examine mass media’s influence on US natural disaster response, considered over 5,000 natural disasters<a id="ref-11" class="ref" href="#note-11"><sup>11</sup></a> and 700,000 news stories from the major US national broadcast networks (ABC, CBS, NBC, and CNN) between 1968 and 2002. </p><p>The findings tells us, among other important things, that networks tend to be selective in their coverage and attention is not reflecting the severity and number of people killed or affected by a natural disaster.<br></p><p>Instead of considering the objective damage caused by natural disasters, networks tend to look for disasters that are “rife with drama”, as one New York Times article put it<a id="ref-12" class="ref" href="#note-12"><sup>12</sup></a>—hurricanes, tornadoes, forest fires, earthquakes all make for splashy headlines and captivating visuals. </p><p>Thanks to this selectivity, less “spectacular” but often times more deadly natural disasters tend to get passed over. <a href="https://ourworldindata.org/famines/">Food shortages</a>, for example, result in the most casualties and affect the most people per incident<a id="ref-13" class="ref" href="#note-13"><sup>13</sup></a> but their onset is more gradual than that of a volcanic explosion or sudden earthquake. As a result, food shortages are covered only 3% of the time while a comparatively indulgent

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<span class="label">Click to open interactive version</span>

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</figure></div></div></section><div class="section-heading"><div class="wrapper"><div><h2 id="link-between-poverty-and-deaths-from-natural-disasters">Link between poverty and deaths from natural disasters<a class="deep-link" href="#link-between-poverty-and-deaths-from-natural-disasters"></a></h2></div></div></div><div class="wp-block-columns is-style-sticky-right"><div class="wp-block-column"><p>One of the major successes over the past century has been the dramatic <a href="https://ourworldindata.org/natural-disasters#number-of-deaths-from-natural-disasters">decline in global deaths</a> from natural disasters – this is despite the fact that the <a href="https://ourworldindata.org/world-population-growth">human population</a> has increased rapidly over this period.</p><p>Behind this improvement has been the improvement in living standards; access to and development of resilient infrastructure; and effective response systems. These factors have been driven by an <a href="https://ourworldindata.org/economic-growth">increase in incomes</a> across the world.</p><p>What remains true today is that populations in low-income countries – those where a large percentage of the population still live in <a href="https://ourworldindata.org/extreme-poverty">extreme poverty</a>, or score low on the <a href="https://ourworldindata.org/human-development-index/">Human Development Index</a> – are more vulnerable to the effects of natural disasters. </p><p>We see this effect in the visualization shown. This chart shows the death rates from natural disasters – the number of deaths per 100,000 population – of countries grouped by their <a href="http://www.healthdata.org/taxonomy/glossary/socio-demographic-index-sdi">socio-demographic index</a> (SDI). SDI is a metric of development, where low-SDI denotes countries with low standards of living.</p><p>What we see is that the large spikes in death rates occur almost exclusively for countries with a low or low-middle SDI. Highly developed countries are much more resilient to disaster events and therefore have a consistently low death rate from natural disasters.</p><p>Note that this does not mean low-income countries have high death tolls from disasters year-to-year: the data here shows that in most years they also have very low death rates. But when low-frequency, high-impact events do occur they are particularly vulnerable to its effects.</p><p>Overall development, poverty alleviation, and knowledge-sharing of how to increase resilience to natural disasters will therefore be key to reducing the toll of disasters in the decades to come.</p></div><div class="wp-block-column"><div class="wp-sticky-container"><figure data-grapher-src="https://ourworldindata.org/grapher/death-rates-natural-disasters" class="grapherPreview">



tropical cyclone is a weather event which originates over tropical or subtropical waters and results in a rotating, organized system of clouds and thunderstorms. Its circulation patterns should be closed and low-level.

The choice of terminology is location-specific and depends on where the storm originates. The term *hurricane* is used to describe a tropical cyclone which originates in the North Atlantic, central North Pacific, and eastern North Pacific. When it originates in the Northwest Pacific, we call it *typhoon*. In the South Pacific and Indian Ocean the general term *tropical cyclone* is used.

In other words, the only difference between a hurricane and typhoon is where it occurs.

#### When does a storm become a hurricane?

When does a storm become a hurricane? [When does a storm become a hurricane?](#when-does-a-storm-become-a-hurricane)

The characteristics of a hurricane are described in detail at the [NASA website](https://www.nasa.gov/audience/forstudents/k-4/stories/nasa-knows/what-are-hurricanes-k4.html).

A hurricane evolves from a tropical disturbance or storm based on a threshold of wind speed.

A tropical disturbance arises over warm ocean waters. It can grow into a tropical depression which is an area of rotating thunderstorms with winds up to 62 kilometres (38 miles) per hour. From there, a depression evolves into a tropical storm if its wind speed reaches 63 km/hr (39 mph).

Finally a hurricane is formed when a tropical storm reaches a wind speed of 119 km/hr (74 mph).

#### Difference between hurricanes and tornadoes

Difference between hurricanes and tornadoes [Difference between hurricanes and tornadoes](#difference-between-hurricanes-and-tornadoes)

But, hurricanes/typhoons/cyclones *are* distinctly different from tornadoes.

Whilst hurricanes and tornadoes have a characteristic circulatory wind patterns, they are very different weather systems. The main difference between the systems is scale (tornadoes are small-scale circulatory systems; hurricanes are large-scale). These differences are highlighted in the table below:

	Hurricanes/typhoons	Tornadoes

<thead>

<tr class="row-1 odd">

<th class="column-1">&nbsp;</th><th class="column-2">Hurricanes/typhoons</th><th class="column-3">Tornadoes</th>

```

</tr>

</thead>

<tbody class="row-hover">

<tr class="row-2 even">

 <td class="column-1">Diameter</td><td class="column-2">60 to 1000s
miles</td><td class="column-3">Up to 1 - 1.5 miles (usually less)</td>

</tr>

<tr class="row-3 odd">

 <td class="column-1">Wind speed</td><td class="column-2">74 to 200
mph</td><td class="column-3">40 to 300 mph</td>

</tr>

<tr class="row-4 even">

 <td class="column-1">Lifetime</td><td class="column-2">Long (usually
days)</td><td class="column-3">Very short (usually minutes)</td>

</tr>

<tr class="row-5 odd">

 <td class="column-1">Travel distance</td><td class="column-2">Long (100
metres to 100 miles)</td><td class="column-3">Short distances</td>

</tr>

<tr class="row-6 even">

 <td class="column-1">Environmental impact</td><td class="column-2">Can
have impact on wider environment and atmospheric patterns.</td><td class="column-3">Local
(although can be very high impact). Little wider impact on atmospheric systems or environment.</td>

</tr>

</tbody>

</table></div></div></div></div><div class="wp-block-columns is-style-sticky-right"><div class="wp-
block-column"><h4 id="volcanic-explosivity-index-vei">Volcanic Explosivity Index (VEI)<a class="deep-
link" href="#volcanic-explosivity-index-vei"></h4></div><div class="wp-block-column"><div
class="wp-sticky-container"></div></div></div><div class="wp-block-columns is-style-sticky-right"><div

```

The intensity or size of volcanic eruptions are most commonly defined by a metric termed the ‘volcanic explosivity index (VEI)’. The VEI is derived based on the erupted mass or deposit of an eruption. The scale for VEI was outlined by Newhall & Self (1982), but is now commonly adopted in geophysical reporting.<sup>14</sup> The table below provides a summary (from the NOAA’s National Geophysical Data Center) of the characteristics of eruptions of different VEI values. A ‘Significant Volcanic Eruption’ is often defined as an eruption with a VEI value of 6 or greater. Historic eruptions that were definitely explosive, but carry no other descriptive information are assigned a default VEI of 2.

Volcanic Explosivity Index (VEI)	General description	Cloud Column Height (km)	Volume (m <sup>3</sup> )	Qualitative Description	Classification	How frequent?	Example
0	Non-explosive	< 0.1 km	1x10 <sup>4</sup>	Gentle	Hawaiian	daily	Kilauea
1	Small	0.1 - 1 km	1x10 <sup>6</sup>	Effusive	Haw/Strombolian	daily	Stromboli



```
<td class="column-1">2</td><td class="column-2">Moderate</td><td class="column-3">1 - 5
km</td><td class="column-4">1x107</td><td class="column-5">Explosive</td><td class="column-
6">Strom/Vulcanian</td><td class="column-7">weekly</td><td class="column-8">Galeras, 1992</td>
```

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</tr>
```

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<tr class="row-5 odd">
```

```
<td class="column-1">3</td><td class="column-2">Moderate-Large</td><td class="column-
3">3 - 15 km</td><td class="column-4">1x108</td><td class="column-5">Explosive</td><td
class="column-6">Vulcanian</td><td class="column-7">annually</td><td class="column-8">Ruiz,
1985</td>
```

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</tr>
```

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<tr class="row-6 even">
```

```
<td class="column-1">4</td><td class="column-2">Large</td><td class="column-3">10 - 25
km</td><td class="column-4">1x109</td><td class="column-5">Explosive</td><td class="column-
6">Vulc/Plinian</td><td class="column-7">10's of years</td><td class="column-8">Galunggung,
1982</td>
```

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</tr>
```

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<tr class="row-7 odd">
```

```
<td class="column-1">5</td><td class="column-2">Very Large</td><td class="column-3">> 25
km</td><td class="column-4">1x1010</td><td class="column-5">Cataclysmic</td><td class="column-
6">Plinian</td><td class="column-7">100's of years</td><td class="column-8">St.
Helens, 1981</td>
```

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</tr>
```

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<tr class="row-8 even">
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```
<td class="column-1">6</td><td class="column-2"></td><td class="column-3">> 25
km</td><td class="column-4">1x1011</td><td class="column-5">Paroxysmal</td><td class="column-
6">Plin/Ultra-Plinian</td><td class="column-7">100's of years</td><td class="column-8">Krakatau,
1883</td>
```

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</tr>
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<tr class="row-9 odd">
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<td class="column-1">7</td><td class="column-2"></td><td class="column-3">> 25
km</td><td class="column-4">1x1012</td><td class="column-5">Colossal</td><td class="column-
```

6">Ultra-Plinian</td><td class="column-7">1000's of years</td><td class="column-8">Tambora, 1815</td>

</tr>

<tr class="row-10 even">

<td class="column-1">8</td><td class="column-2"></td><td class="column-3">&gt; 25 km</td><td class="column-4">&gt;1x10<sup>12</sup></td><td class="column-5">Colossal</td><td class="column-6">Ultra-Plinian</td><td class="column-7">10,000's of years</td><td class="column-8">Yellowstone, 2 Ma</td>

</tr>

</tbody>

</table></div></div></div></div></section><div class="section-heading"><div

class="wrapper"><div><h2 id="data-quality">Data Quality<a class="deep-link" href="#data-quality"></a></h2></div></div></div><div class="wp-block-columns is-style-sticky-right"><div class="wp-block-column"><h4 id="number-of-reported-disaster-events">Number of reported disaster events<a class="deep-link" href="#number-of-reported-disaster-events"></a></h4></div><div class="wp-block-column"><div class="wp-sticky-container"></div></div></div><div class="wp-block-columns is-style-sticky-right"><div class="wp-block-column"><p>A key issue of data quality is the consistency of even reporting over time. For long-term trends in natural disaster events we know that reporting and recording of events today is much more advanced and complete than in the past. This can lead to significant underreporting or uncertainty of events in the distant past.<br><br>In the chart here we show data on the number of <em>reported</em> natural disasters over time. <br><br>This change over time can be influenced by a number of factors, namely the increased coverage of reporting over time. The increase over time is therefore not directly reflective of the <em>actual</em> trend in disaster events.</p></div><div class="wp-block-column"><div class="wp-sticky-container"><figure data-grapher-src="https://ourworldindata.org/grapher/number-of-natural-disaster-events" class="grapherPreview">

<a href="https://ourworldindata.org/grapher/number-of-natural-disaster-events" target="\_blank">

<div></div>

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32,136A40,40,0,0,1,376,616.59H168a40,40,0,0,1-32.35-16.47l-128-176a40,40,0,0,1,64.7-
47.06L104,420.58v-276a40,40,0,0,1,80,0v200h8v-40a40,40,0,1,1,80,0v40h8v-
24a40,40,0,1,1,80,0v24h8a40,40,0,1,1,80,0Zm-256,80h-8v96h8Zm88,0h-8v96h8Zm88,0h-8v96h8Z"
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76,64,142.76,142.76a142.17,142.17,0,0,1-24.13,79.43A27.47,27.47,0,0,1,239.76,234.78Z"
transform="translate(0 -0.41)"></path>
```

```
</svg>
```

```
Click to open interactive version
```

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</div>
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</figure></div></div></div><div class="wp-block-columns is-style-sticky-right"><div class="wp-
block-column"><h4 id="number-of-reported-disasters-by-type">Number of reported disasters by type</h4></div><div class="wp-block-
column"><div class="wp-sticky-container"></div></div></div><div class="wp-block-columns is-style-
sticky-right"><div class="wp-block-column"><p>This same data is shown here as the number of
reported disaster events by type. Again, the incompleteness of historical data can lead to
significant underreporting in the past. The increase over time is therefore not directly reflective of the
actual trend in disaster events.</p></div><div class="wp-block-column"><div class="wp-
sticky-container"><figure data-grapher-src="https://ourworldindata.org/grapher/natural-disasters-by-
type" class="grapherPreview">
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<div class="interactionNotice">
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icon="hand-pointer" class="svg-inline--fa fa-hand-pointer fa-w-14" role="img"
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32,136A40,40,0,0,1,376,616.59H168a40,40,0,0,1-32.35-16.47l-128-176a40,40,0,0,1,64.7-
```

47.06L104,420.58v-276a40,40,0,0,1,80,0v200h8v-40a40,40,0,1,1,80,0v40h8v-  
24a40,40,0,1,1,80,0v24h8a40,40,0,1,1,80,0Zm-256,80h-8v96h8Zm88,0h-8v96h8Zm88,0h-8v96h8Z"  
transform="translate(0 -0.41)"></path>

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145.9,0A27.5,27.5,0,1,1,25.37,222.6,142.17,142.17,0,0,1,1.24,143.17C1.24,64.45,65.28,41,144,.41s142.  
76,64,142.76,142.76a142.17,142.17,0,0,1-24.13,79.43A27.47,27.47,0,0,1,239.76,234.78Z"  
transform="translate(0 -0.41)"></path>

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<span class="label">Click to open interactive version</span>

</div>

</a>

</figure></div></div></div><section><div class="section-heading"><div  
class="wrapper"><div><h2 id="data-sources">Data Sources<a class="deep-link" href="#data-  
sources"></a></h2></div></div></div><div class="wp-block-columns is-style-sticky-right"><div  
class="wp-block-column"><p>Wikipedia has several lists of disasters, and an overview of these lists can  
be found at <a href="http://en.wikipedia.org/wiki/Lists\_of\_disasters">List of  
Disasters</a>.</p></div><div class="wp-block-column"><div class="wp-sticky-  
container"></div></div></div><div class="wp-block-columns is-style-sticky-right"><div class="wp-block-  
column"><h4 id="deaths-from-natural-disasters">Deaths from natural disasters<a class="deep-link"  
href="#deaths-from-natural-disasters"></a></h4></div><div class="wp-block-column"><div class="wp-  
sticky-container"></div></div></div><div class="wp-block-columns is-style-sticky-right"><div class="wp-  
block-column"><h5>Institute for Health Metrics and Evaluation (IHME), Global Burden of  
Disease</h5><ul><li><strong>Data:</strong>&nbsp;IHME provides data on deaths and death rates from  
natural disasters</li><li><strong>Geographical coverage:</strong>&nbsp;Global – country and regional  
level</li><li><strong>Time span:</strong>&nbsp;1990 onwards</li><li><strong>Available  
at:</strong>&nbsp;<a href="http://www.emdat.be/">IHME, GBD</a></li></ul></div><div class="wp-  
block-column"><div class="wp-sticky-container"></div></div></div><div class="wp-block-columns is-  
style-sticky-right"><div class="wp-block-column"><h4 id="multiple-types-of-disasters">Multiple Types  
of Disasters<a class="deep-link" href="#multiple-types-of-disasters"></a></h4></div><div class="wp-  
block-column"><div class="wp-sticky-container"></div></div></div><div class="wp-block-columns is-  
style-sticky-right"><div class="wp-block-column"><h5>EM-DAT – The International Disaster  
Database</h5><ul><li><strong>Data:</strong>&nbsp;EM-DAT is a catalogue of disasters listing detailed  
information on natural disasters: droughts (famines), earthquakes, epidemics, extreme temperatures,  
floods, insect infestations, mass movement (dry & wet), storms, volcanos, and wildfires. There is  
also a data section on technological disasters.</li><li><strong>Geographical  
coverage:</strong>&nbsp;Global – country and regional level (primarily cross-country data set, but also  
contains the name of the sub-national regions affected by disasters)</li><li><strong>Time

span:1900 onwards

- Available at: [EM-DAT](http://www.emdat.be)
- Raw data has to be requested but the [section on disaster trends](http://web.archive.org/web/20150829055006/http://www.emdat.be:80/disaster-trends) encompasses a number of visualizations (time series and maps).
- EM-DAT is maintained by the [Center for Research on the Epidemiology of Disasters \(CRED\)](https://web.archive.org/web/20190922043847/https://www.cred.be/)
- EM-DAT data on the annual number of deaths and number of affected by drought, epidemics, earthquakes, extreme temperature, flood, storm, tsunami, plane crash by country is available at [Gapminder](http://www.gapminder.org/world/#$majorMode=chart&is;shi=t;ly=2003;lb=f;il=t;fs=11;al=30;stl=t;st=t;ns1=t;se=t$wst;tts=C&ts;sp=5.35870967741936;ti=2008$zpv;v=0$inc_x;mmid=XCOORDS;iid=phAwcNAVuyj1jiMAkmq1iMg;by=ind$inc_y;mmid=YCOORDS;iid=rvbbs7uxQc7swJ4RR2BcQfA;by=ind$inc_s;uniValue=8.21;iid=phAwcNAVuyj0XOoBL_n5tAQ;by=ind$inc_c;uniValue=255;gid=CATID0;by=grp$map_x;scale=log;dataMin=282;dataMax=119849$map_y;scale=lin;dataMin=0;dataMax=242000$map_s;sma=49;smi=2.65$cd;bd=0$inds=i239_t001980,,,,;i44_t001980,,,,). [Here](http://www.gapminder.org/world/#$majorMode=chart&is;shi=t;ly=2003;lb=f;il=t;fs=11;al=30;stl=t;st=t;ns1=t;se=t$wst;tts=C&ts;sp=5.35870967741936;ti=2008$zpv;v=0$inc_x;mmid=XCOORDS;iid=phAwcNAVuyj1jiMAkmq1iMg;by=ind$inc_y;mmid=YCOORDS;iid=rvbbs7uxQc7swJ4RR2BcQfA;by=ind$inc_s;uniValue=8.21;iid=phAwcNAVuyj0XOoBL_n5tAQ;by=ind$inc_c;uniValue=255;gid=CATID0;by=grp$map_x;scale=log;dataMin=282;dataMax=119849$map_y;scale=lin;dataMin=0;dataMax=242000$map_s;sma=49;smi=2.65$cd;bd=0$inds=i239_t001980,,,,;i44_t001980,,,,) is the data on the number of people killed in earthquakes during a year.

### Earth Observatory by NASA – Natural Hazards

- Data:** Up to date information and satellite images on fires, storms, floods, volcanoes, earthquakes, and droughts
- Geographical coverage:** Global
- Time span:** Recent years – very up to date
- Available at:** [earthobservatory.nasa.gov/NaturalHazards](http://earthobservatory.nasa.gov/NaturalHazards/)

### Natural Hazards Data – U.S. National Oceanic and Atmospheric Administration’s National Geophysical Data Center (NGDC)

- Data:** Data and maps on many natural hazards including cyclones, tsunamis, earthquakes, volcanoes, and wildfires. It includes the ‘Global Significant Earthquake Database, 2150 B.C. to present’ (5500 events) and ‘The Significant Volcanic Eruption Database’ and ‘Global Historical Tsunami Events and Runups’ among many other datasets.
- Geographical coverage:** Global – exact location
- Time span:** Millennia
- Available at:** Online [here](http://www.ngdc.noaa.gov/hazard/hazards.shtml)
- Download maps as pdf or ArcIMS interactive maps, and data in tab-delimited data files or html.**

### Global Risk Data Platform

- Data:** Spatial data on tropical cyclones and related storm surges, drought, earthquakes, biomass fires, floods, landslides, tsunamis and volcanic eruptions.
- Geographical coverage:** Global
- Time span:** Recent past
- Available at:** The website can be found [here](http://preview.grid.unep.ch)
- Users can visualize, download or extract data on past hazardous events, human & economical hazard exposure and risk from natural hazards.**

### Socioeconomic Data and Applications Center (SEDAC) – by NASA

- Data:** Maps of natural hazards
- Geographical coverage:** Global
- Time span:** Recent years
- Available at:** Online [here](http://sedac.ciesin.columbia.edu/data/sets/browse?facets=theme:hazards) at the SEDAC

website at Colombia University

- Center for Hazards & Risk Research at Columbia University**
- Hotspots:** Risk levels calculated by combining hazard exposure with historical vulnerability for two indicators of elements at risk—gridded population and Gross Domestic Product (GDP) per unit area—for six major natural hazards: earthquakes, volcanoes, landslides, floods, drought, and cyclones
- Natural disaster profiles:** Profiles for 13 countries provide information on sub-national areas at risk from natural hazards including cyclones, droughts, earthquakes, volcanoes, floods, and landslides.
- Geographical coverage:** Global for hotspots data
- Time span:** Recent past
- Available at:** Online [here](http://www.ldeo.columbia.edu/chrr/research/profiles/)

**Earthquakes**

**Global Earthquake Model (GEM)**

- Data:** GEM Global Historical Earthquake Catalogue (1000-1900) and the ISC-GEM Global Instrumental Earthquake Catalogue (1900-2009)
- Geographical coverage:** Global
- Time span:** 1000 onwards
- Available at:** Online [here](http://web.archive.org/web/20130106062157/http://www.globalquakemodel.org:80/risk-global-components/exposure-database/)

**Fire**

**ATSR World Fire Atlas – by the European Space Agency (ESA)**

- Data:** Monthly global fire maps
- Geographical coverage:** Global
- Time span:** 1995 onwards
- Available at:** Online at the website of ESA [here](http://due.esrin.esa.int/page_wfa.php)

**Tsunami**

The **Center for International Earth Science Information Network** at the Earth Institute at Columbia University publishes data on the [Population Affected by the Indian Ocean Tsunami](http://www.ciesin.columbia.edu/tsunami2004.html) (December 2004).

**Floods**

**Wikipedia** has a [page](#) on the **2004 Indian Ocean Tsunami**.

[List of Deadliest Floods](http://en.wikipedia.org/wiki/List_of_deadliest_floods) and a [List of Floods](http://en.wikipedia.org/wiki/List_of_floods).

#### Hurricanes

Data: Data on the track of the storm plus a text-based table of tracking information. The table includes position in latitude and longitude, maximum sustained winds in knots, and central pressure in millibars.

Geographical coverage: Atlantic, East Pacific, West Pacific, South Pacific, South Indian, and North Indian

Time span: 1851 until now

Available at: Online [here](http://weather.unisys.com/hurricanes)

This data set was used by Dean Yang (2008) – Coping with Disaster: The Impact of Hurricanes on International Financial Flows, 1970-2002. The B.E. Journal of Economic Analysis & Policy. Volume 8, Issue 1, ISSN (Online) 1935-1682, DOI: 10.2202/1935-1682.1903, June 2008. Online [here](http://www.degruyter.com/view/j/bejeap.2008.8.1/bejeap.2008.8.1.1903/bejeap.2008.8.1.1903.xml?format=INT).

#### National Climatic Data Center (NOAA)

Data: Data on the track of storms

Geographical coverage: Global

Time span: 1848 until now

Available at: Online at [NOAA here](http://www.ncdc.noaa.gov/ibtracs/index.php?name=wmo-data)

#### Volcanoes

#### National Geophysical Data Center (NGDC)

Data: Global listing of over 500 significant eruptions which includes information on the latitude, longitude, elevation, type of volcano, and last known eruption.

Geographical coverage: Global

Time span: 1750BC onwards

Available at: Online at the [https://www.ngdc.noaa.gov/nndc/servlet/ShowDatasets?dataset=102557&search\\_look=50&display\\_look=50](https://www.ngdc.noaa.gov/nndc/servlet/ShowDatasets?dataset=102557&search_look=50&display_look=50)

#### Smithsonian Institution's Global Volcanism Program (GVP)

Data: Complete list of current and past activity for all volcanoes on the planet active during the last 10,000 years. Data includes eruption type, maximum Volcanic Explosivity Index, start and end dates (when known), and the type of evidence for the eruption.

Geographical coverage: Global

Time span: Past 10,000 years to present day

Available at: Online at [http://volcano.si.edu/search\\_eruption.cfm##](http://volcano.si.edu/search_eruption.cfm##)

the Volcanoes of the World Database

Full reference: Global Volcanism Program, 2013.

Volcanoes of the World, v. 4.7.3. Venzke, E (ed.). Smithsonian Institution.

<https://doi.org/10.5479/si.GVP.VOTW4-2013>

#### Lightning

#### Lightning Maps

- Data:** Real-time tracking of lightning strikes
- Geographical coverage:** Global
- Time span:** Real-time
- Available at:** Online [here](http://www.lightningmaps.org/#m=oss;t=3;s=0;o=0;b=;ts=0;)

### Endnotes

- EMDAT (2019): OFDA/CRED International Disaster Database, Université catholique de Louvain – Brussels – Belgium
- EM-DAT, CRED / UCLouvain, Brussels, Belgium – [www.emdat.be](http://www.emdat.be) (D. Guha-Sapir)
- Since two events are ranked equally in 8th place, a total of 11 are included.
- National Geophysical Data Center / World Data Service (NGDC/WDS): Significant Earthquake Database. National Geophysical Data Center, NOAA. Available at: <https://www.ngdc.noaa.gov/nndc/struts/form?t=101650&s=1&d=1>
- The death toll of the Haitian earthquake is still disputed. Here we present the adopted figure by the NGDC of the NOAA (for consistency with other earthquakes); this is the figure—reported by the Haitian government. Some sources suggest a lower figure of 220,000. In the latter case, this event would fall to 7th place in the above rankings.
- This data is sourced from the [The Significant Volcanic Eruption Database](https://www.ngdc.noaa.gov/nndc/servlet/ShowDatasets?dataset=102557&search_look=50&display_look=50) is a global listing of over 500 significant eruptions.
- This is from the NASA Socioeconomic Data And Applications Center (SEDAC) hosted by the Center for International Earth Science Information Network (CIESIN) at Columbia University. This map is online at their website [here](http://sedac.ciesin.columbia.edu/data/set/ndh-landslide-mortality-risks-distribution/maps).  
This document is licensed under a [Creative Commons 3.0 Attribution License](http://creativecommons.org/licenses/by/3.0/).
- This map is taken from [Wikipedia](http://en.wikipedia.org/wiki/File:Global_lightning_strikes.png) [here](http://en.wikipedia.org/wiki/File:Global_lightning_strikes.png).  
This file is licensed under the Creative Commons Attribution-Share Alike 3.0 Unreported license.
- Eisensee, T., & Strömberg, D. (2007). News droughts, news floods, and US disaster relief. The Quarterly Journal of Economics, 122(2), 693-728. Online here: <http://perseus.iies.su.se/~dstro/wpdisasters.pdf>
- As is mentioned below in more detail, this figure is controlled for other factors (i.e. country, year, month,



and number of people affected).

The study used a database compiled by the Centre for Research on the Epidemiology of Disasters, where an event qualifies as a disaster if at least one of the following criteria are fulfilled: ten or more people are reported, killed; 100 or more people are reported affected, injured, and/or homeless; there has been a declaration of a state of emergency; or there has been a call for international assistance.

Eisensee, T., & Strömberg, D. (2007). News droughts, news floods, and US disaster relief. *The Quarterly Journal of Economics*, 122(2), 693-728. Online here: <http://perseus.iies.su.se/~dstro/wpdisasters.pdf>

Based on the study's analysis of data compiled by the Centre for Research on the Epidemiology of Disasters.

Newhall, C.G. and Self, S (1982). The volcanic explosivity index (VEI): an estimate of explosive magnitude for historical volcanism. *Jour Geophys Res (Oceans & Atmospheres)*, 87:1231-1238. Available at: <https://agupubs.onlinelibrary.wiley.com/doi/abs/10.1029/JC087iC02p01231>

Cite this work

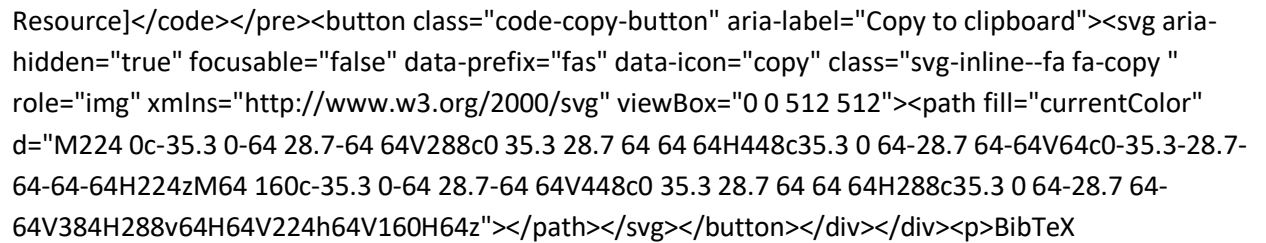
Our articles and data visualizations rely on work from many different people and organizations. When citing this entry, please also cite the underlying data sources. This entry can be cited as:

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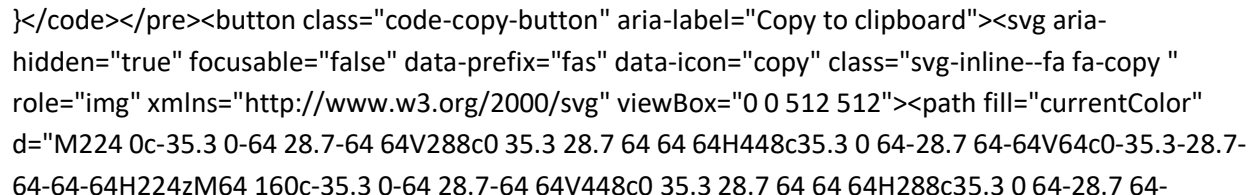
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