

# Big Data Revolutionizing Disaster Claims

Harnessing Real-Time Insights  
to Build More Resilient Societies

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## Key Findings

1

Big data has significantly impacted the insurance industry. Advantages include a 30% improvement<sup>3</sup> in access to insurance services, cost savings ranging from 40% to 70%, and a 60% increase in fraud detection rates.

2

Ground truth data facilitates the development of microinsurance products tailored to individuals or communities at high risk of natural disasters, enabling affordable coverage options that provide financial protection to underserved populations.

3

Accurate reserving, through the use of real-time data, is enabling insurers to make more accurate reserve estimations by ensuring sufficient funds are set aside to cover potential claims.

4

Gathering data from IoT devices, social media, or public sources may involve personal or sensitive information. Insurers must implement robust security measures to protect data against breaches or unauthorized access.



## Introduction

Around the world we are seeing an alarming increase in the frequency and intensity of natural disasters, which are leaving a trail of destruction in their wake. As insurers and policyholders grapple with the aftermath, the need for swift and accurate claims handling has never been more crucial.

Big data has emerged as a powerful tool to improve claims efficiency and streamline the insurance industry's response to catastrophic events. New sources of structured and unstructured data, including weather patterns, satellite imagery and earth observation data, social media feeds, and historical claims data, can be harnessed and analyzed to enhance the claims process. A faster, more efficient response to catastrophe claims surge events can help prevent loss creep and help claimants recover more quickly.

The insights provided by big data, in tandem with advanced analytics, helps insurers to allocate resources effectively and proactively, such as by positioning claims adjusters in the affected areas ahead of time and prepping call centers to handle a surge in claim inquiries. One significant benefit is the ability to assess and predict risk more accurately. By analyzing historical data on past catastrophes, insurers can identify patterns and trends helping them to estimate the impact of future events more precisely. Such hazard data provides the bedrock of the industry's catastrophe risk models.

This article explores the role of big data in facilitating better understanding, assessment and handling of natural catastrophe claims. There are plenty of challenges to overcome, including compliance with data protection laws. But early signs suggest that the industry's ability to harness the power of real-time insights will revolutionize the claims process and build more resilient societies.

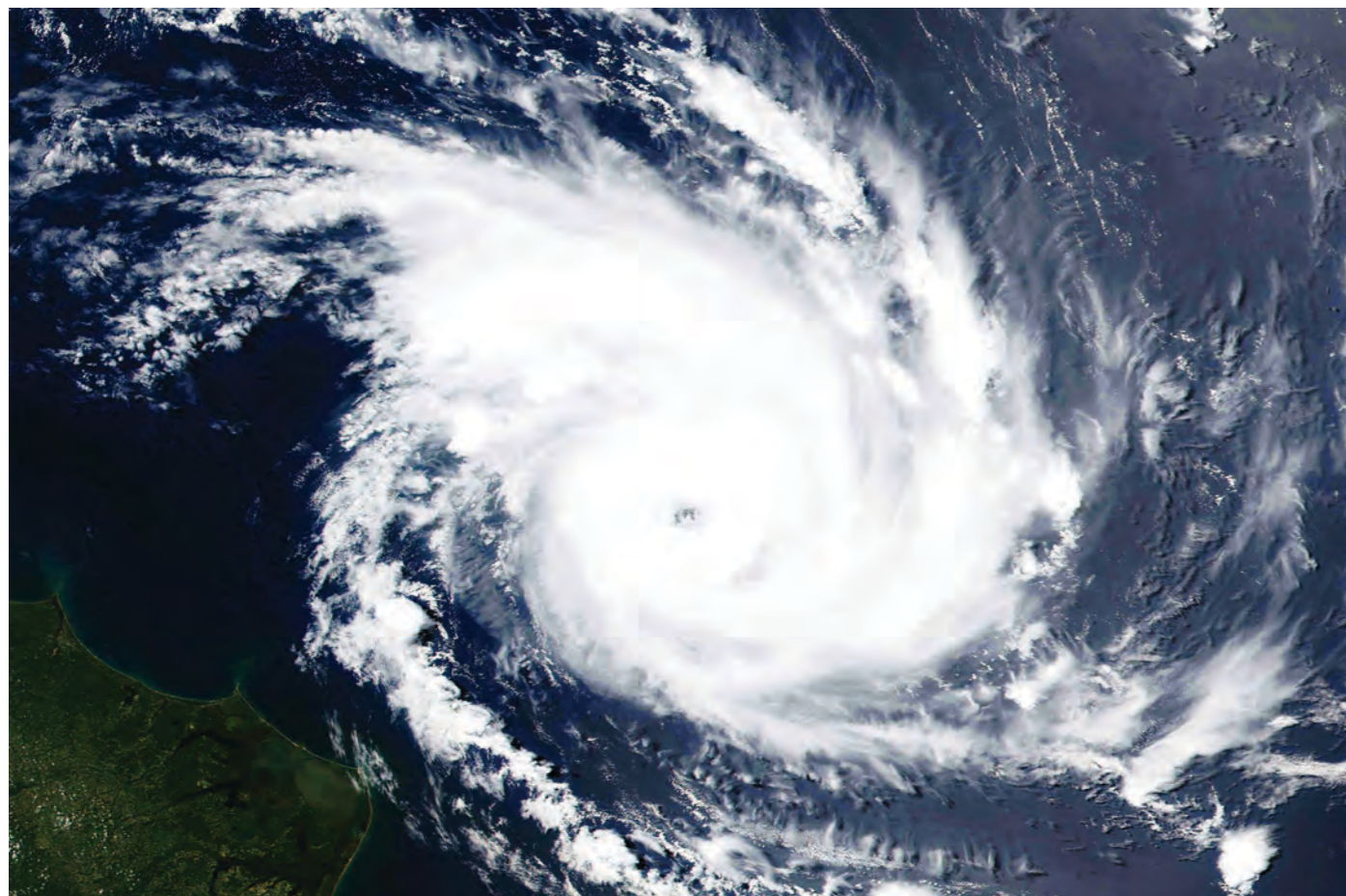
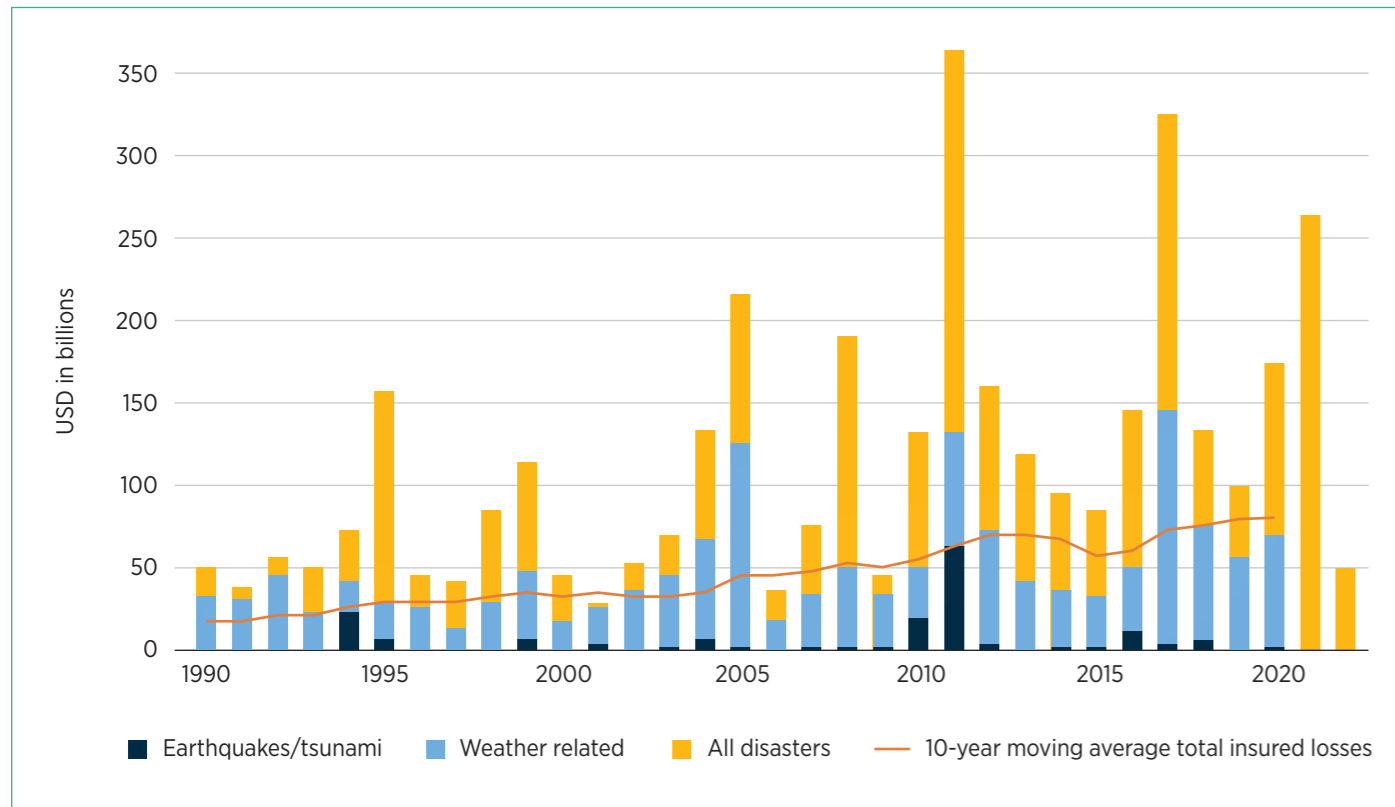
## Perspective

### Insured catastrophe losses versus global economic loss:<sup>1</sup>

- **2020:** Economic losses \$202 billion; insured losses \$83 billion—making 2020 the fifth costliest on-record for the industry.
- **2021:** \$270 billion; \$105 billion insured loss
- **2022:** \$275 billion economic loss; \$125 billion insured loss.



Global damage costs from natural disasters versus insured losses, 1990 – 2022.<sup>2</sup>



## Factors that slow down insurance claim settlements

When a natural catastrophe strikes, leaving a trail of destruction and impacting numerous properties simultaneously, the process of settling the insurance claim becomes incredibly complex and challenging. Several factors come into play, causing delays and hindrances that slow the insurance claims settlement process. Here are some key factors that contribute to delays in insurance claim settlements:

- Overwhelming claim volume:** Natural disasters often result in significantly more claims being filed simultaneously. The sheer volume of claims can overwhelm insurance companies, creating a backlog that hampers the settlement process. Insurers may require additional resources and staff to manage the increased workload.
- Limited adjuster availability:** In the aftermath of a major catastrophe, the demand for loss adjusters also surges dramatically. The adjusters available may struggle to handle the high volume of claims. This shortage can lead to delays in inspections and assessments.
- Assessment and documentation challenges:** After a widespread natural catastrophe, assessing the damage to each affected property becomes a daunting task. Insurers must thoroughly inspect and document the extent of the damage, which can be time-consuming when dealing with several properties at once. Poor access to affected areas, logistical issues and safety concerns can further impede the timely completion of assessments.
- Coordination with government agencies:** Insurance companies must collaborate with government agencies after a natural disaster to verify the damage and assess the overall impact. However, this coordination introduces administrative steps and coordination challenges that can hinder the timely resolution of claims.<sup>3</sup>
- Construction delays:** Engaging contractors and service providers to perform repairs and restoration work is often necessary after a natural catastrophe. However, the coordination and availability of these professionals can be challenging, especially when dealing with a widespread disaster. Delays in scheduling repairs and securing necessary resources can further extend the settlement process, driving up the cost of claims.
- Manual processes:** The reliance on manual data entry and paperwork can lead to time-consuming and error-prone procedures, causing delays and additional costs. Outdated workflows may lack automation and integration capabilities, hindering the smooth flow of information and coordination involved in the claim settlement process.

To address these factors and expedite insurance claim settlements in the aftermath of natural catastrophes, insurance companies can leverage technology solutions, such as automated claim processing systems and data analytics, to streamline workflows, enhance efficiency, and improve communication between all stakeholders.



## Consequences of settlement delays

Natural catastrophes can have devastating effects on both individuals and communities. In the aftermath of such events, an efficient claims settlement process is crucial in helping affected individuals and businesses recover and rebuild. However, when claims are delayed, it can significantly exacerbate an already challenging situation. The consequences are far-reaching and often impact multiple stakeholders.

- **Claims inflation:** Claims inflation refers to the rising costs of claim payments, particularly related to goods and services. Insurers set claims reserves to anticipate future settlement amounts, which is a crucial part of their planning and budgeting.
- **Claims disputes:** Claims disputes occur when the insurer denies the claim, proposes a lower settlement than requested by the policyholder, or delays the payment without explanation.
- **Business interruption:** Natural disasters can interrupt the day-to-day operations of a business, either directly—through damage to plant and property—or indirectly, for instance as a result of damage to infrastructure or disrupted supply chains. The longer it takes to resolve a claim, the more the potential for lengthy and extended periods of business interruption.
- **Financial strain:** Claim settlement delays can leave policyholders in financial distress, particularly if they surpass the indemnity period on their BI insurance. If insurance claims are not settled promptly, policyholders are burdened with the additional financial strain of repair and rebuilding costs, which can lead to further economic hardship and uncertainty.
- **Wider economic impacts:** When claims are delayed, it can impact the overall economic stability of a region.

## Recent natural catastrophe losses

The world has witnessed a significant increase in natural disasters, resulting in substantial losses. From devastating hurricanes and cyclones to destructive wildfires and floods, these events have profoundly impacted human lives and the economy. The escalating trend of natural catastrophe losses has become a pressing concern for governments, insurance companies and communities worldwide.

In 2022, a significant economic challenge emerged in the form of high inflation, contributing to increased claims severity and rising costs to repair fixed assets including buildings and motor vehicles.

The most costly event of 2022 was Hurricane Ian, which led to insured losses estimated at \$50 to \$65 billion.<sup>4</sup> This devastating storm struck an economically valuable region characterized by rapid urbanization and population growth, highlighting how these factors significantly contribute to the extensive damages caused by natural disasters.

In developing countries, natural disasters frequently have a devastating economic and humanitarian impact. Many poorer countries are exposed to perils such as windstorm, flood and earthquake, and are less resilient from an infrastructure and finance perspective than wealthier countries. One example is the contrast between the Haiti and Chile (Maule) Earthquakes of 2010. While the Chile quake was more intense (at a M8.8 compared to M7 in Haiti), it was less damaging as a result of the country's strict adherence to building codes.<sup>5</sup>

From an insurance perspective, claims relating to natural disasters are more costly in developed markets, with North America, Europe and Japan described as 'peak zones' by re/insurers. This is due to higher levels of insurance penetration and more expensive assets at risk. However, with insurance take-up increasing in other parts of the world (assisted by double-digit growth in parts of Asia Pacific, Africa and LatAm), other regions are likely to become more significant drivers of catastrophe claims in the future.

## The role of big data in revolutionizing the insurance industry

Big data has significantly impacted the insurance industry, transforming various aspects of insurance operations, underwriting, risk assessment, customer experience and fraud detection.

These outcomes not only benefit policy holders but also bring considerable advantages to other stakeholders. Some examples of big data being harnessed by insurers to improve their approach to handling natural disaster claims include:

- **Earth observation data:** By leveraging high-resolution satellite imagery, or earth observation data, insurers access valuable information regarding the severity of various natural disasters, including hurricanes, wildfires, floods, tsunamis, etc. By collecting and analyzing this data, insurers can quickly and accurately evaluate the extent of damage incurred and estimate the affected geographical area. This equips insurers with crucial insights for making accurate assessments and informed decisions in response to natural disasters. And crucially, such data can be accessed when it is not yet safe to deploy loss adjusters on the ground.
- **Meteorological data:** Insurers benefit from meteorological data collected from weather stations, radars, river gauges and other sources to understand weather patterns. This valuable information empowers insurers to assess the intensity of the catastrophe event and estimate its potential impact on insured assets. By leveraging this data, insurers can make well-informed decisions in near real-time, enabling them to effectively strategize and prepare for the potential impacts of a natural disaster.
- **Social media platforms:** Social media platforms generate an immense volume of data during and after a natural catastrophe. Insurers, disaster response agencies and other stakeholders can make proactive use of this information by actively monitoring these sources to gain real-time insights into the impacted regions, helping them assess the extent of damage and safety issues, identify potential claims and stay vigilant about emerging issues.
- **Internet of Things (IoT):** IoT sensor data can provide valuable ground truth insights during natural disasters. Insurers can leverage the power of IoT devices, including weather sensors, flood detectors, CCTV and seismic monitors, which continuously generate valuable data streams. These devices are crucial in monitoring environmental conditions during a natural disaster. By harnessing this data, insurers gain insights into essential factors, such as the event's intensity, duration and geographical spread.





## Big data in the insurance industry

Big data plays a pivotal role in the insurance industry during natural disasters, enabling various applications that enhance reserving accuracy, expedite claims payments, facilitate loss mitigation and even introduce innovative products and services such as parametric and microinsurance. Sources of big data include earth observation data, sensors, CCTV and river gauges. Here's how big data is being used:

- **Accurate reserving:** Through using real-time data, insurers can make more accurate reserve estimations, ensuring sufficient funds are set aside to cover potential claims.
- **Quicker claim payments:** Insurers can validate claims more efficiently. By comparing claim information against actual event data, such as satellite imagery, aerial surveys, or on-the-ground assessments, insurers can expedite claims, enabling faster payments to policyholders in need.
- **Loss mitigation:** Some data offers insights into the causes and impacts of natural disasters. This information helps insurers identify areas prone to specific perils and proactively mitigate risks. For example, insurers can collaborate with customers to implement preventive measures like retrofitting structures or improving drainage systems, minimizing potential losses.
- **New products and services:** Big data has opened avenues for innovative insurance products and services.
  - Parametric insurance, for instance, uses specific triggers tied to verifiable data to initiate claim payments automatically. This coverage offers quick financial help to policyholders based on objective measurements like wind speed or rainfall, eliminating the need for lengthy claims assessment processes.
  - Ground truth data facilitates the development of micro-insurance products tailored to individuals or communities at high risk of natural disasters. With accurate data on localized risks, insurers can offer affordable coverage options that provide financial protection to underserved populations.



## Challenges to overcome

While using a broader spectrum of data sources to speed up claim settlements during natural disasters offers numerous benefits, there are several challenges and potential risks that insurers must address:

- **Inaccurate or inconsistent data** can lead to incorrect claim assessments, delays and disputes. Insurers need robust data validation processes and quality control mechanisms to address these issues.
- **Data interpretation** and accurate decisions based on the information can be challenging, and insurers need to invest in analytical capabilities and talent.
- Different data formats, protocols or data models can make the integration process challenging. Insurers must establish **compatible data frameworks, APIs and data governance practices** to harmonize and consolidate data from various sources.
- Using a broader spectrum of **data sources for claims settlements** during natural disasters must comply with relevant regulations and guidelines.
- **Gathering data from IoT devices**, social media, or public sources may involve personal or sensitive information. Insurers must implement robust security measures to protect data against breaches or unauthorized access.



## Conclusion

As the insurance industry continues to embrace the power of data analytics and technology, the claims process during natural disasters is poised for significant transformation. The emergence of more sophisticated data collection enabling real-time analysis and decision making data promises to revolutionize how insurers assess and settle claims in the coming years.

With advanced technologies such as the Internet of Things (IoT), satellite imagery, social media analytics and machine learning algorithms, insurers will be able to assess risks more accurately and expedite the claims settlement process.

However, alongside these exciting developments, challenges related to data quality, integration, privacy and ethical considerations must first be overcome. Insurers must establish robust data governance practices, adhere to regulatory requirements and ensure transparent and responsible use of data to maintain public trust.



### Citations

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