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INFORM Severity Index

Concept and Methodology, Version 2026

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Abstract

This report outlines the revised methodology of the INFORM Severity index, a comprehensive, data-driven tool for assessing humanitarian crises globally. The revision was prompted by user feedback and changes in the data ecosystem since the last publication of the methodology in 2020, and it was developed through a rigorous collaboration between the Joint Research Centre and ACAPS.

A statistical audit of the methodology confirmed its overall robustness, validating its core principles. Based on these findings, the revision focused on refining data processing and scoring, improving the aggregation of the "Concentration of conditions," finding alternatives for outdated indicators, and recalculating the model. Further key changes include the rescaling of the score to a 0-10 scale for better alignment with other INFORM products, the proposal of a shared framework on data time validity, and recommendations for a new approach to the Reliability Index. This revised methodology enhances the Index's transparency and accuracy, ultimately improving its application in humanitarian decision-making.

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Rado Kozma (Visiting Scientist and Data Analyst): Contributed to the final stages, supporting the formal analysis, validation, review, and editing of the report across multiple sections.

Andrea Salvi (Visiting Scientist and Data Analyst): Performed a crucial review and editing role in the final stages of report preparation.

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ACAPS

Olivia Singer (Senior Analyst and Product Manager of the Severity Index): Supported the drafting of changes to the data analysis and implementation approach carried out by ACAPS and reviewed the final report.

Farrah Jaber (Data Scientist): Contributed to the data analysis of the Reliability Index model, the identification of data gaps in Complexity dimension and provided key insights into the data collection process.

Eugine Mukhaye (Severity Index Analyst): Contributed to the data analysis of the Reliability Index and provided key insights into the data collection process.

1 Introduction

In a world where humanitarian needs are increasing at an alarming rate, measuring crisis severity has never been more crucial. With millions more people requiring assistance each year and funding gaps widening, aid organizations face difficult choices about where to allocate their limited resources. The INFORM Severity index has proven to be an invaluable and respected tool, providing a systematic and data-driven approach that has become a key reference for the humanitarian community. It helps aid organizations make evidence-based decisions, prioritize responses, and advocate effectively for those in greatest need.

Developed through the INFORM initiative - a collaboration of the European Commission, UN agencies, and various multilateral partners – INFORM Severity index has played a vital role in navigating the challenging landscape of humanitarian crises since its official launch in 2020.

The INFORM Severity is a composite indicator designed to assess the severity of humanitarian crises globally, categorizing them into five levels. It is released monthly and aggregates data from diverse sources, providing a systematic, objective, and easily interpretable measure of crisis severity. The Index is based on three core dimensions: crisis impact, affected people's conditions, and crisis complexity.

Over the past five years changes in the data ecosystem and valuable feedback from users have highlighted areas of improvement. This, along with the opportunity to perform a statistical audit and backward analysis on five years of real-world data, prompted a comprehensive re-evaluation of the product to ensure its continued relevance and accuracy.

To address these challenges, the Joint Research Centre (JRC), responsible for the core methodology, and ACAPS, driving force behind the data collection and analysis process, initiated a collaborative effort in 2024. This process was anchored by two dedicated workshops with users, in 2024 and 2025, respectively, at Humanitarian Networks and Partnerships Weeks (HNPW)[1] in Geneva. The first workshop was crucial in identifying the key issues in the existing product. Based on this feedback, a second workshop was held to discuss the latest developments, share the achievements in data collection process operationalized over the past year, and explain the methodological adjustments and their added value. This approach allowed for direct engagement with our users and partners, ensuring that updated data collection guidelines and methodology would be robust, transparent, and fit for purpose.

The sustained and robust collaboration between JRC and ACAPS over the past years—and especially during this last critical phase—was crucial for making the transparent compromises necessary to ensure the INFORM Severity index is a reliable and objective tool for the humanitarian community. This partnership not only steered the revision process to a successful conclusion but will also pave the way for the effective implementation of the changes.

This report outlines the revised methodology of the INFORM Severity index, building upon the foundations of the first methodological report (Poljanšek et al., 2020). JRC has revisited and refined the assumptions and calculations underpinning the INFORM Severity index, introducing minor

[1] http://www.hnpw.org/

adjustments, evaluating the robustness of the methodology, and providing clear implementation guidelines.

The document offers a transparent and in-depth explanation of these methodological advancements. It contextualizes the Index within the broader INFORM suite, presents the updated methodology alongside parallel data collection efforts by ACAPS, and features operational use cases from across the humanitarian sector to demonstrate the Index's practical application in humanitarian decision-making.

The report systematically reviews the conceptual framework and index construction, detailing key changes to indicator selection, weighting, and aggregation. Crucially, it presents the findings of a comprehensive statistical audit and investigates the propagation of uncertainty from indicator reliability assessments to the final composite score. Furthermore, it addresses the Index’s strengths, limitations, and potential applications.

By providing this detailed and technically grounded explanation, the report aims to enhance the understanding of humanitarian crisis severity and optimize the INFORM Severity index 's application in informing humanitarian response and planning.

2 Summary of key revisions

This chapter summarizes the key revisions resulting from the methodological recalibration of the INFORM Severity Index and from improved standardization and transparency of the data collection process. The revision was executed through a setup of clearly defined, yet interdependent responsibilities: the JRC holds the mandate for the methodology and statistical modelling, while ACAPS is primarily responsible for all data collection, analysis and operational processing. The changes are presented across these two integrated workstreams to clarify the technical adjustments implemented to optimize the Index's empirical robustness and transparency.

2.1 Drivers for revision: key user requirements

The revision was directly guided by the following core users and partners requirements:

- **Increasing transparency and explainability** for key indicator analysis. Specifically, this involved developing and communicating the analytical guidelines necessary for ACAPS analysts to address challenges in estimating PiN by Severity indicators, after changes in OCHA's JIAF methodology[2].
- **Minor methodology adjustments** based on user feedback and operational experience, the need arose to refine crisis typologies. This process involved revisiting the definition of 'complex crises', leading ACAPS to revise its crisis name and driver taxonomy to achieve improved standardization. Furthermore, this effort resulted in the decision to phase out regional crises and replace them with a new "connected crisis" approach to minimize information duplication by linking related crises directly.
- **Statistical audit:** After monitoring and collecting data on a large number of crises since 2019, a requirement was established to run a comprehensive statistical audit to re-evaluate the design choices made at the Index's development stage, specifically checking internal consistency, weighting, and aggregation.
- **Communication system:** Users expressed a need for the ability to communicate quickly and clarify specific indicator nuances (e.g., PiN and PiN by Severity) with ACAPS analysts. This requirement for a streamlined system for sharing and receiving feedback directly led to the development and implementation of the online (beta) Q&A form.

2.2 Enhancements to the methodology (JRC)

The methodology is grounded in the conceptual framework, which defines the phenomena's dimensions (e.g., Impact, Conditions, Complexity) and guides the selection of relevant indicators. The methodology then establishes the foundation for the technical steps—such as indicator combination and aggregation—ensuring consistency and accuracy in the composite measure. A robust methodology is essential for accurately assessing crisis severity, tracking trends, and maintaining comparability over time. Composite indicators must be transparent and breakable into their components, with any methodological issues or adjustments clearly documented to prevent data

[2] https://knowledge.base.unocha.org/wiki/spaces/hpc/pages/3992944652/JIAF

misrepresentation. To uphold these critical principles of robustness and transparency, the following analysis, revisions, and proposals for improvement have been undertaken and are detailed below:

- **Statistical audit** (Section 8)**:** The major contribution to the revisions was the statistical audit, conducted to ensure the methodological framework remains robust and reflects the reality. This audit employed rigorous techniques, including descriptive statistics, coherence analysis, and sensitivity testing, with the specific goal of enhancing the precision of index scores and the transparency of the results. **Ultimately, the exercise confirmed the overall robustness of the INFORM Severity index's core principles** and analytical structure, providing the empirical foundation for all subsequent methodological refinements.

- **Revision of the normalization limits** (Section 8.1): The methodology has always utilized a min–max normalisation method with fixed limits; however, it was observed that several core indicators had become saturated over time, reducing their sensitivity. A thorough statistical analysis of the complete historical dataset (2019–2024) was conducted and revised normalisation limits for specific variables were defined. This update was designed to exclude outliers and restore the full discriminatory power of the indicators, ensuring the Index remains relevant and accurate.

- **Enhancing precision in aggregation**: Utilizing unrounded values throughout the hierarchical aggregation process to enhance precision, applying rounding only at the final stage for the overall index score. Intermediate scores will remain displayed in rounded form for user clarity (Section 8.4).

- **Rescaling the INFORM Severity score to 0-10** (Section 3.4.3): To ensure maximum consistency and interpretability across the suite of INFORM products, it is proposed to rescale the Index Severity score from a 0-5 range to a 0-10 range.

- **Dimension Conditions of people affected: potential Improvement in calculating the Concentration of Conditions Category** (Section 6.2.1): The current integer scoring (1-5) using broad 5% thresholds is too simple and ignores subtle differences between crises. The method doesn't account for the relative distances or nuance of situations falling between those fixed severity levels. A new continuous calculation is proposed to capture these intermediate variations, providing a more precise and differentiated score.

- **Dimension Complexity of the crisis: dimension was revised to address indicators that did not meet the criteria for coverage, frequency of update and timeliness** (Section 6.3.1). The review focused on indicators such as *Empowerment*, *Ethnic fractionalization*, *Size of excluded ethnic groups* and *Conflict intensity*. The solution involved revising the recentness criteria for existing data and proposing alternatives to ensure the Complexity dimension is consistently current and robust.

- **Analysis of Reliability index** (Section 9): Analysis is needed to understand better how the Reliability Index reflects data uncertainties. By providing clarity on how effectively the index pinpoints specific data weaknesses (e.g., outdated data, major information gaps, unreliable data), the analysis will ensure decision-makers act appropriately—whether that means proceeding cautiously when reliability is low or directing efforts to improve data collection where it's needed most.

- **Proposing to create a shared framework on data time validity** (Section 7.4): This framework would establish the maximum acceptable age for each indicator, ensuring the Index remains a dynamic and accurate reflection of current realities. By defining these "validity windows" in collaboration with technical partners, the model would align diverse expectations on data timeliness and ensures that only the most relevant evidence informs the Severity Score.

2.3 Improvements to the data collection and operational process (ACAPS)

The data collection process involves gathering information from multiple sources and ensuring consistency across indicators. As the composite index depends on the quality of its underlying data, the quality and transparency of data are recurring concerns among INFORM Severity Index users. Feedback from users has highlighted the importance of reliable and transparent data, prompting developers to prioritise these aspects in recent updates:

- **Data collection manual**: ACAPS has published a comprehensive data collection manual that outlines the standardised approach to data collection and the key principles guiding the process. This document provides users with clarity on the principles and decisions made by the data and analysis teams (ACAPS, 2024) in order of improving transparency and guiding users in interpreting the data.
- **Justification templates**: ACAPS has implemented a beta version of justification templates to standardise the language used during data collection. These templates serve as checklists, ensuring no relevant information is overlooked and enhancing consistency across datasets. (Developed by ACAPS – reviewed by JRC, 2024)
- **Automated quality controls**: Additional automated controls have been introduced during the data entry process to minimise human error and improve data accuracy (2025). This includes an automated flagging system comparing data to the previous entry and ensuring figures are correctly aggregated in line with the methodology (exposed, affected, PiN, and the levels of Conditions of People Affected), as well as within 'Multiple Crises' IDs. Complementing this technical enhancement, a new team in ACAPS, dedicated to the review of crisis data across the Index, has been established as of 2025, ensuring a harmonized and consistent approach to data quality assurance.
- **Launched online communication platform** (2025) to address user queries with full transparency, new features of the online Q&A form were implemented:
    - Systematic Query Classification and Prioritization: When submitting a question, users simply categorize it as a Request, Clarification, or Suggestion. The system automatically assigns an urgency level based on your category and immediately routes it to the specific analyst who can help. This focused approach cuts down on response time, ensuring that user's technical questions about indicators like PiN reach the right expert without delay.
    - Public version of questions and answers: When submitting a question, there is an option to "Opt-In" and make the question and ACAPS answer visible to other registered users. This allows other users facing similar issues to quickly find solutions in the public Q&A section, reducing repetition and giving you instant clarity on indicator nuances.

Furthermore, there were issues related to the methodology that strongly affect the way the operational work behind the INFORM Severity index is done:

- **Replacing regional crisis with connected crisis** (Section 7.2): The ineffective comparison of 'regional crises' led to adoption of 'connected crises'. This allows measuring the severity of a crisis within a country—even if regional—to highlight its differing impact across various locations.
- **Updating driver taxonomy and adjustment of naming convention** (Annex 5. Driver taxonomy): Driver taxonomy facilitates cross-comparison for users who largely analyse similar crises (e.g., 'international displacement crises'), while naming conventions encouraged deeper analysis, helping us better define driver vs. consequences (e.g., specifying the cause of acute food insecurity).
- **Designing a prioritization approach to estimate PiN by severity for HNO/HRP countries** to rapidly adapt to the evolving Joint Intersectoral Analysis Framework (JIAF). Approach (**Annex 6: A prioritization interim solution to estimate PiN by severity**), developed by ACAPS and reviewed by JRC, was shared with donors in April 2024. However, it was not formally published as it was specifically developed as a necessary **interim measure** to bridge the immediate methodological switch from JIAF 1.0 to JIAF 2.0 in 2024. This rapid adaptation successfully ensured operational continuity. However, due to the ongoing evolution of the JIAF methodological framework, over the coming year, research and statistical analysis will be prioritized to create a more robust, validated methodology that can withstand future disruptions in data availability.

3 The INFORM Severity index: a core product of inform suite

Following the summary of key technical and operational revisions detailed in Chapter 2, this chapter transitions to the strategic and functional role of the INFORM Severity Index within the wider INFORM suite of products. It presents the INFORM initiative, outlines the core objectives and scope of the INFORM Severity Index, its development trajectory and defines its crucial, interconnected function in validating the INFORM Risk Index and informing the architecture of the future INFORM Warning tool.

3.1 About INFORM initiative

3.1.1 INFORM partnership

The INFORM (Index for Risk Management) initiative started more than a decade ago as a collaboration of UN agencies (Inter-Agency Standing Committee Reference Group on Risk, Early Warning and Preparedness[3]), European commission, donors and experts. Its purpose is to address the emerging needs for common evidence–based coordinated allocation of humanitarian aid and to meet the requirement of EU[4] and global humanitarian systems[5].

The INFORM partnership is currently adapting its coordination model to better align with its evolving strategic priorities, while the Joint Research Centre (JRC) of the European Commission maintains its established role as the scientific and technical lead for all INFORM products. This process is focused on ensuring long-term sustainability and continued effectiveness in delivering on the initiative's mandate.

3.1.2 INFORM suite

INFORM[6] has become a suite of shared quantitative, analytical products (**Figure 1**) to support decision-making at different phases of the crisis management cycle, specifically climate adaptation and disaster prevention, preparedness and response. It offers three regularly updated operational products. INFORM Risk (De Groeve et al., 2014), launched in 2014, is a new way to measure a multi-hazard risk of humanitarian crisis and disasters. INFORM Severity (Poljanšek et al., 2020), launched in 2020, is an innovative approach to measure the severity of crisis. INFORM Climate Change (Poljanšek et al., 2022), released at the COP27, quantifies the impact of climate change on future risk of humanitarian crisis. While INFORM Warning (in development) will provide another opportunity for anticipatory action.

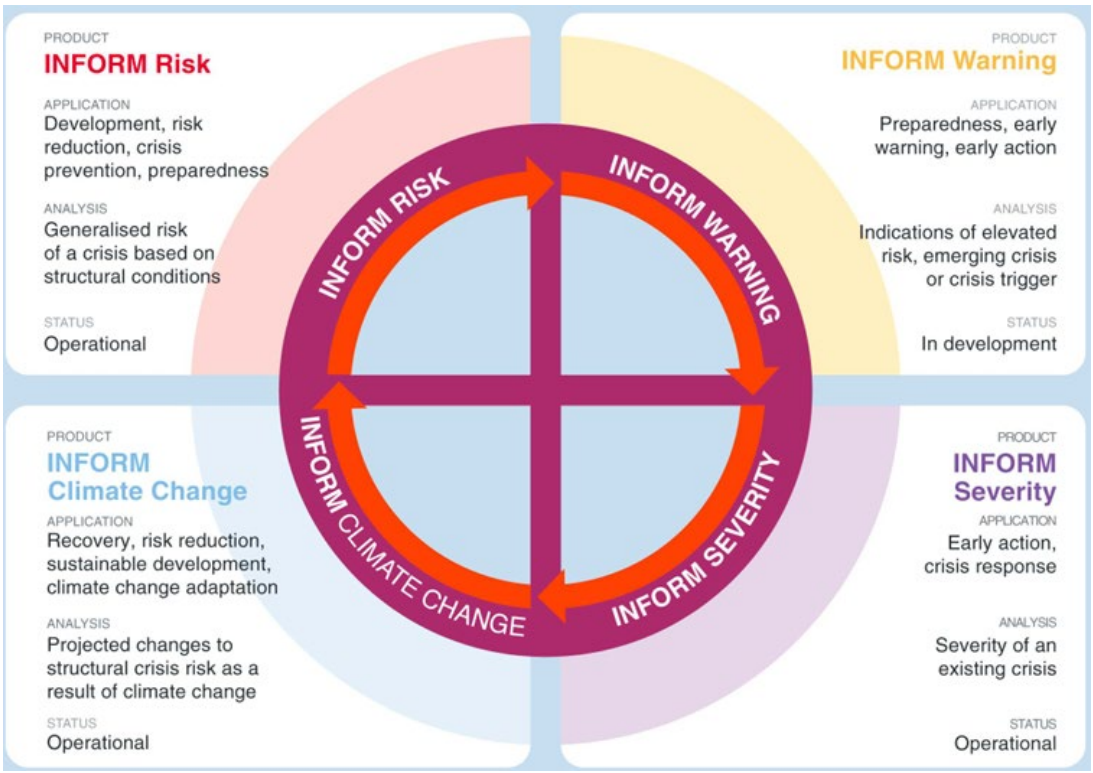
[3] The Inter-Agency Standing Committee (IASC), the primary forum for humanitarian coordination and policy development involving the key UN and non-UN humanitarian partners, was a founding collaborator of the INFORM initiative and is currently undergoing a major reform initiative, the Humanitarian Reset (https://interagencystandingcommittee.org/humanitarian-reset).

[4] Council Regulation (EC) No 1257/96 of 20 June 1996 concerning humanitarian aid (https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=celex:31996R1257)

[5] UN General Assembly adopted resolution 46/182 (https://ngocoordination.org/system/files/documents/resources/ga-resolution-46-182.pdf

[6] https://drmkc.jrc.ec.europa.eu/inform-index

Figure 1: INFORM Suite



Source: Inter-Agency Standing Committee and the European Commission., 2024

3.1.3 INFORM principles

All INFORM products adhere to INFORM's principles:

- **GLOBAL**: INFORM global products cover 191 countries and subnational products include all parts of the region or country they cover.
- **OPEN**: All INFORM products are freely available and the methodology and sources are open and transparent.
- **RELIABLE**: INFORM products use the best available methods and data. INFORM partners, data providers, have committed to make them available into the future.
- **FLEXIBLE**: INFORM products can be easily adapted and included into the decision-making processes of users.

INFORM is developed together with Partners, a mix of users, decision-makers and technical specialists.

3.2 Objective and scope of the INFORM Severity index

The objective of the INFORM Severity Index is to provide a standardised and data-driven measure of the severity of humanitarian crises globally. By integrating diverse datasets into a single, comparable framework, the index supports evidence-based decision-making, enabling the efficient prioritisation of resources and responses across crises.

The index aims to portray the scale, intensity, and complexity of humanitarian needs arising from crises. It captures the immediate impacts of events, the conditions experienced by affected

populations, and the operational challenges hindering assistance. This multidimensional approach ensures a comprehensive understanding of the humanitarian situation, considering both quantitative and qualitative (contextual) factors.

Fundamentally, the Index serves as a tool to establish overarching principles and processes for defining and measuring "crisis severity," aiming to standardize this concept (Section 5.2) within the humanitarian community.

The INFORM Severity Index provides crucial analytical capabilities that directly inform action, strengthening the analytical foundations of humanitarian decision-making:

- **Prioritization:** comparison of crises across different contexts to support prioritisation.
- **Monitoring and planning:** facilitates the monitoring of severity trends over time to inform response planning.
- **Analysis:** supports the identification of key drivers of humanitarian need.
- **Advocacy:** enables evidence-based advocacy and resource/humanitarian funding allocation methodology.

Consistent with the INFORM initiative's principles, the Index is designed to be open source, transparent, and scientifically sound. By offering its materials under an accessible and adaptable license, the INFORM Severity Index strengthens humanitarian organizations and research centers, ensuring that its non-commercial use promotes more effective and equitable responses to crises worldwide.

3.3 Development trajectory of the INFORM Severity index

The development of the INFORM Severity Index, as outlined in the previous methodology report (Poljanšek et al., 2020), has been initiated and consistently guided by the INFORM initiative and shaped by the contributions of various key partners.

Technical leadership

The technical development was led by a dedicated technical working group comprising:

- European Commission: European Civil Protection and Humanitarian Aid Operations (DG ECHO) and the Joint Research Centre (JRC).
- ACAPS,
- US Centers for Disease Control and Prevention (CDC),
- UK Foreign, Commonwealth, and Development Office (FCDO),
- Karolinska Institute
- United Nations Office for the Coordination of Humanitarian Assistance (UN OCHA).

Key milestones: original development (2016–2020)

The development process was structured across several critical phases, establishing the foundation for the current Index:

- 2016: Review of existing tools,
- April 2016: Initial scoping workshop and concept paper,
- December 2016: Technical workshop and first prototype development (2017),
- Early 2018: Testing and adjustment using historical data for 26 crises,
- January 2019: Publication of a monthly beta version,
- November 2019: Final technical workshop,
- October 2020: First official release, accompanied with the launch event and publication of the methodology report.

Current methodology upgrade (2023–2025)

The present upgrade was initiated in response to calls from users and partners to reassess the methodology based on operational feedback and data trends:

- 2023–2024: Decision to reassess the methodology,
- 2024: Review of methodology and user feedback, collaboration between JRC and ACAPS is strengthened,
- May 2024: First partners and users meeting (Geneva, HNPW 2024, SDC[7] headquarter),
- September 2024: Data collection manual (ACAPS, 2024) published,
- March 2025: Second partners and users meeting (Geneva, HNPW 2025),
- October 2025: Draft of the methodology report in review,
- 2026: Publication of methodological upgrade report.

The Joint Research Centre (JRC) is responsible for the index methodology and upgrades, while ACAPS manages data collection, analysis, and publishing. Since the beta release in January 2019, INFORM Severity Index results have been available through monthly updates to the INFORM working group and the public via the ACAPS[8] and JRC[9] websites. In addition to downloadable results (Excel, API), users can access interactive dashboards, maps, and crisis profiles online.

3.4 The role of INFORM Severity index within INFORM suite

INFORM Severity captures the overall severity of on-going crisis as a snapshot in time defined by its impact, needs and complexity (Section 5.2) and released on monthly basis.

[7] https://www.deza.eda.admin.ch/en

[8] https://www.acaps.org/en/thematics/all-topics/inform-severity-index

[9] https://drmkc.jrc.ec.europa.eu/inform-index/INFORM-Severity

The INFORM Severity Index is positioned as a critical analytical link within the broader INFORM suite (Figure 2) and designed to fit in the whole disaster risk management cycle providing essential real-time operational context.

By offering an open source, transparent, data-driven, scientifically sound and easy to use tool, the INFORM Severity Index strengthens the analytical foundations of humanitarian decision-making and promotes more effective and equitable responses to crises worldwide.

Figure 2: Functionality of the products of INFORM Suite in a timeline

Source: Authors

3.4.1 Complementary function and validation

The INFORM Severity Index is founded upon the clear conceptual and temporal separation from risk assessment, specifically the INFORM Risk Index. This distinction is defined by their focus:

- INFORM Risk Index focuses on ex ante (forward-looking) potential future impacts, tied to long-term structural factors (e.g., pre-existing vulnerability, capacity to respond).
- INFORM Severity Index is the dedicated measure of crisis severity, focusing solely on the ex post (real-time/historical) manifestation of impact and its immediate humanitarian implications.

This methodological delineation of scope is critical. It ensures clarity and avoids the conflation of different factors, thereby preventing double counting and maintaining the integrity of the INFORM Severity Index as a pure measure of the current operational environment.

This distinction defines their complementarity. As a focused measure of the current situation, the INFORM Severity Index is only one source of information that supports decisions about humanitarian crisis response. It should be generally complemented by risk, early warning, and capacity information.

Even more, the INFORM Severity Index provides the empirical backbone for validation of all INFORM products. By correlating actual observed severity with structural crisis risk, INFORM Severity validates the assessment model of the INFORM Risk Index (Inter-Agency Standing Committee and the European Commission, 2023). Analysis of the INFORM Risk Index 2023 (published in September

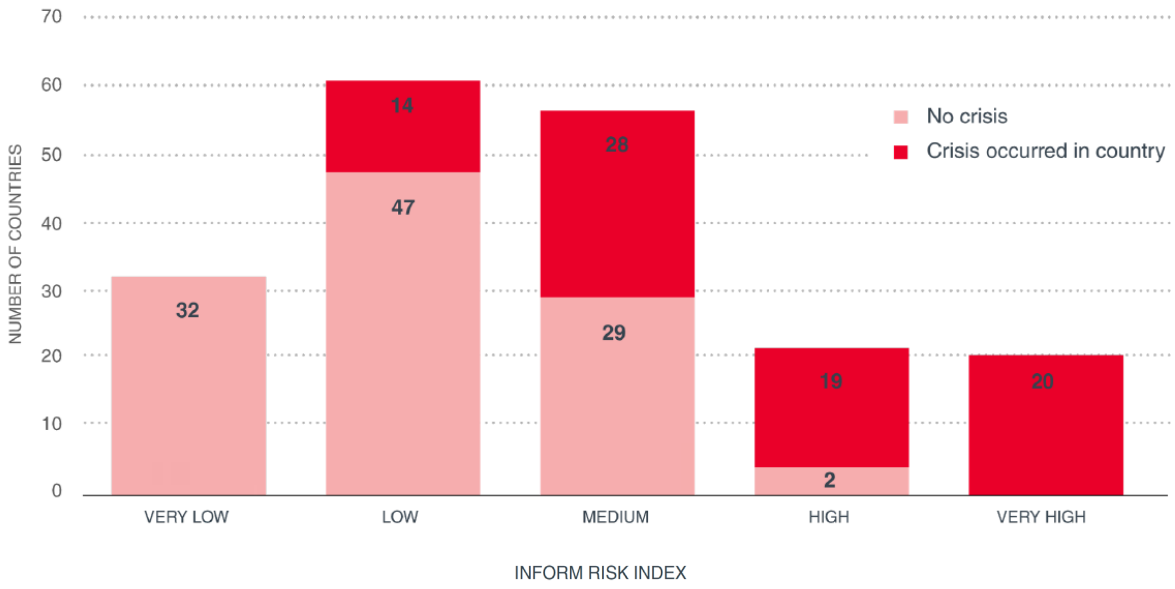
2022) against the INFORM Severity Index results for July–December 2022 confirms the predictive utility and internal consistency of the Risk model.

The comparison demonstrated a **strong correlation** between a country's risk level and the likelihood and severity of an actual crisis:

- Likelihood: Analysis (Figure 3) showed that 100% of countries classified as "Very High Risk" experienced a crisis, 90% of "High Risk" countries also faced crises and none of the countries in the lowest risk category had a crisis. This confirms that the higher the risk level of a country, the more likely it is to have a crisis.
- Severity: Among countries experiencing a crisis, the correlation between the country's risk and the crisis severity category also strong (Figures 4 and 5). Specifically, 52% of countries had the same Risk and Severity Index category, and over 97% of countries had categories that were the same or differed by only one level (+/- one category).

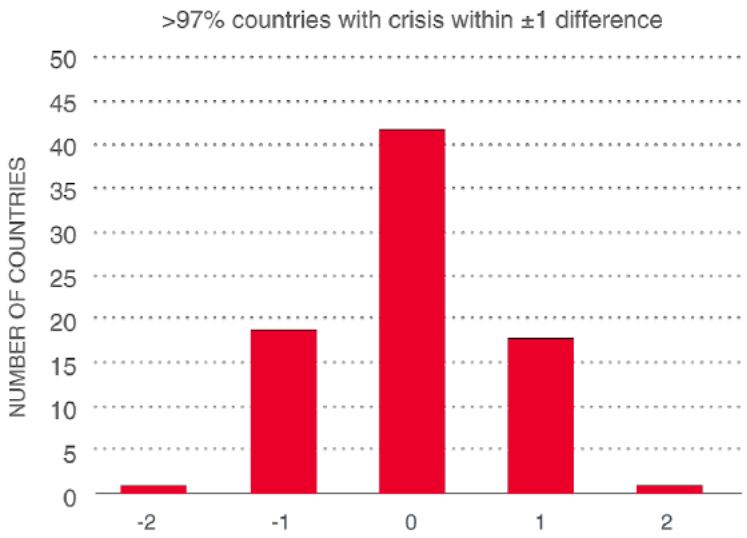
This robust empirical evidence confirms that the INFORM Risk index can effectively predict **both where a crisis is more likely to occur and the likely severity level** of that crisis.

Figure 3: Distribution of countries by risk category (according to INFORM Risk Index 2023). All the countries are split into two groups: those where actual crises occurred according to INFORM Severity Index Jul-Dec 2022 (red color) and those with no crises (pink color).



Source: Inter-Agency Standing Committee and the European Commission., 2023

Figure 4: Distribution of differences between INFORM Risk Index 2023 and INFORM Severity Index Jul-Dec 2022



Source: Inter-Agency Standing Committee and the European Commission., 2023

Figure 5: Correlation between INFORM Risk Index 2023 and INFORM Severity Index Jul-Dec 2022. Countries that experienced a crisis (INFORM Severity Index Jul-Dec 2022) are shown according to the severity of the crisis and the risk of crisis in the country (INFORM Risk Index 2023). The maximum severity category is shown for countries that experienced more than one crisis. The intensity of the colour shows the number of countries in each position in the matrix (i.e. the correlation between risk and severity).

INFORM SEVERITY INDEX (JULY TO DECEMBER 2022)	VERY LOW	LOW	MEDIUM	HIGH	VERY HIGH
VERY HIGH				Nigeria, Ukraine	Afghanistan, CAR, Chad, Congo DR, Ethiopia, Haiti, Yemen, Mali, Myanmar, Syria, Somalia, Sudan, South Sudan
HIGH		Sri Lanka	Angola, Lebanon, Malawi, North Korea, Palestine, Peru, Zimbawe, El Salvador, Türkiye	Bangladesh, Burundi, Colombia, Eritrea, Guatemala, Honduras, Iran, Libya, Pakistan, Venezuela	Burkina Faso, Cameroon, Iraq, Mozambique, Niger, Kenya, Uganda
MEDIUM		Chile, Eswatini, Hungary, Malaysia, Moldova, Poland, Romania, Slovakia	Algeria, Brazil, Costarica, Djibuti, Dominican Republic, Ecuador, Jordan, Mauritania, Marocco, Namibia, Panama, Rwanda, Senegal, Zambia	Congo, Madagascar, Mexico, Papua New Guinea, Philippines, Tanzania	
LOW		Greece, Italy, Spain, Trinidad and Tobago, Tunisia	Armenia, Egypt, Gambia, Thailand, Tonga	Azerbaijan	
VERY LOW					

INFROM RISK 2023

Source: Inter-Agency Standing Committee and the European Commission., 2023

3.4.2 Bridging to INFORM Warning and quantifying anticipation

The INFORM Severity Index is also integral to the development of the INFORM Warning tool that bridges the analytical gap between structural risk drivers (before a crisis) captured by INFORM Risk and real-time impact described by the Severity Index (once a crisis has happened). The INFORM Warning tool is designed to link dynamic risk information, early warnings, forecasts, and scenarios that could lead to a crisis up to 12 months in advance.

The system will be structured around two key modules:

- Risk Monitor: This module is the automated core of INFORM Warning, designed to communicate and aggregate recent, forecasted, and seasonal changes in risk. It continuously compares indicators against a reference baseline to highlight the magnitude and significance of risk changes as signals, aggregated in the final warning levels.
- Crisis Anticipation: This module utilizes the Risk Monitor output to select countries for detailed scenario development and forward-looking impact analysis.

The INFORM Severity index plays dual role in the INFORM Warning system's analytical output:

- **Contextual Input** (Risk Monitor): The INFORM Severity Index is used to calculate the Warning Level. This final level of aggregation combines dynamic risk signals with contextual information from the country's structural risk (INFORM Risk) and any existing crisis (INFORM Severity). This identifies where risk increases could result in humanitarian consequences requiring an international response in the following 12 months.
- **Quantified Output** (Crisis Anticipation): The core function of the Crisis Anticipation Module is to conduct impact analysis of possible scenarios. The ambitious plan is to utilize scenario-building to forecast future INFORM Severity scores, thereby providing measurable outcomes for anticipatory action. The projected impacts will be directly communicated in reference to the possible evolution of the INFORM Severity Index under each scenario. This approach allows the Warning system to effectively quantify the likely deterioration or improvement of a crisis's evolution and enables evidence-based anticipatory action based on a data-driven forecast of future humanitarian needs.

3.4.3 Implications of the multi-product role: proposal for rescaling the score to 0–10

The Index's **multi-product role** requires it to function as a necessary and active component that works seamlessly with the other tools in the larger INFORM Suite, particularly the INFORM Risk Index and the upcoming INFORM Warning tool. The Severity Index isn't just a standalone product; its primary value comes from its ability to be directly integrated, compared, and analyzed alongside the data from the other INFORM products.

The requirement for cohesion strongly supports the proposal for methodological change of rescaling the INFORM Severity Index to a 0–10 scale instead of current 0–5 scale. The rational for rescaling is:

- **Simplifying User Interpretation:** If the INFORM Risk Index uses a 0–10 scale and the Severity Index uses a 0–5 scale, users must constantly perform a mental conversion (e.g., doubling the Severity score to match the Risk score). The unified 0–10 scale would remove this confusion.

- **Common, Consistent Scale:** Operating all core indices (Risk and Severity) on the same 0–10 scale would be the most direct way to achieve methodological cohesion.
- **Unified Product Suite:** This cohesion would reinforce the perception that INFORM is a single, scientifically validated analytical system, not just a collection of separate tools.

In terms of calculation effort, the change is minimal. This rescaling can be achieved either in the post-processing of the final index (a simple linear transformation of multiplying the current score by 2) or in the pre-processing of the raw indicators (rescaling them to the 0–10 range with no change to the min-max normalization)

This change means that while the categories would be stretched to cover the wider 0–10 range—with "Very Low Severity" now relating to score values up to 2—the relative position and meaning of a crisis would remain unchanged, ensuring continuity in data interpretation.

Additionally, some users would benefit from this change, as it may provide greater differentiation (higher variance) between crisis severity levels that can enhance interpretability and facilitate prioritization.

4 Use cases of INFORM Severity index

This chapter presents use cases contributed directly by organizations that have integrated the INFORM Severity into their operational workflows. These firsthand accounts demonstrate how the Index supports humanitarian decision-making in practice. Uses range from funding allocation to early warning, across diverse institutional contexts. They offer a form of validation that complements technical assessments, showing not only that the Index is actively used but how it adds value within operational settings. The contributions that follow come from the European Commission, UN agencies, the Red Cross and Red Crescent Movement, government agencies and bilateral donors.

European Civil Protection and Humanitarian Aid Operations (ECHO): The European Commission Directorate-General for European Civil Protection and Humanitarian Aid Operations (DG ECHO) uses the INFORM severity in its regular analysis of crises. Since 2020, INFORM Severity, together with INFORM Risk, has been part of the commissions methodologies for allocating humanitarian aid and disaster preparedness funds, as well as for assessing forgotten crises. It has been integrated into internal decision-making frameworks and funding allocation systems via API. This includes both the severity scores and the contextual information from crisis profiles to inform their comprehensive assessment processes.

INFORM Severity represent one of the commissions approaches to strengthening evidence-based policymaking. It offers a common approach to the humanitarian aid community for the analysis of crises, enabling comparability, prioritization, and a shared objective language among humanitarian actors. The tool's solid scientific basis, neutrality and independence, and validation by a large community of practitioners further reinforce its credibility and usefulness in DG-ECHO's work.

Foreign, Commonwealth & Development Office (FCDO): The Early Warning, Analysis and Reporting (EWAR) team have been using INFORM severity for a few years in various ways. We have an internal tool that works similar to INFORM warning, which uses changes in several INFORM severity indicators as one input for signals. Beyond that, we often use INFORM severity to provide context to senior readers when flagging specific contexts, by highlighting contexts with similar INFORM severity scores. We access the data both through the monthly releases and the API, and use a variety of indicators like 'displacement', 'people affected', 'people in need', and the severity scores as well as the overall categories. Because INFORM Severity is a recognized product that undergoes a lot of scrutiny, we feel confident using indicator data that would otherwise be hard to achieve, given differing data availability across multiple contexts.

International Federation of Red Cross and Red Crescent Societies (IFRC): The Crisis Categorisation (CC) process is a core component of IFRC's Emergency Response Framework (ERF). It assigns a category (Yellow, Orange, Red) to emergencies, triggering key actions such as resource allocation through the DREF and the assigning of accountability at different levels of the IFRC Secretariat. In 2025 alone, the CC has been applied over 100 times. The CC is built on 18 carefully selected indicators aligned with the IFRC Analytical Framework, ensuring a robust and harmonized approach.

Since 2022, the INFORM Severity plays a pivotal role in the Humanitarian Conditions pillar of the CC, providing an objective measure of the crisis severity in a country. Use of INFORM Severity in this way supports coordination, enhances transparency and allows comparative and time-series analysis, all of which directly contribute to our IFRC network's local action, everywhere.

IFRC GO accesses INFORM data automatically via API, allowing our ongoing development of a semi-automated CC to help streamline the process and make it more consistently available for use by our National Societies.

Swedish International Development Cooperation Agency (Sida): Sida uses parts of INFORM Severity within its internal allocation analysis index, which serves as the primary tool for distributing the annual humanitarian budget across crisis-affected countries. The objective of this index is to enable an impartial allocation between crises, by capturing people in need of humanitarian assistance but also to what extent that need is being addressed by the humanitarian system and crisis-affected countries themselves. Sida utilizes the core indicators from the INFORM Severity Index, with a focus on the "Conditions of People Affected" dimension. Sida analysts review the provided figures and justifications, and triangulate these with other sources, to identify estimates for the number of people in severity levels 3-5 and levels 4-5. These estimates feed into 6 out of the 9 indicators that form Sida's allocation analysis index.

United Nations Office for the Coordination of Humanitarian Affairs (OCHA) - Central Emergency Response Fund (CERF): The Emergency Relief Coordinator (ERC) allocates CERF funding to support timely humanitarian response to new and deteriorating emergencies and critically underfunded humanitarian operations, based on evidence-based recommendations[10] of the CERF secretariat. The CERF Index for Risk and Vulnerability (CIRV) was developed in 2015 to allow dynamic, comparative analyses of humanitarian crises across countries based on risk, needs severity and early warning data. In 2020, INFORM Severity was integrated into CIRV, to account for one-third of its score. For each of CERF's Underfunded Emergencies allocation rounds[11], the INFORM Severity dataset is downloaded monthly and used as part of humanitarian needs and funding analysis. CERF complements this data analysis with multi-stakeholder consultations and qualitative analysis of additional contextual information, to make the final country selection and funding recommendations for the ERC. The availability of a common, composite severity scale supports consistent comparison across contexts and contributes to more transparent, evidence-based allocations.

United Nations Office for the Coordination of Humanitarian Affairs (OCHA) - Centre for Humanitarian Data (HDX): OCHA's Centre for Humanitarian Data developed HDX Signals. HDX Signals monitors key humanitarian datasets such as displacement, food insecurity, market prices, and conflict events to generate timely alerts on deteriorating conditions. INFORM Severity has been introduced as an additional alert to provide a standardized measure of crisis severity. This integration adds a common scale that helps interpret alerts in context, enabling decision-makers to understand not only what is changing but how severe the situation is overall. By combining INFORM Severity with real-time signals from core datasets, HDX Signals strengthens prioritization, advocacy, and resource allocation across crises. For more details, see the HDX Signals Impact Story.[12]

United Nations Operations and Crisis Centre (UNOCC): The UN Secretary-General continues to emphasize the need to put comprehensive crisis prevention at the forefront of the UN's work. Since

[10] https://cerf.un.org/sites/default/files/resources/CERF%20Prioritisation%20and%20Decision-Making%20%28Oct%202025%20version%29.pdf

[11] https://cerf.un.org/apply-for-a-grant/underfunded-emergencies

[12] https://centre.humdata.org/hdx-signals-alerting-humanitarians-to-deteriorating-crises/

2021, the UN Operations and Crisis Centre (UNOCC) has integrated INFORM Severity into biannual horizon scans to inform prioritization within the UN Secretary-General's crisis prevention mechanism. INFORM Severity data, ingested into UNOCC's crisis data warehouse, is embedded in a forward-looking analytics package that combines current severity level alongside six-month trend signals to identify high severity or worsening contexts and to inform selection of country, regional, and thematic priorities over the next six months. Decisions draw on a common severity scale complemented by qualitative analysis and other external/internal models, ensuring evidence-based, transparent prioritization aligned with global humanitarian benchmarks. This strengthens early warning, interagency coordination, and rights based preventive action.

World Health Organization (WHO): The World Health Organization (WHO) has utilized the INFORM Severity since 2022 as a core input to the Dynamic Preparedness Metric and, more recently, to the Pandemic Fund Risk-Need Metric. WHO relies on the monthly country-aggregated score accessed via API, integrating it directly into our analytical systems. Within these Metrics, INFORM Severity serves as the primary indicator for identifying countries facing humanitarian crises. This data informs country prioritization for funding allocations, preparedness interventions, and advocacy.

The use of INFORM Severity has significantly shaped decision-making. For example, it underpinned the prioritization of high-risk, high-need countries through the Risk-Need Metric for targeted Pandemic Fund support, ensuring resources reach countries with severe context. It also guides funding rounds focused on fragile countries that have not yet benefited from Pandemic Fund investments.

Summary of Operational Applications

The use cases presented in this chapter reveal consistent patterns in how the INFORM Severity is applied, falling into three primary categories:

1. **Resource allocation and prioritization:** Several organizations including ECHO, CERF, Sida, WHO, and IFRC, use the Index to guide funding decisions. Whether for humanitarian aid, disaster preparedness, or pandemic response, INFORM Severity helps direct resources to where needs are greatest. The Index provides an objective, evidence-based foundation for difficult prioritization choices.

2. **Crisis classification and assessment:** Several users have embedded the Index within broader analytical frameworks used to categorize or assess crises. IFRC's Crisis Categorisation process, ECHO's forgotten crises methodology, and UNOCC's horizon scanning all draw on INFORM Severity to provide a standardized measure of humanitarian conditions. This enables consistent comparison across contexts and supporting transparent, evidence-based decisions.

3. **Early warning and monitoring:** FCDO, UNOCC, and OCHA HDX use the Index—and its underlying indicators—to detect deteriorating conditions and generate timely alerts. By tracking shifts in severity over time, these systems strengthen anticipatory action and crisis prevention efforts.

Beyond these three categories, the Index provides essential context for crisis communication, allowing users to benchmark a specific situation against contexts with similar severity scores.

Across these use cases, several common merits emerge. Organizations that are using INFORM Severity consistently highlight the value of a **common scale** that enables comparability and a shared language among humanitarian actors. The Index's **scientific basis, neutrality, and independence** lend credibility to decisions that must withstand scrutiny. Its **accessibility via API** facilitates integration into diverse analytical systems, supporting automation and efficiency. Finally, the **validation by a broad community of practitioners** reinforces confidence in the data.

Taken together, these contributions show that the INFORM Severity Index has become an integral component of the humanitarian information ecosystem — one that supports coordination, enhances transparency, and strengthens evidence-based decision-making across the sector.

5 Conceptual framework and index construction

The first methodology report of INFORM Severity Index (Poljanšek et al., 2020) provides a detailed exploration of the foundational concepts of humanitarian crises, how the crisis severity is described, and measured within humanitarian contexts to generate actionable information while highlighting the absence of universally accepted definitions.

The INFORM Severity Index model was built upon the following three operational definitions, refined in consultation with technical partners (Section 3.3) during technical development:

- **Humanitarian crisis:** An event or series of events—arising from both man-made and natural hazards—that causes harm to the physical, mental, social, and economic well-being of a community or large group of people. Crucially, the crisis must exceed their ability to cope using their own resources, requiring complex efforts from humanitarian responders to fill the resulting gap.
- **The severity of humanitarian crisis** is defined as the extent of outcomes generated by the impact of a crisis, distribution of people affected by the severity of the conditions they are confronted with and is aggravated by the complexity of delivering humanitarian response in the operational environment.
- **Measure of crisis severity** is a composite indicator that aggregates a wide range of quantitative information about severity of humanitarian crisis and presents it in numerical and/or categorical scale. It is designed to provide a comparable, evidence-based assessment that facilitates informed and timely decision-making.

Before index construction, the **scope and scale** of the composite indicator were set, defining the essential analytical and operational boundaries, where analytical boundaries govern the model's design and data requirements and operational boundaries referring to how the results are categorized, applied, and interpreted for the user (Section 7).

Index construction was based on the conceptual framework and involved establishing a clear analytical link between the high-level concepts and the specific data used to measure them. It encompassed the following steps that have been subject to review and refinement:

- Defining distinct and measurable conceptual pillars translated into core dimensions
- Establishing the five-level hierarchical structure: Indicators → Components → Categories→ Dimensions→ Index Score.
- The mathematical model: normalization, weighting and aggregation formulas necessary to consistently and transparently combine the data into the final, single, and comparable score.

5.1 Scale and scope – spatial and temporal

The scope and scale of the composite indicator define the essential requirements for data sourcing and methodology. When selecting the indicators for the INFORM Severity Index, the possible scalability in geographical and temporal scope is always considered an important property.

The spatial scope of the INFORM Severity Index is global. The index is applied at the crisis level, meaning it measures severity against a common scale for each distinct crisis. Crucially, the current model is not applied at the sub-crisis level (i.e., it does not geographically differentiate severity

within an individual crisis), although the methodology could potentially be adapted for internal differentiation in the future.

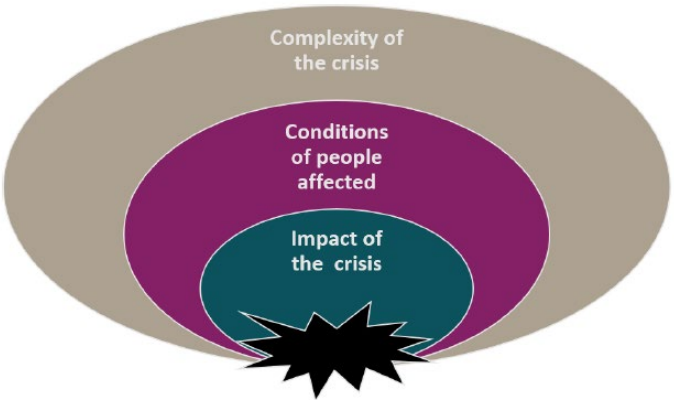
Regarding the temporal scale and scope, the INFORM Severity Index is designed to be regularly updated and released with a sustained frequency – monthly basis. This ensures the index is dynamic, accurately reflecting recent and rapid changes in crisis severity over time.

5.2 Concept of the INFORM Severity index and hierarchical structure

The concept of INFORM Severity Index envisages three dimensions of the severity of humanitarian crises globally that can be measured (**Figure 6**):

1. **Impact of the Crisis**: This dimension reflects the geographical scope and human scale of the crisis, encompassing both the magnitude and extent of its effects.
2. **Condition of people affected**: This dimension informs about the distribution of people affected by different levels of severity of humanitarian needs among them.
3. **Complexity of the Crisis**: This dimension evaluates factors that complicate or hinder crisis mitigation or resolution, such as governance challenges, security concerns, and access constraints.

Figure 6: Concept of the INFORM Severity

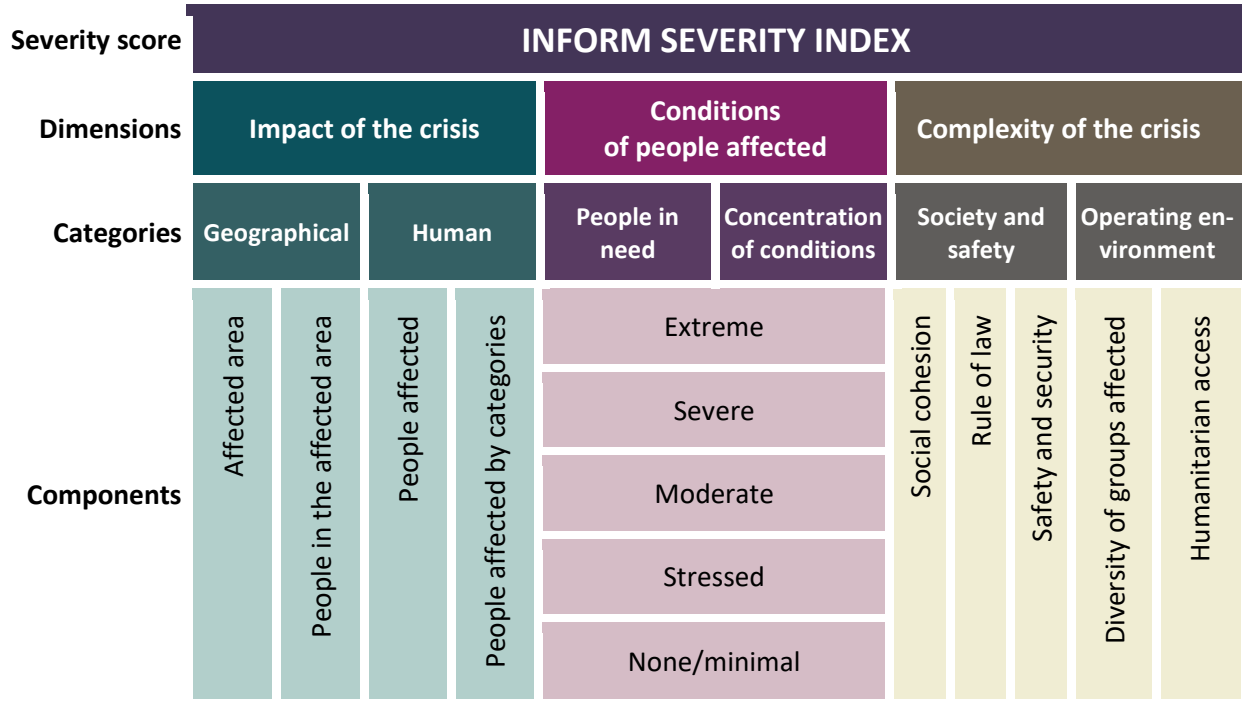


Source: Poljanšek et al., 2020

These dimensions are integrated into a structured and hierarchical theoretical framework that ensures that the index provides a comprehensive snapshot of crisis severity. The framework is designed to reflect the real-time status of crises, with information on the impact of the crisis, the distribution of the people affected by the severity of conditions they are facing and the context in which the response is going to operate, based on the latest available data. By doing so, it aims to support evidence-based decision-making and prioritization in resource allocation, as well as enhance the transparency and objectivity of crisis assessments.

Each dimension is subdivided into categories and components that reflect different aspects of severity, as can be seen in **Figure 7**.

Figure 7: INFORM Severity Index model



Source: Poljanšek et al., 2020

5.3 The mathematical model of the INFORM Severity index

The INFORM Severity Index employs a composite indicator approach to transform its conceptual framework into a structured and operational methodology. This approach utilises a hierarchical structure, aggregating data across dimensions, categories, components and indicators to produce a composite severity score ranging from 1 (low severity) to 5 (extreme severity). The model adheres to the principle that higher scores indicate worse outcomes and greater response challenges.

Severity is conceptualized as a function of the event's impact and the conditions of the affected population, with adjustments for the complexity of delivering humanitarian assistance. This relationship is summarised in **Equation 1** and **Equation 2**:

Equation 1: INFORM Severity as a function of the defined dimension

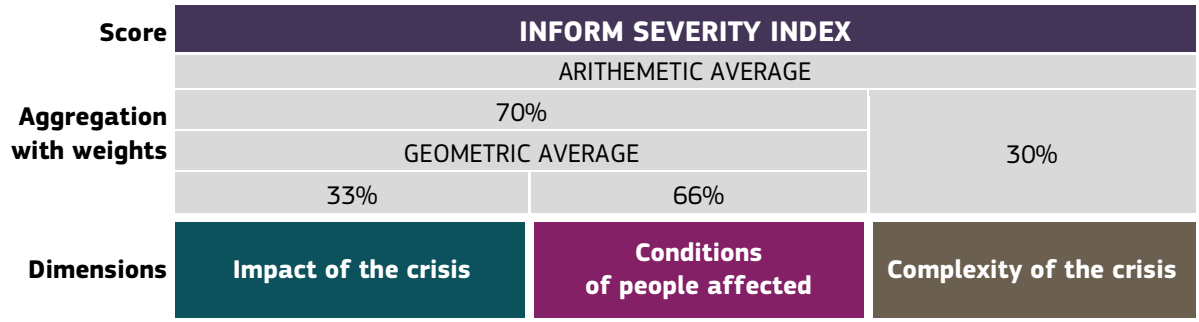
$$INFORM\ Severity\ Index = f(Impact\ of\ the\ crisis, Conditions\ of\ people\ affected, Complexity\ of\ the\ crisis)$$

Equation 2: INFORM Severity calculation

$$INFORM\ Severity\ Index = Impact\ of\ the\ crisis\ \times Conditions\ of\ people\ affected + Complexity\ of\ the\ crisis$$

This formula (**Equation 2**) ensures that severity reflects both the immediate humanitarian needs and the operational challenges posed by the crisis.

Figure 8: INFORM Severity calculation weighting schema



Source: Poljanšek et al., 2020

The overall severity score is a result of a weighted two-stage aggregation process, where the three dimensions—**Impact of the Crisis**, **Conditions of people affected**, and **Complexity of the crisis**—do not contribute equally or identically.

Among the three dimensions, the Conditions of the affected population is deliberately assigned the greatest weight. This reflects its centrality to humanitarian response priorities—namely, addressing the immediate and pressing needs of populations in crisis. High values across all three dimensions will, by definition, result in the worst overall severity outcomes. However, this dimension alone doesn't capture the full scope of severity; less severe direct impacts can result in extreme humanitarian conditions if compounded by complex operational challenges.

The mathematical model imposes a critical nullification rule, that clarifies the distinct structural roles of the dimensions.

Impact of the Crisis and **Conditions of people affected** are treated as mandatory, core driving factors. The severity score is zero if either of these two dimensions is zero. This aligns with the conceptual definition of a humanitarian crisis (Section 5): without impact, there are no affected populations, and without poor humanitarian conditions, there is no need for assistance. This is the intended effect of the **weighted geometric mean** used to aggregate these two core dimensions.

The **Complexity of the crisis** dimension acts solely as a **magnifier** applied *after* the core driving factors are established. This is the intended effect of the **weighted arithmetic mean** in the second stage of aggregation process. Conceptually, complexity cannot nullify the overall score on its own. While a zero score in Complexity would imply no operational barriers - a scenario that is largely theoretical, as all contexts present some degree of access challenges or systemic inequalities that influence interventions - complexity can have a non-zero value when the other two dimensions are zero, but this is filtered out by the nullification rule of the core driving factors. The model ensures that for the INFORM Severity Index to be calculated and a crisis included in the crisis list, there must always be a measurable amount of people in need that are impacted by a crisis (Section 7.1). When complexity has a non-zero value, it invariably exacerbates crisis severity and increases the final score.

To move from raw data to the overall index score, the model follows the established composite indicator construction procedure, developed by the JRC and OECD (Joint Research Centre, 2020; OECD and JRC, 2008).

Missing values and denomination

To maintain continuity, missing values are imputed using the most recent available data (see Section 7.4 on data validity windows). Data is then standardised into percentages, per capita figures, or density functions to ensure consistency and comparability across diverse crises.

Normalisation

The index uses a normalisation procedure to harmonise data from varied sources and enable cross-crisis comparability. All core indicators are transformed into a common scale ranging from 0 to 5 (or 0–10, as proposed in Section 3.4.3.), where higher values indicate more severe conditions. This normalisation is achieved using a min-max scaling method, which adjusts raw data while maintaining its proportionality. Importantly, the minimum and maximum values for each indicator remain constant across monthly updates to ensure comparability in the severity scores.

Weighting and aggregation

The weight allocation along with the aggregation methods proposed in the following paragraph, were decided by experts during the initial development of the index and were fixed after a series of technical workshops.

The weighting applied at the dimension level is illustrated in **Figure 8** and its significance is already discussed

The aggregation process combines data across dimensions, categories, and components either geometric or arithmetic means to reflect the relationships among indicators and their respective importance. Different aggregation methods carry distinct assumptions and yield specific outcomes. Aggregation serves as a tool to balance deficits in one dimension with surpluses in another, particularly in ranking scenarios.:

- the arithmetic mean assumes constant compensation between indicators
- the geometric mean has low compensability, meaning that high values cannot fully compensate for low values. In general, geometric mean decreases the influence of higher scores. In the specific case of the INFORM Severity Index, the geometric mean is used in a counter-intuitive way to **strengthen the influence of higher scores** instead of dampening them. This is achieved by first reversing variable, then rescaling the variables into interval away from 0 (e.g., 1-5), aggregated variables by geometric mean and then rescaling and reversing the output back into operational range.

As shown in **Equation 2** and **Figure 8**, the dimensions are aggregated to compute the overall index score using a combination of weighted arithmetic and geometric means

A detailed description of each dimension, category, component, and core indicator, along with their respective aggregation methods, is provided in Chapter 6.

6 INFORM Severity index dimensions in detail

This section provides a more detailed overview of the dimensions, categories, components, and core indicators. While it was originally discussed comprehensively in the first methodological report, it has been included here in a slightly revised and updated format.

6.1 Dimension: Impact of the crisis

The Impact of the Crisis dimension evaluates the magnitude and depth of a crisis's effects. Magnitude refers to the absolute scale of the crisis in terms of the number of people or the geographical area affected, while depth reflects the relative scale, such as the proportion of the population impacted within a specific area. Without impact, the severity of a crisis cannot be determined, regardless of the intensity of the hazardous event. This dimension is divided into two categories: Geographical Impact and Human Impact, which are aggregated using a weighted geometric mean.

Different weights are assigned to the two categories of the Impact of the crisis dimension. The human category is weighted at 66%, while the geographical category is weighted at 33%. This allocation emphasises the centrality of addressing the needs of affected populations, which is fundamental to humanitarian response. Other categories, components, and indicators are weighted equally.

Figure 9: Impact of the crisis dimension.

Dimension	Impact of the crisis									
Categories	GEOMETRIC AVERAGE 33/66									
	33%				66%					
	Geographical				Human					
Components	GEOMETRIC AVERAGE				GEOMETRIC AVERAGE					
	Affected area		People in the affected area		People affected		People affected by categories			
Core Indicators	ARITHMETIC AVERAGE		ARITHMETIC AVERAGE		ARITHMETIC AVERAGE		GEOMETRIC AVERAGE			
	Affected area (absolute)	Affected area (relative to the total area of the country)	People in the affected area (absolute)	People in the affected area (relative to the total population of the country)	People affected (absolute)	People affected (relative to the people in the affected area)	Displaced		Fatalities	
							ARITHMETIC AVERAGE		ARITHMETIC AVERAGE	
							Displaced (absolute)	Displaced (relative to affected people)	Fatalities (absolute)	Fatalities (relative to affected people)

Source: Poljanšek et al., 2020

Geographical impact

The Geographical Impact category is calculated as the geometric average of two components: affected area and people in the affected area:

- **Affected area**: This is defined as the landmass affected by the crisis. It is calculated as the arithmetic average of the absolute affected area (the total area in square kilometres affected) and the relative affected area (the percentage of the total area of the country affected).
- **People in the affected area** (frequently referenced as people exposed): This is calculated as the arithmetic average of the absolute *Population living in the affected area* (the total number of people residing there) and the relative *Population living in the affected area* (the percentage of the country's total population living in the affected area).

Human impact

The Human Impact category is the geometric average of two components: people affected, and people affected by categories:

- **People affected**: This component is the arithmetic average of the absolute number of people affected (the total population affected by the crisis) and the relative number of people affected (the percentage of the population affected within the affected area).
- **People affected by categories**: This is derived from the arithmetic average of:
    - **People displaced**: The arithmetic average of the absolute number of displaced individuals (the total displaced population) and the relative number of displaced individuals (the percentage of displaced individuals within the affected population).
    - **Crisis-related fatalities**: The arithmetic average of the absolute number of fatalities (the total deaths caused by the crisis) and the relative number of fatalities (the percentage of fatalities within the affected population).

6.2 Dimension: Conditions of people affected

The Conditions of people affected dimension in the INFORM Severity index is designed to aggregate the assessed severity of humanitarian conditions at individual level to crisis level. It translates information about people into a severity score using a common five-level scale (**Figure 10**), which reflects the number of people in need as well as the physical, social, mental, and economic effects of the crisis. This dimension is essential for identifying the scale and intensity of needs, guiding prioritisation and response efforts.

Figure 10: Description of the humanitarian condition severity by levels.

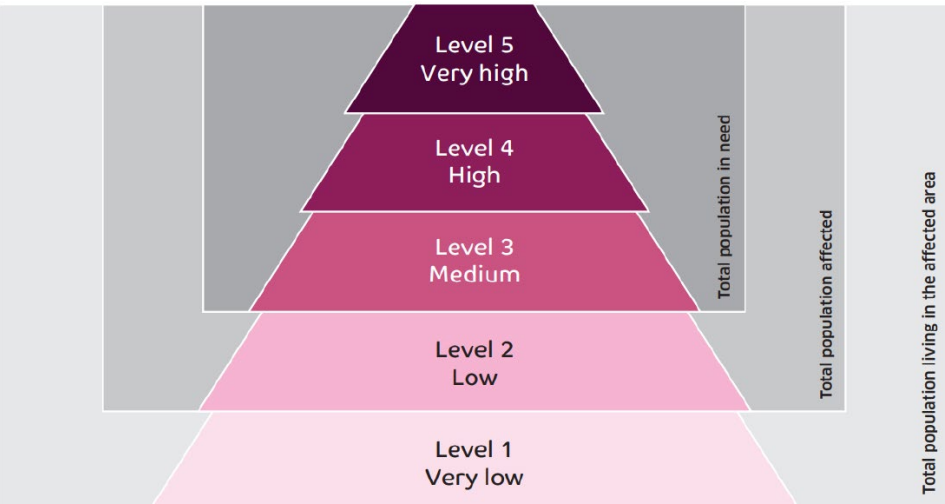
Level 5	**Extreme humanitarian conditions**: People are facing extreme shortages or availability and accessibility problems in regards to basic services. Widely accepted fact that deaths have been reported due to the humanitarian situation, widespread mortality. People face a complete lack of food and/or other basic needs and starvation, death, and destitution are evident; and acute malnutrition is widely reported. They may face grave human rights violations.
Level 4	**Severe humanitarian conditions**: People are facing significant shortages and/or significant availability and accessibility problems in regards to basic services. People face severe food consumption gaps and have started to deplete their assets or already face an extreme loss of assets. This may result in very high levels of acute malnutrition and excess mortality. Presence of irreversible harm and heightened mortality as well as widespread grave violations of human rights.
Level 3	**Moderate humanitarian conditions**: People are facing shortages and/or availability and accessibility problems in regards to basic services but they are not life-threatening. Significant food consumption gaps are visible or people are marginally able to meet minimum food needs only with irreversible coping strategies. As a result of shortages and disruption of services, may face potentially life-threatening consequences if not provided assistance. People may also facing malnutrition. There may be physical and mental harm in populations resulting in a loss of dignity.
Level 2	**Stressed humanitarian conditions**: People are facing some shortages or/and some availability and accessibility problems in regards to basic services. People have some food gaps and food consumption is reduced but adequate are able to meet minimum food needs by applying coping strategies. There are strains on livelihoods. Needs are more increased but are still not life-threatening. There may exist localized/targeted incidents of violence and/or human rights violations.
Level 1	**None/Minor humanitarian conditions:** People are facing none or minor shortages or/and accessibility problems regarding basic services. People are able to meet food and other basic needs without having to apply to irreversible coping strategies. There may be some needs but are not life-threatening.

Source: Poljanšek et al., 2020

All individuals within the crisis-affected area are classified at Level 1 or higher, while those directly impacted by the crisis are categorized at Level 2 or higher. Individuals with identified humanitarian needs are assigned to Levels 3–5, depending on the severity of their conditions. This hierarchical classification (**Figure 11**) provides a structured view of the intensity of needs, from minimal to extreme humanitarian conditions.

This methodology draws inspiration from the Integrated Food Security Phase Classification (IPC) Framework (The Integrated Food Security Phase Classification (IPC) Global Partners, 2019), ensuring alignment with established approaches in humanitarian assessment.

Figure 11: Levels of conditions of affected people used in the INFORM Severity Index.



Source: Poljanšek et al., 2020

Figure 12: Conditions of people affected dimension.

Dimensions	**Conditions of people affected**									
Categories	ARITHMETIC AVERAGE									
	People in need					**Concentration of conditions**				
Components	Extreme humanitarian conditions									
	Severe humanitarian conditions									
	Moderate humanitarian conditions									
	Stressed humanitarian conditions									
	None/minimal humanitarian conditions									
Core Indicators	People in **extreme** conditions -Level 5 (absolute)	People in **severe** conditions -Level 4 (absolute)	People in **moderate** conditions -Level 3 (absolute)	People in **stressed** conditions -Level 2 (absolute)	People in **none/minimal** conditions -Level 1 (absolute)	People in **extreme** conditions -Level 5 (relative to population in affected area)	People in **severe** conditions -Level 4 (relative to population in affected area)	People in **moderate** conditions -Level 3 (relative to population in affected area)	People in **stressed** conditions -Level 2 (relative to population in affected area)	People in **none/minimal** conditions -Level 1 (relative to population in affected area)

Source: Poljanšek et al., 2020

The dimension Conditions of people affected is split into two categories, People in Need and Concentration of Conditions, which are aggregated using an arithmetic mean. It captures both absolute and relative aspects of humanitarian conditions.

People in Need category (**Table 1**) represents

- the cumulative number of people across the last three levels (Levels 3, 4 and 5) of humanitarian conditions.
- an absolute number of people and is a normalized value of the cumulative frequency of the three levels.

Table 1: Definition of people in need category

Level of humanitarian condition	Frequency (# of people)	Cumulative frequency (# of people)	Category: People in need
Level 5 - extreme	F5	F5	
Level 4 - severe	F4	F5 + F4	
Level 3 - moderate	F3	F5 + F4 + F3	People in need
Level 2 - stressed	F2	F5 + F4 + F3 + F2	People affected
Level 1 - none/minimal	F1	F5 + F4 + F3 + F2 + F1	People in the affected area

Source: Poljanšek et al., 2020

Concentration of conditions category (**Table 2**):

- is measured by the relative value (i.e., cumulative relative frequency expressed in % of people in the affected area).
- Is defined by score that corresponds to the level where the cumulative relative frequency just exceeds or reach 5%, reflecting areas or populations with significant levels of humanitarian distress starting from level 5.

Table 2. Definition of concentration of conditions category

Level of humanitarian condition	Relative frequency (% of people out of population in the affected area)	Cumulative relative frequency (% of people out of population in the affected area)	Category: Concentration of conditions
Level 5 - extreme	R5	R5	Score equals to the level with cumulative relative frequency equal or just greater than 5%
Level 4 - severe	R4	R5 + R4	
Level 3 - moderate	R3	R5 + R4 + R3	
Level 2 - stressed	R2	R5 + R4 + R3 + R2	
Level 1 - none/minimal	R1	R5 + R4 + R3 + R2 + R1 = 100%	

Source: Poljanšek et al., 2020

Example

Population living in the affected area = 100 with the distribution of humanitarian conditions defined by the following frequencies:

Frequencies:	And the relative frequencies:
Humanitarian conditions level 1 = 60,	*Humanitarian conditions level 1 = 60%,*
Humanitarian conditions level 2 = 20,	*Humanitarian conditions level 2 = 20%,*
Humanitarian conditions level 3 = 14,	*Humanitarian conditions level 3 = 14%,*
Humanitarian conditions level 4 = 2,	*Humanitarian conditions level 4 = 2%,*
Humanitarian conditions level 5 = 4.	*Humanitarian conditions level 5 = 4%.*

The cumulative relative frequency starting from level five is:
Humanitarian conditions level 5 = 4%,
Humanitarian conditions level 5 + 4 = 6%,
thus, it exceeds 5% at Level 4, so the category score is 4.

6.2.1 Proposed refinement of Concentration of conditions calculation

The current method (Section 6.2) for calculating the Concentration of Conditions assigns discrete integer scores (1 to 5) which overlooks the relative distances between severity levels, failed to capture nuanced variations, and created artificial clustering among cases. To address these limitations and enhance the methodological integrity of the Index, we propose transitioning to a continuous scoring system based on a weighted average. This shift is justified by the following key methodological improvements:

- **Enhanced Discrimination Between Cases:** Integer scoring (1-5) creates artificial clustering where situations with meaningfully different severities receive identical scores. Continuous scoring allows for finer distinctions between cases that may appear similar under the current system but have important differences in the distribution of people across severity levels.
- **Better Reflection of Gradual Changes:** Humanitarian crises rarely shift abruptly between discrete levels. Continuous scoring captures the gradual nature of deterioration or improvement, providing a more accurate representation of evolving conditions rather than forcing situations into rigid categorical boxes.
- **Improved Statistical Properties:** Continuous scores enable more sophisticated analytical approaches by providing greater statistical power for detecting meaningful differences between regions or time periods, allowing for more robust correlation analysis when examining relationships with other continuous variables such as economic indicators and environmental factors.
- **Reduced Information Loss:** The current averaging of continuous and discrete scores (people in need and concentration of conditions) inherently loses information. Aggregating two continuous variables preserves more of the underlying distributional data, allowing the final severity measure to better reflect the full complexity of the humanitarian landscape.
- **More Nuanced Decision-Making:** For humanitarian actors, continuous scoring provides clearer prioritization when resources are limited and multiple areas have similar integer scores, enables better threshold setting for intervention triggers, and allows for more precise monitoring of program impacts over time.

- **Methodological Consistency:** Since the underlying data (cumulative distributions) are inherently continuous, maintaining this continuity through to the final score creates greater methodological coherence.

The proposed approach calculates a continuous score ($\overline{S}$) by taking a weighted average of the condition levels that constitute the worst 5% of the affected population as shown in the following equation:

$$\overline{S} = \frac{\sum_{(j)=1}^{j^*} S_{(j)} . P_{(j)}}{\sum_{(j)=1}^{j^*} P_{(j)}}, \qquad j = 1, \dots, 5 \qquad \textbf{Equation 3}$$

Where

- $S_{(j)}$ represents the condition level *j* in decreasing order of severity,
- $P_{(j)}$ is the proportional weight of each level's contribution to the 5% threshold, and
- j^* is the number of condition levels needed to reach the cumulative 5% frequency.

The threshold level j^* is determined by:

$$j^* = min(j) : \sum_{(j)=1}^{j^*} \frac{n_{(j)}}{N} \geq 0.05 \ , \quad , \qquad N = \sum_{j=1}^{j=5} n_j \qquad \textbf{Equation 4}$$

Where

- $n_{(j)}$ denotes the number of people in condition level $S_{(j)}$, and
- N is the total number of people in all condition levels.

The weight for the threshold level $P_{(j^*)}$ is calculated as:

$$P_{(j^*)} = 0.05 - \sum_{(j)=1}^{j^*-1} \frac{n_{(j)}}{N} \qquad \textbf{Equation 5}$$

For all other levels within the threshold, the weights are calculated as:

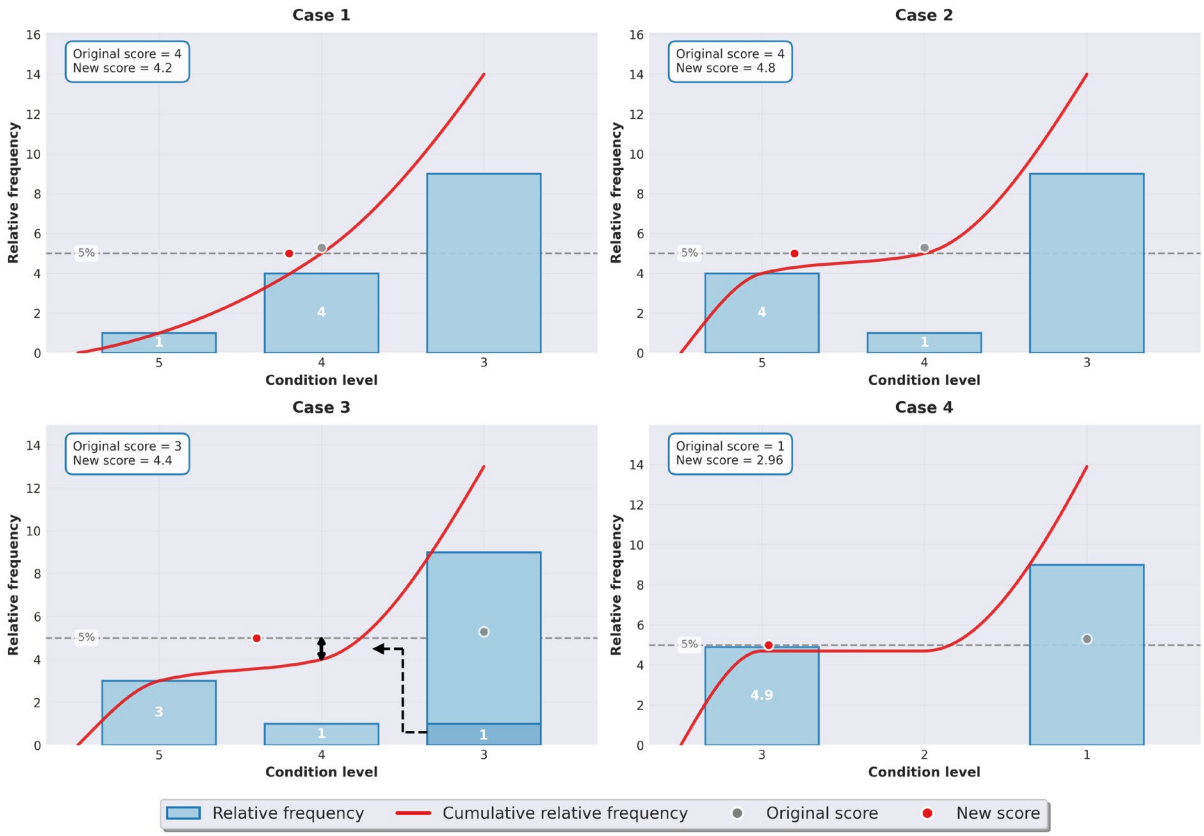
$$P_{(j)} = \frac{n_{(j)}}{\sum_{(j)=1}^{(j)=5} n_{(j)}} \qquad \textbf{Equation 6}$$

$Parenthesis\ (\cdot)\ denotes\ the\ class\ in\ a\ decreasing\ order: if\ j < k \ \rightarrow S_{(j)} < S_{(k)}$

To better illustrate how this approach enables more precise scores, providing humanitarian actors with more precise tools for prioritization and decision-making, we examine two distinct case studies step-by-step: complex crises in Sudan and the conflict and climatic shocks s in Colombia (**Annex 3. Continuous scoring for Concentration of conditions: Sudan and Colombia case analysis**).

The methodology's strength lies in its ability to handle diverse distribution patterns, including cases where the 5% threshold cuts through the middle of a concentration level rather than ending at level boundaries. **Figure 13** showcases various patterns could be found among the severity dataset:

Figure 13: Various frequency patterns could be found among the crises in severity dataset. The bars and the lines show relative and cumulative relative frequencies respectively.



Source: Authors

- In Cases 1 and 2, the 5% cumulative relative frequency threshold is exceeded at level 4, which under the original integer scoring method would yield identical scores of 4 for both situations, despite their fundamentally different severity profiles. The new proposed methodology, however, yields completely distinct continuous scores: Case 1 receives 4.2 due to a larger relative frequency at level 4, while Case 2 scores 4.8 because of a larger relative frequency at level 5. This demonstrates how the continuous approach captures a key principle: a higher concentration in higher severity levels results in a proportionally higher score.

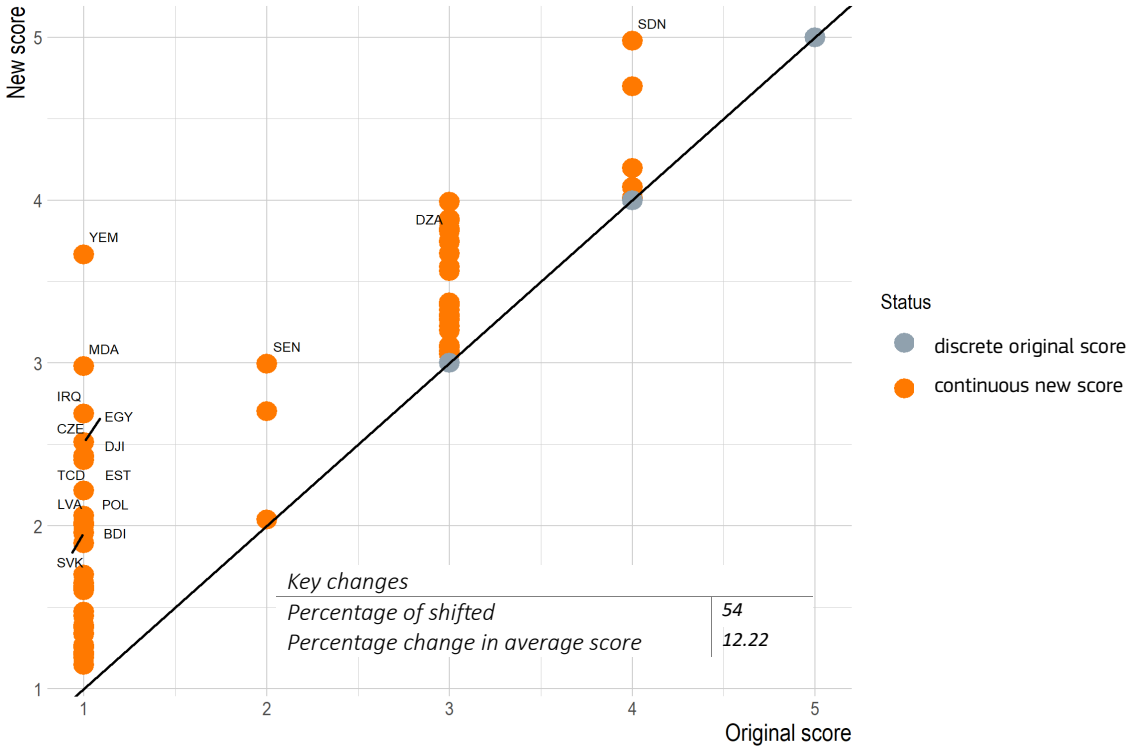
- Case 3 illustrates another critical limitation of the integer method: although relative frequencies exist in levels 4 and 5, the 5% cumulative relative frequency threshold is exceeded at level 3, resulting in an original score of 3 that completely ignores the presence of more severe conditions. The new method accounts for these higher-level frequencies, yielding a score of 4.4 that appropriately reflects conditions distributed between levels 4 and 5.

- The last case demonstrates an occasion where a high concentration of severe conditions is overlooked by the current methodology. Here, nearly 5% of the population experiences level 3 conditions, with zero frequency at level 2, yet the 5% cumulative relative frequency threshold is not exceeded until level 1. Following the current methodology results in a severity score of only 1, entirely ignoring the critical humanitarian needs at level 3. The new method, however, accounts for these severe conditions in the calculation, yielding a score of 2.96 that accurately reflects the presence of serious humanitarian concerns and enables appropriate resource prioritization.

Figure 14 illustrates how the crisis severity changes using the current and new methods. More than 50% of the cases are shifted generally towards the higher bound, resulting in more than 12% increase in the average severity scores.

- Except level 1, countries shift at most one level upwards.
- In level 1 the shift pattern is more chaotic where we observe shifts up to two levels higher due to having several countries with concentration levels matching fourth case shown in **Figure 13**. This cluster includes extreme cases like international displacement in Yemen where new methodology results in a shift from score 1 in current methodology to a score of 3.7.

Figure 14: Continuous new vs. discrete original scores for concentration of conditions component. The original scores are extracted from INFORM Severity May 2025 release.



Source: Authors

To summarize, by proportionally weighting each severity level's contribution to the worst 5% of affected people, the formula produces continuous scores that capture meaningful differences between humanitarian situations that would otherwise receive identical integer scores. This continuous approach enhances discrimination between cases, preserves statistical information for analysis, and provides humanitarian actors with more precise tools for prioritization and decision-making while maintaining the theoretical foundation of existing severity assessment frameworks.

6.3 Dimension: Complexity of the crisis

The Complexity of the Crisis dimension evaluates factors that complicate or hinder the delivery of humanitarian assistance. It encompasses the structural, societal, and operational challenges that exacerbate the severity of a crisis. While the Impact of the Crisis and the Conditions of the Affected Population highlight the immediate needs, complexity provides insight into the barriers that humanitarian actors face in addressing those needs effectively.

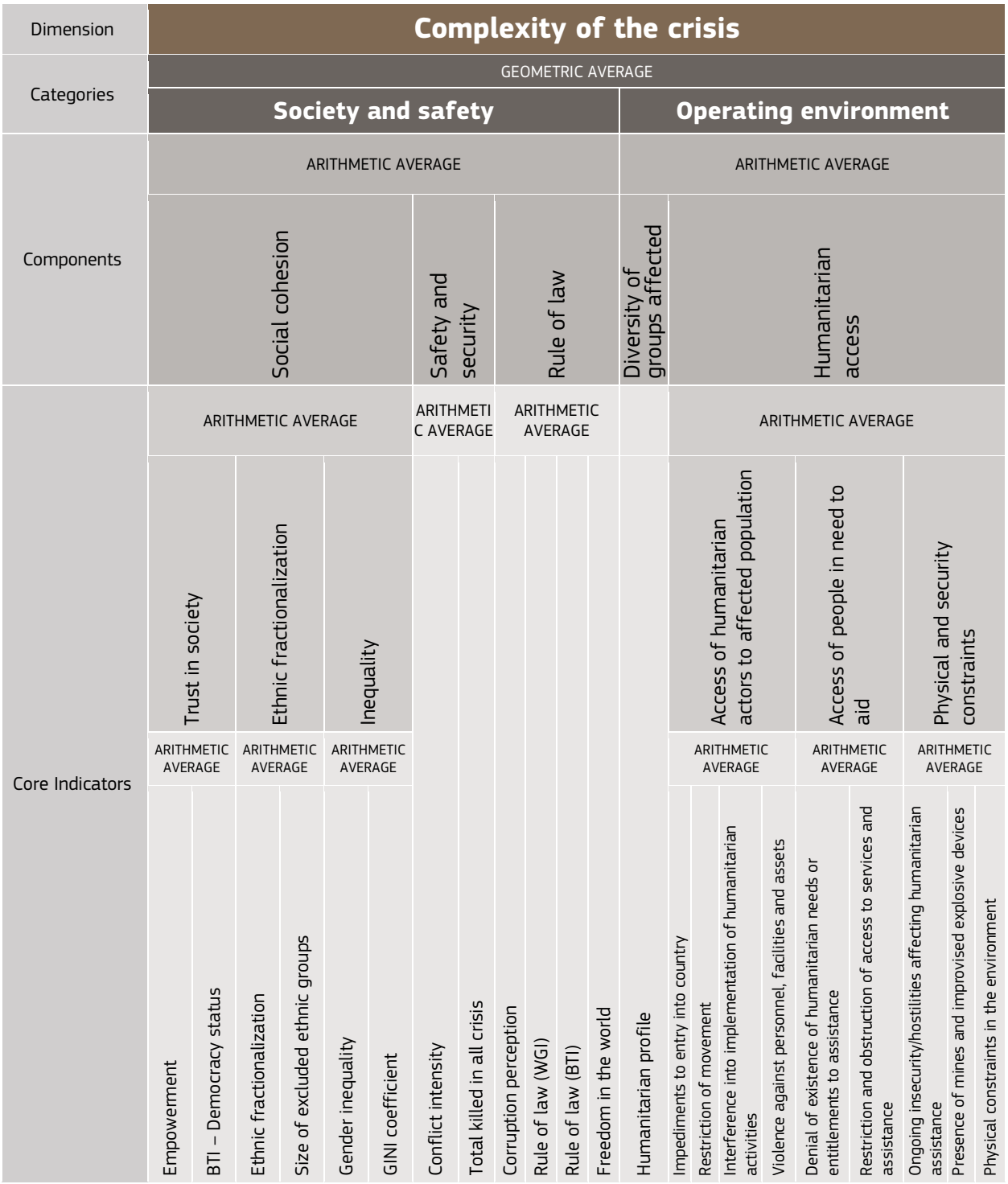
The Complexity of the Crisis dimension is integrated into the overall severity score as a secondary yet essential component. While it is weighted lower (30%) than the combined (70%) Impact of the Crisis and Conditions of the Affected Population dimension (see **Equation 2**), its value amplifies the severity score when operational challenges are significant.

This dimension is divided into two key categories: **Society and Safety** and **Operating Environment**, each offering a unique perspective on the factors influencing the complexity of a crisis response.

The sub-components follow a top-down approach, starting with an overarching view of society, narrowing to a focused assessment of the specific groups affected, and finally delving into a detailed analysis of the contextual factors influencing humanitarian access to those groups.

The indicators in this dimension are aggregated using a combination of arithmetic and geometric means, ensuring that high values in any category or indicator have a proportionally greater impact on the final complexity score. This approach highlights the influence of extreme complexity on overall crisis severity.

Figure 15: Complexity of the crisis dimension.



Source: Poljanšek et al., 2020

The **Society and safety** category reflects the broader societal and security context in which a crisis occurs. It measures factors such as **Social cohesion, Safety and security and The rule of law**. These conditions directly influence the well-being of affected populations and the ability of humanitarian responders to operate safely and effectively. Methodologically, the category is calculated by the arithmetic average of three underlying components (**Figure 15**). The purpose of the selected indicators is to describe those elements of society that constrain the capacity of

humanitarian actors to deliver assistance. This analytical focus includes factors that undermine citizen safety and stability, such as the level of democracy, gender/economic inequality, societal fragmentation, violations of human rights, and various forms of corruption, which may result in a heightened risk of violence or discrimination. The indicators were selected for redundancy and compensation, with multiple metrics aggregated to cover each major element. The use of the arithmetic mean assumes a degree of constant compensation among these societal factors. While the framework does not define a society holistically, its analytical scope is strictly limited to those critical elements that determine constraints for principled aid delivery.

The **Operating Environment** category is the arithmetic average of the Diversity of groups affected and Humanitarian access component. This category comprises contextual indicators that focus on the actual limitations set in place during a humanitarian emergency, which directly impact humanitarian operators and the caseload of beneficiaries.

The **Diversity of Groups Affected** component is derived from a checklist of distinct population groups impacted by each crisis. This checklist includes internally displaced persons (IDPs), refugees, asylum seekers, other groups of concern (e.g., migrants), returnees, host populations, and non-host populations. The indicator reflects the complexity of addressing the diverse needs of these groups. The categories are based on the definitions provided in the IASC Guidelines on the Humanitarian Profile Common Operational Dataset[13]. The score is determined by the number of distinct groups identified, with a maximum score of 5 assigned when 5 or more groups are present.

The **Humanitarian Access** component is a composite indicator developed by ACAPS[14] to provide humanitarian organisations with an in-depth analysis of the constraints affecting the ability to reach people in need during emergencies. These constraints arise from various factors, as represented by the indicators within the sub-pillar. They include deliberate obstructions imposed by authorities, inadequate infrastructure such as roads, challenging topographic or climatic conditions, and the presence of explosive remnants of war.

6.3.1 Revision of Complexity dimension's recentness criteria

In this section, we examined the extent to which indicators under the complexity dimension meet the general inclusion criteria for INFORM models (**Table 3**), focusing specifically on update frequency and timeliness. Dynamic data, such as conflict-related variables, require frequent updates to maintain reliability, while structural indicators, which have low temporal variance, can remain representative for longer periods. Where criteria are not met, we recommend alternative sources as replacements.

The revision revealed that four core indicators did not meet the "green light" criteria for recentness (**Table 4**):

- Ethnic Fractionalization,
- Size of Excluded Ethnic Groups,
- Empowerment, and
- Conflict Intensity.

[13] IASC Guidelines on the Humanitarian Profile Common Operational Dataset, 2011

[14] https://www.acaps.org/methodology/access

Table 3: Quantitative criteria for inclusion in the INFORM.

Criteria	Green	Orange	Red
Coverage	> 80 %	≥ 50 %	< 50 %
Time series	> 10 years	≥ 5 years	< 5 years
Update frequency	≤ 1 year	≤ 2 years	> 2 years
Timeless	≤ 1 year	≤ 3 years	> 3 years

Source: Poljanšek et al., 2019

Table 4: Indicators, latest update and alternative sources from current complexity dimension.

Indicator	Last update	Source	Recentness under question
Corruption perception index	2024	Transparency International: http://www.transparency.org/research/cpi/	
Rule of law (WGI)	2023	Worldwide Governance Indicators World Bank: https://www.worldbank.org/content/dam/sites/govindicators/doc/wgidataset_excel.zip	
Rule of law (BTI)	2024	Bertelsmann Stiftung's Transformation Index (BTI): https://www.bti-project.org/en/index/	
Freedom in the World	2025	Freedom house: www.freedomhouse.org	
Conflict intensity	2023	Conflict Barometer: https://www.hiik.de/en/konfliktbarometer/	x
People killed in all crises	2024	ACLED dataset: https://www.acleddata.com/data	
Gender inequality	2023	UNDP: http://hdr.undp.org/en/content/gender-inequality-index-gii	
Income Gini coefficient	2024	World Bank: https://data.worldbank.org/indicator/SI.POV.GINI	
Ethnic fractionalization	2010	ETHZurich GREG: https://icr.ethz.ch/data/greg/	x
Size of excluded ethnic groups	2007	The Minorities at Risk (MAR) project, Center for International Development and Conflict Management (CIDCM): http://www.mar.umd.edu/mar_data.asp	x

Indicator	Last update	Source	Recentness under question
Empowerment	2014	CIRI Human Rights Dataset: http://www.humanrightsdata.com/p/data-documentation.html	x
BTI - Democracy status	2024	Bertelsmann Stiftung's Transformation Index (BTI): https://www.bti-project.org/en/index/	
# of different types of affected population groups	2024 - 2025	Various sources, including: UNOCHA HNO, FEWSNET for crisis involving food security sector, UNHCR for crises involving refugee response	
Humanitarian access	2025	ACAPS Humanitarian Access Report: https://www.acaps.org	

Source: Authors

Consequently, alternative data sources with more frequent updates or methodological advantages were recommended as replacements (**Table 5**).

Table 5: Alternative sources proposed with more frequent updates that fulfill the criteria

Indicator	Original source	Proposed replacement	Justification
Ethnic Fractionalization	ETHZurich GREG (2010)	Ethnic Power Relations (EPR) 2021. https://icr.ethz.ch/data/epr/	Strong correlation (0.98) with the original index; maintains the structural nature of the data.
Size of Excluded Ethnic Groups	Minorities At Risk (MAR) (2007)	Derived measure from Ethnic Power Relations (EPR) 2021. https://icr.ethz.ch/data/epr/	EPR's power-based approach is more actionable for humanitarian access; statistical compatibility (0.64 correlation).
Empowerment	CIRI Human Rights Dataset (2014)	Index constructed from Varieties of Democracy (V-DEM) indicators. 2025. https://v-dem.net/data/the-v-dem-dataset/	V-DEM provides greater methodological nuance (expert-coded, Bayesian IRT model) and meets recentness criteria; statistically compatible (0.90 correlation).
Conflict Intensity	HIIK Conflict Barometer (2023)	Ongoing Domestic & International Conflict domain of the Global Peace Index (GPI) 2025. https://www.visionofhumanity.org/wp-content/uploads/2025/06/Global-Peace-Index-2025-web.pdf	GPI's sub-domain offers high statistical compatibility (0.74 correlation with HIIK) and meets the required update frequency for dynamic data.

Source: Authors

The detailed conceptual analysis, comparative correlation matrices, and normalization threshold calculations for each revised indicator are presented in **Annex 4. Technical justification for Complexity of the** crisis indicator revisions**.**

7 Operational protocols and application of the INFORM Severity index

This chapter translates the methodological architecture of the INFORM Severity Index (Section 5.2) into practical application guidelines. It is divided into three key sections: first, establishing the necessary operational protocols and rules; second, defining the specific crisis unit for measurement based on the index's scope; and third, providing guidance on the application and interpretation of the final severity scores for effective decision-making.

7.1 Operational protocols

7.1.1 Crisis activation and deactivation criteria

Crisis activation/ deactivation is informed by joint analysis decision conducted by ACAPS through the continuous monitoring of quantitative data and qualitative data.

Crisis activation criteria

A humanitarian crisis is considered active and is included in the INFORM Severity Index system when both of the following objective conditions are met:

1. Impact on population
    - The number of people affected is at least **30,000 people** OR
    - The number of people affected is at least **1% of the population of the country**.
2. Humanitarian Needs:
    - At least **10,000 people** are identified as needing assistance.

The decision to formally activate a crisis also considers the country's capacity to respond. If national and local mechanisms can effectively manage the situation without external humanitarian intervention, the crisis may not be formally activated, regardless of whether the quantitative thresholds are met.

Crisis deactivation criteria

A crisis is considered for closure (deactivation) when an assessment determines that conditions have improved to the point that sustained external humanitarian intervention is no longer needed. This evaluation is based on falling below the same key thresholds used for activation.

For **sudden-onset disasters**, a crisis is closed when

- The number of affected individuals and those in need show a consistent and sustained decline, falling below the defined thresholds AND/OR.
- no updates are available for three months.

For **protracted crises or slow-onset crises,** there is no single strict rule for closure. The deactivation decision relies on a holistic assessment where the absence of available updates is combined with qualitative evidence that humanitarian needs are no longer being actively reported or have effectively ceased.

Inclusion and calculation rules

The INFORM severity score is calculated **only when sufficient data is present for all three dimensions.**

Crises that do not yet meet the formal activation criteria but show a high risk of deterioration are assigned an "under monitoring" status and may still be included in the results list for situational awareness.

For crises under monitoring or active crises with insufficient data, individual dimensions or categories may still be calculated and presented where sufficient data is available, while the final overall score will be suppressed

7.1.2 Update frequency and release schedule

The update process for the INFORM Severity Index operates on a dual schedule: continuous indicator refresh and fixed monthly release.

Indicators are updated on a continuous, non-fixed cycle. The timing depends entirely on the availability of new data about the humanitarian situation, which is subject to external factors like resource availability for conducting assessments, assessment cycles, and access to affected populations. Indicators are updated immediately as more current or reliable information becomes available.

Consequently, the information presented in any single release often reflects a combination of data collected over varying timeframes. The model is designed to handle this aggregation of data with different timeframes, depending on factors like resource availability, the rapid escalation of needs and/or operations, improved access to communities which requires careful consideration of the underlying data's context and timing.

The **INFORM Severity index is released on a monthly basis** to provide users with a fixed, consistent schedule for incorporating data into pre-scheduled analyses and monitoring trends (Section 7.5.3) over time. Each monthly release represents a snapshot of the most up-to-date and reliable information available at that moment.

To ensure consistency and prevent misinterpretation, the following criteria govern the publication of the monthly release:

- **No Data Update:** When new data for the indicators is unavailable, the INFORM Severity Index remains **unchanged**, and the latest available score serves as the reference point.
- **Data Updated, Score Unchanged:** If new indicator data is available but the recalculation results in **no change** to the final crisis score, the published index score remains the same as the previous release.
- **Data Updated, Score Changed:** A new INFORM Severity Index score will be released only when the updated data results in a **change** to the crisis score.

7.2 Defining the crisis unit

This section details the practical application of the spatial and conceptual scope established in the Conceptual Framework (Section 5)

7.2.1 Drivers of the crises

Hazardous events driving or impacting a crisis, may include:

- Natural events: For example, floods, droughts, earthquakes, or cold waves.
- Human-made events: For example, conflict, violence-driven displacement, political or economic deterioration.
- Complex crisis: overlapping of different hazards or geographical areas, often compounded by pre-existing vulnerabilities and other structural issues (e.g., governance issues, socioeconomic challenges, lack of infrastructure), which prevent the isolation of single-drive impacts. Quantitatively, this crisis is defined by the presence of three or more overlapping crisis drivers.

In many humanitarian crises, distinguishing between **drivers** and **impacts** is often challenging, as the two can become deeply interconnected, creating reinforcing **feedback loops** that perpetuate the crisis.

Take international displacement as an example. An initial shock, like armed conflict, causes people to flee their homes (Impact). When these displaced populations gather, the sheer number of people strains limited resources, creating new local tensions or health emergencies (the Impact becomes a new Driver). This new instability then causes further problems, such as the diversion of aid resources or increased vulnerability (the Driver causes a new Impact). This dynamic shows how the line between a crisis's initial impacts and its resulting drivers often blurs.

An exhaustive list of drivers s of crises covered by the INFORM Severity Index can be found in Annex 5.

7.2.2 Extent of the geographical area affected

Crises are geographically classified for analytical purposes:

- **Subnational**: affecting one or more administrative units of a country. The affected area is defined based on the most detailed available administrative level affected.
- **National**: affecting most of the landmass of a country and impacting the whole country.
- **Connected**: Crises that share common drivers, impacts, and/or affected populations across multiple countries or administrative units, requiring a single, unified analytical framework. This category is broad: crises do not need to be geographically proximate (e.g., they can be non-neighbouring countries or different regions within the same continent). This classification incorporates the concept of previously defined regional crises.

7.2.3 Individual crisis vs. country level aggregation

Following users' request the INFORM Severity Index always assigns a score to both subnational crises and an overall country score. The resulting country-level crisis scores are important for humanitarian actors to assess the overall situation within a national context for strategic planning. The method for generating their country-level score depends on the number and type of crises present, categorized into three distinct scenarios:

Scenario 1: Single crisis in the country

If a country is experiencing only one geographically defined crisis, the country-level score will directly match the score of that single crisis. This single crisis may be a simple, single-driver event or a Complex Crisis with at least three drivers overlapping. (Section 7.2.1).

- **Labels Assigned:** Individual, Country Level.

Scenario 2: Multiple non-overlapping crises

When a country experiences multiple, distinct crises that **do not overlap** geographically, an aggregate score is calculated. This cumulative score reflects the total extent of severity across different administrative units. The aggregated score has a unique ID that provides the 'country-level score with the crisis named 'Multiple Crises in [Country]'.

- **Aggregation method:** The score is determined by summing the relevant indicator values of all active, non-overlapping crises at the data processing stage, thus reflecting the total burden on the country.
- **Labels Assigned:** Aggregated, Country Level.

Scenario 3: Multiple overlapping crises

When a country experiences multiple, distinct subnational crises, however, **overlap** geographically, an aggregate score is calculated. This cumulative score reflects the total extent of severity across different administrative units. The crisis is named 'Multiple Crises in [Country]'.

- **Aggregation method:** The score is determined by taking the maximum severity score from the individual crises within the overlapping areas. This approach ensures that the final country-level score accurately reflects the most severe humanitarian impact in any given location, while critically preventing the double-counting of affected populations and impacts.
- **Labels assigned:** Aggregated, Country Level.

7.3 Displacement Data

Humanitarian crises often result in displacement of people. Millions of people are forced to leave their homes every year because of conflict, violence, human rights violations, persecution, economic crisis and natural hazards[15]. A crisis could occur within the country, while attempting to leave, or

[15] https://ec.europa.eu/echo/what-we-do/humanitarian-aid/refugees-and-internally-displaced-persons_en

while on the move to a safe country, or even after arrival in a country of asylum. A situation can be called a crisis, either from the perspective of the forcibly displaced persons, or from the perspective of the receiving state, or both.

7.3.1 Displacement tracking

The model should enable to track the people displaced because of a crisis, including their status (IDP, refugees, returnees etc.). It is therefore recommended to record separately different types of displacement figures, namely refugees, returnees or internal displaced (IDPs).

Incoming refugees are included in the condition of people affected dimension, outgoing refugees are included into human impact category in the impact of the crisis dimension.

Table 6: Accountability of displacement data in INFORM Severity Index

Dimension	Indicator	Displacement figures
Impact of the crisis	Displaced	Displaced people (stock number) due to the drivers of the crisis. This may include refugees from the affected country, IDPs and IDP and refugee returnees.
Condition of people affected	People in need	Includes all populations in need due to the crisis, which may include the displaced population within the country
Complexity of the crisis	Humanitarian profile	Number of different types of groups affected by the crisis: hosting, non-hosting, refugees, idps, returnees.

Source: Authors

7.4 Proposal for establishing a shared framework on data time validity

Building upon the existing imputation logic used for data continuity (Section 5.3), this proposal adds a layer of temporal rigor by establishing a **maximum acceptable age** for each indicator. This threshold serves as an "expiry date" to prevent obsolete data from influencing current scores. This proactive approach further strengthens the model's precision and enhances its correlation structure, ensuring that the Index remains a dynamic reflection of current realities while preventing outdated information from distorting the characterization of a crisis.

Recognizing that data age tolerance depends on the nature of the information—where structural data may remain relevant longer than frequently changing operational figures—this specific validity windows set as the maximum acceptable age for an indicator should be defined in collaboration with technical partners to align diverse expectations on data timeliness. For example:

- Tier 1: Dynamic Impact (Low Tolerance – 1 Year Validity window): Indicators under the Impact and Condition of people affected dimensions, such as displacement figures or people in need, are highly volatile. A data point older than 12 months may dangerously misrepresent the current intensity of a crisis, making the INFORM Severity Score a less reliable reflection of reality.
- Tier 2: Structural Context (High Tolerance – 5–10 Years Max Age): Indicators within the Complexity dimension, such as ethnic fractionalization, represent foundational characteristics. These factors change slowly over years, meaning older data can still provide useful information of structural drivers for the assessment.

Once an indicator exceeds these thresholds, the framework provides an opportunity for a more nuanced application of the Reliability Index (see Section 9.3). While 'stale' data may be removed from the primary calculation and be flagged as missing to maintain the INFORM Severity Index's temporal rigor, the system can alternatively allow for the continued use of older data provided its decreased validity is explicitly reflected in a lower reliability score. This ensures the Severity Score remains grounded in the best available evidence while transparently signalling the need for refreshed data collection.

7.5 Application and interpretation

7.5.1 Interpretation of the severity score

The results of the INFORM Severity Index are currently presented on a scale from 0 to 5, where 5 indicates the highest level of severity. Darker colours correspond to higher values and, therefore, greater severity.

Although the current operational scale remains 0–5, the methodology has **proposed a future change to a 0–10 scale** to align with other global analytical products (as detailed in Section 3.4.3).

The INFORM Severity Index is presented in two formats: a **real value** ranging from 0 to 5 and a **5-level categorization** (**Table 7**), which is derived by rounding up the real value (e.g., 2.1 rounds to 3).

Table 7: INFORM Severity Index categorisation

Real Value	Crisis Severity Category
(4.0, 5.0]	Very high
(3.0, 4.0]	High
(2.0, 3.0]	Medium
(1.0, 2.0]	Low
[0.0, 1.0]	Very Low

Source: Authors

It’s important to note that a crisis categorised as having low or medium severity does not imply there are no people in need of humanitarian assistance. It simply means there are fewer people requiring aid compared to crises with higher severity levels (high or very high). The Index is designed to ensure that all crises receive attention proportionate to their severity, but it **does not rank humanitarian needs** (Section **7.5.2**)

7.5.2 Understanding of the INFORM Severity index: decoding the dimensions

The overall severity score is a composite, and its utility is maximized through the contextual analysis provided by its dimensions, categories and components. The following recommendations provide a clear understanding of the Index's analytical nature and use:

- **Humanitarian outcomes measurement**: The INFORM Severity Index measures humanitarian outcomes based on the impact of an event, whether natural, human-made, or a combination of both, occurring in an environment where delivering assistance to individuals is complex.
- **Contextual analysis of humanitarian needs**: The INFORM Severity Index offers a contextual analysis of humanitarian needs, primarily through the "Conditions of People Affected" dimension. This context is further supported by the data in the "Impact of the Crisis" and "Complexity of the Crisis" dimensions, allowing users to decode the drivers of the final score.
- **Combination of expert knowledge and updated data**: The INFORM Severity Index associated with each release reflects a combination of the most current information that meets minimum requirements and incorporates expert knowledge at the data entry level. In data-challenged environments, such as crises with limited reporting capacity from humanitarian organizations or sudden-onset emergencies, data may not always accurately capture the current humanitarian situation.
- **Data transparency and time sensitivity:** The INFORM Severity Index estimates the severity of a humanitarian crisis at a specific point in time. All underlying data contributing to the severity score come from publicly available sources, ensuring transparency and replicability. However, these data may be based on different methodologies and timeframes.
- **Comparability, not ranking of humanitarian needs**: The INFORM Severity Index facilitates comparisons between crisis severity and is used to track a crisis over time. Crucially, it must be understood that the Index provides a measure of severity, but it does not rank humanitarian needs.
- **Comparability, data variability and source transparency**: For meaningful comparison of the INFORM Severity Index scores across crises or over time, users must critically assess the input data utilized. The Index maintains full source transparency and requires explicit justification logs for all primary data source changes. This documentation is vital to distinguish whether a shift in the Severity Score reflects an actual change in the crisis situation or is an artifact of updated data sourcing or improved methodology. Users are required to consult these underlying data and justifications when making critical comparisons (Section 7.1.2).

7.5.3 Utilizing the Index for trend and change analysis

The monthly releases of the INFORM Severity Index provide valuable inputs for generating trend analysis, both for the index itself and its underlying indicators.

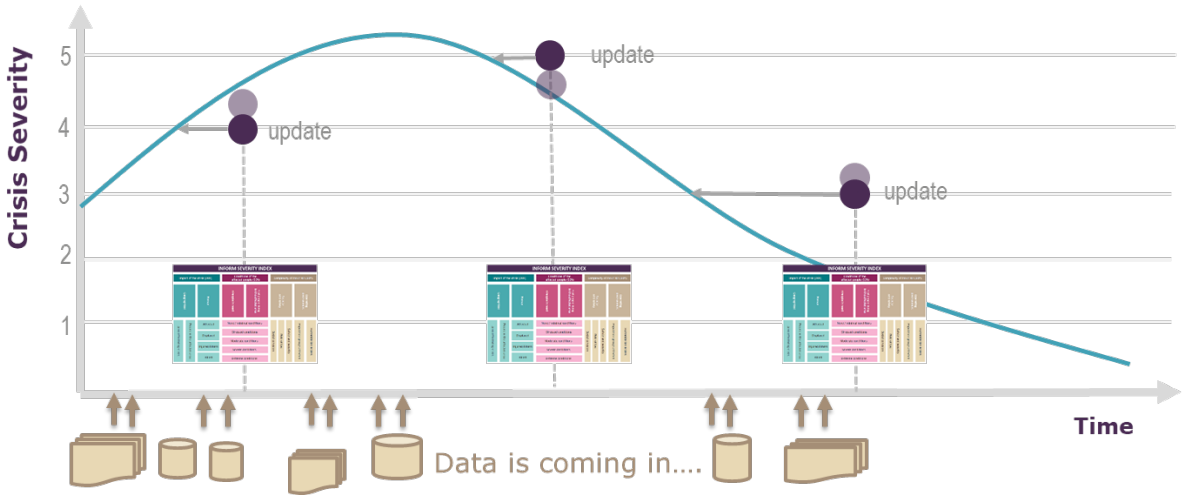
Trend calculation: A monthly trend is calculated based on a 3-month moving average. The average crisis score from the current three months is compared to the average from the preceding three months to determine whether the severity index has increased, remained stable, or decreased. A trend is considered significant if there is at least a 0.1-point difference between the two values.

Interpreting score changes and data integrity: It is crucial to isolate changes genuinely linked to variations in the humanitarian situation from those that stem from shifts in the data collection cycle. Changes in the severity score are driven by multiple variations in the underlying data (Section 7.1.2). For instance, when a new data source is introduced to replace a previous source, this could lead to a change, whether real or apparent, in the underlying indicator.

The data entered into the model can remain valid for future periods for a specific indicator, as each indicator has its own **time-sensitivity**. The indicators in the INFORM Severity Index represent varying timeframes and **must be harmonized within a defined time-window** for trend analysis. For instance, the Humanitarian Access indicator is consolidated at the source level every six months; therefore, when used to calculate a monthly trend, **recalculation is required to synchronize the data**, resulting in more accurate results. It is vital to clearly indicate the timeframe in which the data was collected to prevent misinterpretation of the INFORM Severity index at the time of release.

In calculating and visualizing trends, it is essential to understand the relationship between the timeframe of the underlying data and the temporal window used for trend analysis (see **Figure 16**).

Figure 16: Understanding the difference between the timeframe of the underlying data and monthly releases



Source: Authors

Two key consideration form part of the methodology:

- **Timeframe of the indicators**: Ensure that the influence of different timeframes embedded within the indicators is considered and clearly communicated during trend analysis.
- **Nature of the changes observed in the data**: Clearly consider and communicate changes observed in the indicators, in relation to changes in the underlying data, its source, and any variations in the methodology used to input the data.

Country level trend analysis

Trends are often analysed at the country level, focusing on both the overall index and its elements (e.g., dimensions and categories). For example, a recent analysis by ACAPS[16] on the Myanmar crisis demonstrated how this approach provides a holistic view of humanitarian severity at the national level.

However, such analyses require careful interpretation. Changes in the composition of crises within a country can sometimes produce counterintuitive shifts in the country-level score or its components. This occurs because the calculation of certain core indicators considers both the scale and the relative proportions of affected and exposed populations, which can vary significantly between crises.

For example, a crisis affecting a small, concentrated area with high proportions of affected populations may result in high indicator scores, particularly for categories such as people affected (relative to the people in the affected area).

On the other hand, when a larger-scale crisis, such as a natural disaster, is added, it may significantly increase the exposed population while reducing the relative percentage of affected people. This can lead to a decrease in the scores for certain core indicators at the country level, even if the absolute number of people affected increases.

These dynamics underline the need for careful interpretation of country-level trends. Changes in the composition of crises—such as the addition of new crises or shifts in their geographic or demographic characteristics—can influence the overall scores, even if the humanitarian situation has not fundamentally changed. This effect is not limited to specific indicators or dimensions but can impact other elements of the INFORM Severity Index, highlighting the need for a nuanced understanding when analysing and interpreting trends.

[16] https://www.acaps.org/fileadmin/Data_Product/Main_media/20250109_ACAPS_thematic_report_Myanmar_-_INFORM_Severity_Index_trends_.pdf

8 Statistical audit of the index

The major contribution to the methodological revisions was the statistical audit, conducted to ensure the framework remains robust and reflects reality.

The audit employed rigorous statistical techniques with the specific goals of:

- Ensuring the methodological framework reflects the conceptual framework while remains **up-to-date and robust**
- Enhancing the **precision** of the index scores while maintaining meaningful differentiation.
- Enhancing the **transparency** and **reliability** of the final results.

The audit encompassed three main analytical areas, providing a comprehensive review of the model's statistical soundness:

4. **Descriptive statistics and normalization:** Examining data distribution and the consistency of indicator normalization.
5. **Coherence/correlation analysis:** Assessing the analytical fit analysing relationship between indicators, components, and dimensions.
6. **Uncertainty and sensitivity analysis:** Evaluating the robustness of the final index scores against changes in methodological assumptions.

The correlation, uncertainty and sensitivity analyses were conducted using data from October 2024, as it provided clear and interpretable visualisations. To ensure robustness, the same analysis was performed using three-month and six-month periods, yielding similar results.

Ultimately, the exercise confirmed the overall robustness of the INFORM Severity Index's core principles and analytical structure, providing the empirical foundation for all subsequent methodological refinements.

8.1 Normalisation

The INFORM Severity Index utilizes a fixed min–max normalisation method for its core indicators. Since the initial release, these limits had remained unchanged, resulting in several indicators becoming saturated, which restricted their statistical variability and capacity to meaningfully differentiate between severe crises.

Descriptive statistics: To address this, the JRC conducted a statistical analysis of the complete dataset (2019–2024) of all core indicators. This update procedure applied rigorous techniques, including the Interquartile Range (IQR) rule and analysis of skewness and kurtosis, to adjust the limits and exclude statistical outliers without significantly altering the underlying data distribution (OECD and JRC, 2008; Joint Research Centre, 2020). The updated limits can be found in **Annex 1.** Fact sheets of core indicators

Evaluation of original and updated normalisation limits: Following the implementation of the updated normalisation limits, the Severity Index was recalculated, and the differences were analysed. All three dimensions were affected (**Table 8**), with the **"Impact of the crisis"** dimension experiencing the most significant changes (e.g., nearly half of the cases affected by the changes showed a one-class reduction). The new normalization limits successfully introduced **more**

variability and **reduced the number of cases classified at severity level 5**, confirming the integrity of the index's upper scale.

Table 8: Number of updated indicators.

Adjustments in normalisation limits	Updated indicators
Impact of the crisis	6 out of 10
Conditions of people affected	1 out of 2
Complexity of the crisis	6 out of 22

Source: authors

Conclusion: In summary, the adjustments to the normalization limits successfully addressed the issue of indicator saturation - a challenge where low maximum thresholds created a ceiling effect, causing data to cluster at the upper bound and resulting in a disproportionate number of crises reaching the maximum score. By recalibrating these thresholds to better reflect the true range of humanitarian data, the revision introduced greater statistical variability and a necessary one-class reduction in overall severity for several affected cases, reducing the number of cases classified at severity level 5. This outcome validates the audit's recommendation for improved scale differentiation and enhances the index's integrity at the highest severity level.

The detailed analysis of the original versus the updated limits, along with the data utilized, is provided in **Annex 2.** Normalisation limits analysis.

8.2 Correlation analysis

The reliability of the index depends, among other factors, on the coherence between its conceptual framework and the statistical structure of the data. Greater alignment between these elements enhances the index's reliability. However, statistical coherence alone should be considered a necessary but insufficient condition for a robust index. As statistical analysis primarily relies on correlations, it is essential for developers and experts to critically examine whether the index corresponds to real-world phenomena. As highlighted by (OECD and JRC, 2008), “correlations do not necessarily represent the real influence of the individual indicators on the phenomenon being measured.” The influence of indicators depends on the interaction between conceptual soundness and statistical validity.

Correlation analysis is a valuable method for assessing the extent to which observed data supports the conceptual framework. At each level of the index, there should ideally be positive and statistically significant correlations. JRC (2020) recommends values exceeding 0.30 to ensure that overall index scores accurately reflect the underlying indicators. Conversely, redundancy in the framework should be avoided, as indicated by very high correlations (e.g., >0.93). Such collinearity between indicators may lead to double counting and, consequently, the over-weighting of certain phenomena.

The coherence of the INFORM Severity Index framework was assessed by examining the extent to which the indicators account for sufficient variation in aggregated scores at the category, dimension, and overall index levels, using the Pearson's correlation coefficient.

Indicator and component coherence: Across all cases, indicators showed strong correlations with others within their respective component groups. Similarly, these indicators correlated well with their aggregate, i.e., the component to which they belong, as illustrated in **Table 9**.

Table 9. Correlation of core indicators with their aggregates.

	1st aggregation level (for some indicators)	Component	Category	Dimension	INFORM Severity Index
Area affected - absolute		0.71	0.64	0.53	0.39
Area affected - relative		0.92	0.84	0.49	0.17
People living in the affected area - absolute		0.77	0.68	0.62	0.40
People living in the affected area - relative		0.88	0.86	0.51	0.14
People affected - absolute		0.89	0.70	0.69	0.80
People affected - relative		0.93	0.73	0.54	0.68
People displaced - absolute	0.64	0.61	0.68	0.65	0.68
People displaced - relative	0.91	0.74	-0.06	-0.07	-0.22
Fatalities - absolute	0.88	0.59	0.72	0.67	0.72
Fatalities (relative)	0.87	0.70	0.30	0.23	0.14
People in need				0.91	0.89
Concentration of conditions				0.92	0.81
Empowerment	0.92	0.55	0.61	0.52	0.37
BTI - Democracy Status	0.87	0.62	0.75	0.67	0.48
Ethnic Fractionalisation	0.80	0.73	0.46	0.31	0.27
size of excluded ethnic groups	0.80	0.53	0.19	0.15	0.10
Gender Inequality	0.85	0.67	0.61	0.49	0.49
Income Gini coefficient	0.75	0.26	0.03	-0.05	0.04
Conflict Intensity		0.86	0.84	0.73	0.55
Total killed in all crisis		0.89	0.76	0.77	0.67
Corruption Perception		0.93	0.81	0.73	0.59
Rule of Law (WGI)		0.94	0.80	0.72	0.59
Rule of Law (BTI)		0.96	0.86	0.78	0.62
Freedom in the World		0.93	0.79	0.72	0.57
Humanitarian profile		1.00	0.84	0.71	0.55
Impediments to entry into country	0.62	0.52	0.49	0.50	0.47
Restriction of movement	0.83	0.83	0.75	0.78	0.73
Interference into implementation of humanitarian activities	0.85	0.78	0.72	0.71	0.65
Violence against personnel, facilities and assets	0.74	0.65	0.58	0.60	0.54
Denial of existence of humanitarian needs or entitlements to assistance	0.85	0.67	0.58	0.53	0.44
Restriction and obstruction of access to services and assistance	0.91	0.80	0.67	0.66	0.59
Ongoing insecurity/hostilities affecting humanitarian assistance	0.73	0.75	0.68	0.72	0.66
Presence of mines and improvised explosive devices	0.58	0.50	0.44	0.51	0.38
Physical constraints in the environment	0.68	0.43	0.45	0.50	0.45

Source: Authors.

When assessing the correlations of indicators with their aggregates at higher levels of the index, most maintained strong correlations, demonstrating their contribution to the overall structure. Even

in the few instances where indicators exhibited lower correlations with the overall index, they remained strongly correlated with their immediate components, ensuring effective transmission of information within the framework. A small number of indicators displayed exceptionally high correlations (above 0.93) with their respective components. However, these cases are not problematic, as these indicators also showed similarly high correlations with the aggregate and maintained strong correlations with one another, ensuring consistency within the framework.

Category, dimension, and overall index coherence: When examining the correlations of the INFORM Severity Index categories with their respective dimensions (**Table 10**), it is evident that all categories have a strong positive relationship with both their dimension and the overall index. The INFORM Severity Index employs a weighted aggregation scheme, which assigns different weights to components, categories, or dimensions. These weights naturally influence both the results and the correlation structure. For example, the Geographical component correlates moderately (Pearson's correlation coefficient = 0.67) with the "Impact of the crisis" dimension, while the Human component has a stronger correlation (Pearson's correlation coefficient = 0.87). This disparity aligns with the weights assigned to these components, as the Human component is weighted more heavily (70%) than the Geographical component (30%).

Table 10. Correlations of the INFORM Severity Index categories with their dimensions.

		Impact of the crisis	Conditions of people affected	Complexity of the crisis	INFORM Severity Index
Geographical	30%	0.68			0.32
Human	70%	0.87			0.86
People in Need	50%		0.91		0.89
Concentration of conditions	50%		0.92		0.81
Society and safety	50%			0.89	0.73
Operating environment	50%			0.94	0.79

Source: Authors

Similarly, all three dimensions correlate well with each other and the overall index (**Table 11**). However, the "Conditions of people affected" dimension contributes most to the final score, with a correlation of 93%, compared to 82% for the "Impact of the crisis" and 80% for the "Concentration of conditions." These differences are consistent with the weighting scheme, where "Conditions of people affected" is assigned a weight of 66%, compared to 33% and 30% for the other two dimensions, respectively. These results align with the established theoretical framework.

Table 11. Correlation matrix of the INFORM Severity Index categories, dimensions and overall index.

	INFORM Severity Index	Impact of the crisis	Geographical	Human	Conditions of people affected	People in Need	Concentration of conditions	Complexity of the crisis	Society and safety	Operating environment
INFORM Severity Index	1.00	0.80	0.32	0.86	0.93	0.89	0.81	0.83	0.73	0.79
Impact of the crisis	0.80	1.00	0.68	0.87	0.64	0.75	0.43	0.57	0.45	0.59
Geographical	0.32	0.68	1.00	0.24	0.19	0.41	-0.07	0.13	0.04	0.19
Human	0.86	0.87	0.24	1.00	0.74	0.74	0.62	0.69	0.58	0.67
Conditions of people affected	0.93	0.64	0.19	0.74	1.00	0.91	0.92	0.62	0.56	0.57
People in Need	0.89	0.75	0.41	0.74	0.91	1.00	0.68	0.57	0.51	0.54
Concentration of conditions	0.81	0.43	-0.07	0.62	0.92	0.68	1.00	0.56	0.51	0.51
Complexity of the crisis	0.83	0.57	0.13	0.69	0.62	0.57	0.56	1.00	0.89	0.94
Society and safety	0.73	0.45	0.04	0.58	0.56	0.51	0.51	0.89	1.00	0.69
Operating environment	0.79	0.59	0.19	0.67	0.57	0.54	0.51	0.94	0.69	1.00

Source: Authors

Conclusion: the correlation structure of the INFORM Severity Index is robust and supports its conceptual and statistical soundness.

8.3 Robustness analysis

A composite indicator, such as INFORM Severity Index, is inherently shaped by a series of methodological choices, many of which introduce an element of subjectivity. These choices include but are not limited to: (i) the underlying theoretical framework; (ii) the selection of individual indicators; (iii) the weighting scheme; (iv) the normalisation approach; and (v) the method of aggregation. Such choices are often informed by expert judgement, statistical considerations, or the need to enhance communication or draw attention to particular issues.

8.3.1 Uncertainty analysis

To assess the impact of the methodological decisions, particularly concerning weighting and aggregation at the dimension level of the model, we conduct an uncertainty analysis. This approach explores the effects of varying the assumptions within a range of plausible alternatives and it is widely supported in the literature (Saisana, Saltelli, and Tarantola, 2005; Saltelli A. et al., 2008; OECD and JRC, 2008),.

The aim is to quantify the uncertainty in the composite index scores, thereby illustrating the extent to which crises can be distinguished by their respective scores. Specifically, the uncertainty analysis examines two key modelling aspects:

1. the weights applied during aggregation, and
2. the aggregation formula used at the dimension level.

In the original index, the three dimensions are aggregated to generate the final index score using a combination of geometric and arithmetic means. The Impact of the Crisis dimension and the Conditions of People Affected dimension are first aggregated using a geometric mean. The resulting product is then combined with the Complexity of the Crisis dimension through an arithmetic mean to produce the final score.

The use of a geometric mean introduces limited compensability, penalising crises (or countries when the unit is a country) with unbalanced performances across dimensions. The degree of compensability reflects the potential trade-offs between indicators during aggregation. Aggregators with a high degree of compensation, such as the arithmetic mean, allow strong performance in one dimension to offset weaker performance in another, potentially obscuring areas of concern. Conversely, aggregators with lower compensability, such as the geometric mean, give greater emphasis to weaker-performing indicators, providing policymakers with more detailed insights into deficiencies and guiding resource allocation to address imbalances (Marzi, Mysiak, and Santato, 2018; Marzi et al., 2019; OECD and JRC, 2008).

Monte Carlo simulations were conducted to assess the robustness of the index under varying methodological assumptions. A total of 4,000 simulations were run, each employing different sets of weights for the three dimensions. Weights for the three dimensions were randomly generated from uniform continuous distributions, centred around the reference values with a ±20% range. The models were tested with various combinations of aggregation formulas. A summary of the alternative methodological choices considered is provided in **Table 12**.

Table 12. Alternative assumptions considered in the uncertainty and sensitivity analysis.

Assumption	Reference	Alternatives
1. Weights (Dimension level)	Equal weights	Randomly varied +/-20% from nominal values
2. Aggregation method (Dimensions to index)	Geometric average of the two dimensions and arithmetic average of the product with the third dimension	Geometric average of the two dimensions and arithmetic average of the product with the third dimension Geometric average

Source: authors

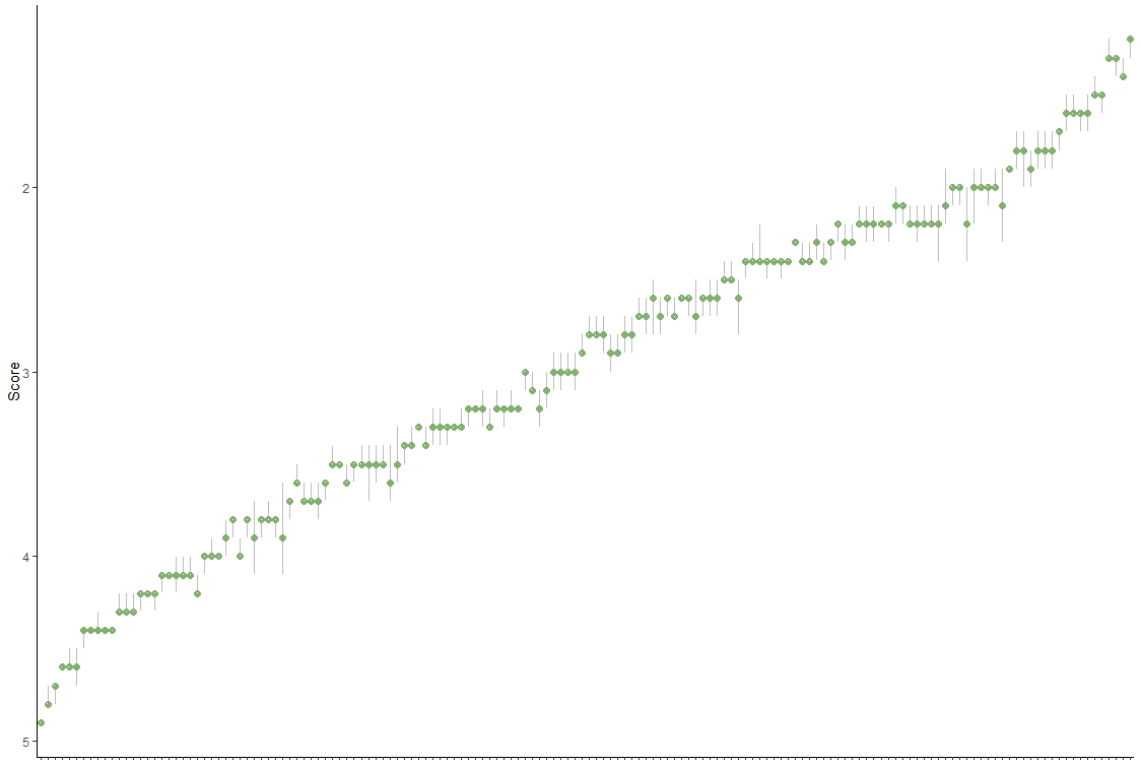
The key findings from the uncertainty analysis are presented in **Figure 17**, which displays median scores alongside 90% uncertainty intervals derived from the 4,000 Monte Carlo simulations. Crises are ranked according to their nominal position, with each blue dot representing the median score across the iterations for each crisis. The error bars illustrate the 90% uncertainty intervals, spanning from the 5th to the 95th percentile of the simulation results. It shows that:

- All crises exhibited confidence intervals (CIs) smaller than 1 point n the 4,000 Monte Carlo simulations.
- Among these, only 9% of the crises have CIs in the range of 0.3–0.5 points, while the remaining crises have CIs of 0.2 points or less.

- Similarly, when comparing the median scores from the 4,000 Monte Carlo simulations with the nominal crisis scores, 71% of the crises show no difference between the median and nominal values, 29% exhibit a difference of 0.1 points, and only one crisis demonstrates a difference of 0.2 points.

Furthermore, the INFORM Severity Index scores are categorised into five severity levels by rounding scores to the nearest whole number. Using the uncertainty analysis results, the median severity class from the 4,000 Monte Carlo simulations was compared to the original severity class. The results demonstrate that only 4 out of 154 crises (approximately 3%) would fall into a different severity category. Consequently, 97% of crises remain in the same severity class, which underscores the robustness of the severity categorisation.

Figure 17: Uncertainty analysis on scores, nominal score vs median score and 90% intervals



Source: Authors

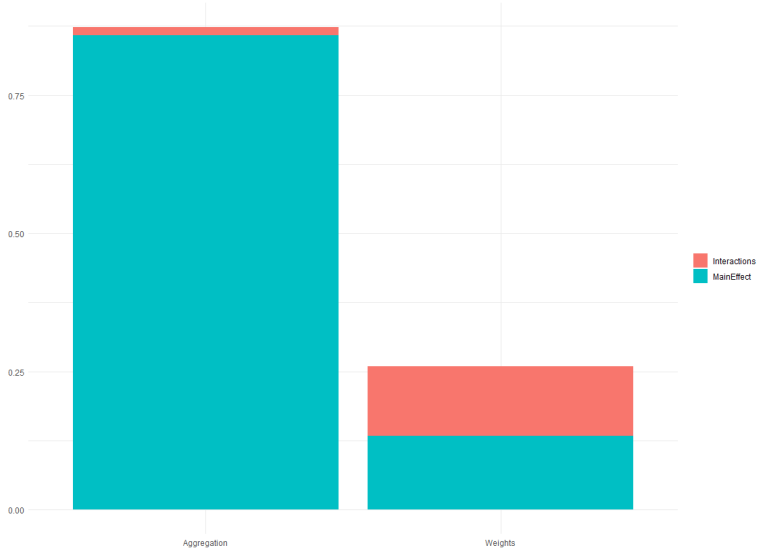
8.3.2 Sensitivity analysis

Sensitivity analysis was conducted to identify the key drivers of output uncertainty. We applied the **Sobol sensitivity measures of the total effect** (Sobol, 2001; Saisana, Saltelli, and Tarantola, 2005) which estimate the extent to which input uncertainties influence the overall uncertainty of the output.

The sensitivity analysis (**Figure 18**) reveals that this sensitivity is primarily driven by the aggregation method:

- 87% of the total variation in scores is attributable to changes in the aggregation method or interactions involving the aggregation method.
- In contrast, variations in weights have a negligible impact on the final scores.

Figure 18: Sensitivity analysis on the index scores.



Source: authors

Conclusion: The uncertainty and sensitivity analyses provide strong validation of the Index's design:

- **Score & class stability:** The uncertainty analysis demonstrates **high stability** in both the continuous score and the final severity category (class). This ensures that the official categorization, which is used for communication and decision-making, remains consistent and reliable across a wide range of plausible methodological scenarios.
- **Driver identification:** The sensitivity analysis revealed that the limited variation that does occur is primarily attributable to the choice of the **aggregation method**, and *not* to variations in the weights.

This outcome confirms the **consistency** of the INFORM Severity Index's core structure and its ability to maintain reliable score and categorization despite underlying methodological variations.

8.4 Proposing delayed rounding for index accuracy

In the statistical processing of the INFORM Severity index, raw data are appropriately rescaled onto a 0–5 scale prior to aggregation through a hierarchical model to generate the final index.

The current operational model applies rounding to intermediate scores (to one decimal place) at each aggregation step. While this maintains the immediate clarity of the components, an audit has identified this practice as a source of minor precision loss in the final index score.

It is recommended that unrounded values be utilized throughout the entire hierarchical aggregation process. Rounding would then be applied only at the final stage when calculating the overall index score. Intermediate scores (dimensions and categories) will continue to be displayed in rounded form for user clarity, but all internal calculations will be based on the unrounded data to ensure maximum accuracy and transparency.

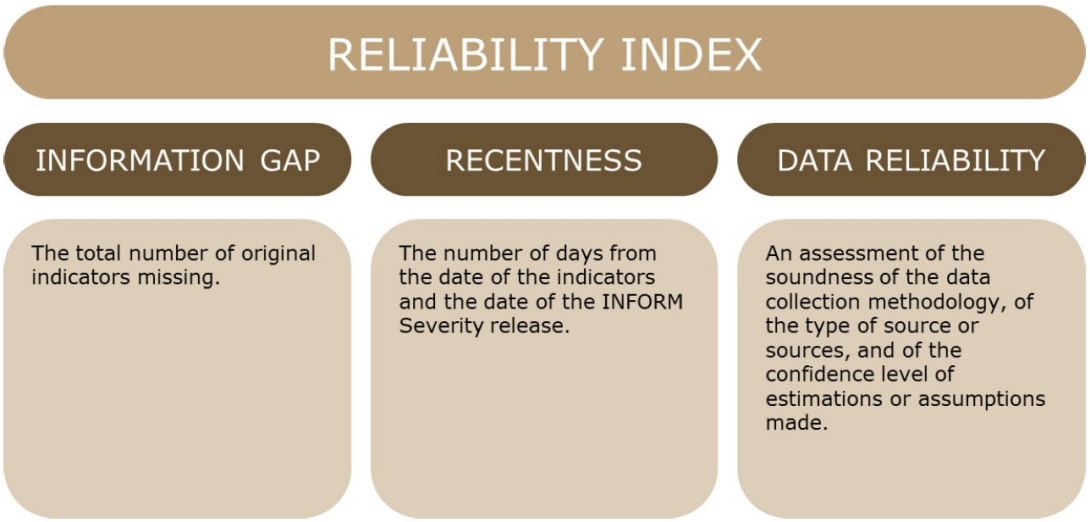
9 Reliability index

The Reliability Index provides users with a measure of the consistency and quality of the data used to calculate the severity score, aiming to increase transparency. In many humanitarian crises, the data environment does not allow for full trust in the available information. Rather than excluding crises or imputing missing data, INFORM uses this measure to ensure users are aware of the reliability of the data underlying the scores, particularly when the same indicator is patched by utilizing different sources or methodologies across countries to achieve global coverage.

The Reliability Index (**Figure 19**) is calculated as arithmetic mean of its three dimensions:

- **Data reliability**
- **Recentness of the data**
- **Information gaps.**

Figure 19: INFORM Severity Reliability index.



Source: Poljanšek et al., 2020

The final reliability index score is a measure of data quality on a scale of zero to five, from very low to very high (**Table 13**). The scale is interpreted such that higher is worse, meaning a higher score equates to lower data quality and lower reliability.

Table 13: Corresponding qualitative scale

Score	Reliability Category
(4.0, 5.0]	Very low
(3.0, 4.0]	Low
(2.0, 3.0]	Medium
(1.0, 2.0]	High
[0.0, 1.0]	Very high

Source: authors

9.1 Data reliability

The Data Reliability score is derived from **expert human judgment** during the monthly data collection phase, unlike the other two components which are automatic calculations. Analysts assess data for all core indicators that change monthly across the Impact of the Crisis, Conditions of People Affected, and relevant Complexity components. Scores are given on a 3-point scale (low, medium, high) and are determined using the following criteria:

- **Methodology of data collection**: The soundness of the data collection methodology, if known, is assessed including design, implementation, and update frequency, to determine reliability and usability.
- **Sources and potential bias**: The type, credibility, impartiality, and potential biases of the data sources (international organizations, local institutions, etc.) are examined to ensure trustworthiness. Analysts focus on how well-suited the sources are for the specific indicator in the model.
- **Estimations**: The confidence level in estimations within the source data is assessed, including a review of the source's methodology for making the estimation.

It is important to note that this assessment does not reflect the general reliability of the sources but their suitability for the specific indicator being evaluated. A generally reliable source may be considered less reliable for a particular indicator, especially when the data does not adequately reflect the current humanitarian situation. For instance, data collected during a field assessment conducted prior to a significant recent development may no longer accurately represent the current context.

Aggregation of Data reliability dimension: The overall Data reliability score for a crisis is determined through a multi-step, bottom-up aggregation process:

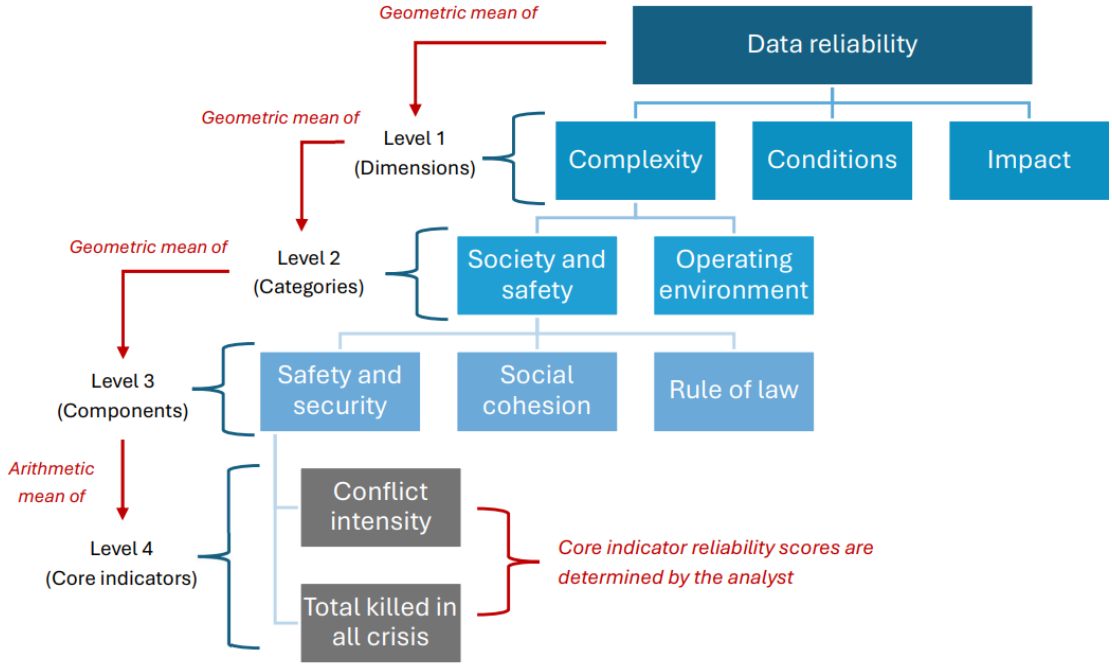
1. **Core indicator assessment and normalization**

- Initial Judgment: Data analysts assess the reliability of each relevant core indicator based on criteria of the data collection methodology, source credibility/bias, and confidence in any estimations.
- Normalization: Each core indicator's reliability is immediately normalized to a 0 to 5 scale. This ensures all scores are comparable as they begin their journey up the aggregation chain.

2. **Bottom-up aggregation to dimension level:** The normalized core indicator reliabilities are then aggregated hierarchically (**Figure 20**) using a combination of arithmetic and geometric means:

- Lower Levels (e.g., Component Level): Reliability scores for core indicators that make up a component (like the "Safety and Security" component) are combined using the arithmetic mean (simple average).
- Upper Levels (e.g., Category and Dimension Level): Reliability scores for categories within a dimension (e.g., "Society and Safety" and "Operating Environment" within Complexity) are typically combined using the geometric mean. The geometric mean is preferred at higher levels because it balances indicators on similar scales and minimizes the influence of extreme values, leading to a more stable combined score.

Figure 20: Bottom-Up Aggregation to Dimension Level



Source: authors

This hierarchical process continues through the various layers until a final, aggregated Data Reliability score is obtained for each of the three INFORM Severity dimensions:

- Data Reliability of the Impact of the Crisis
- Data Reliability of the Conditions of people affected
- Data Reliability of the Complexity of the Crisis

3. **Final aggregation:** The final Data Reliability score for the entire crisis score is calculated using a formula (**Figure 21**) structurally similar to the one used for calculating the overall INFORM Severity score itself (**Figure 8**). This formula ensures that components critical to the final severity assessment, like Conditions of People Affected, are appropriately weighted in the final reliability judgment.

Figure 21: Data Reliability calculation weighting schema

Score	**DATA RELIABILITY**		
Aggregation with weights	ARITHEMETIC AVERAGE		
	70%		30%
	GEOMETRIC AVERAGE		
	33%	66%	
Dimensions	Data reliability of the Impact of the crisis	Data reliability of the Conditions of people affected	Data reliability of the Complexity of the crisis

Source: authors

9.2 Recentness of data

This variable assesses how recent the data is for each crisis. It is measured as the number of days that have passed between the date of the source and the release date of the specific INFORM Severity Index. More recent data is typically associated with higher reliability scores, as it better reflects the current humanitarian context.

If the data is older than a year (>365 days), the maximum penalty of 5 (low reliability) is assigned. Otherwise, the score is calculated using the following formula (**Equation 7**), which inverts the score so that more recent data results in a lower score (better reliability):

$$Recentness = 5 - \left(\frac{365 - Number\ of\ days}{365}\right) \times 5 \qquad \textbf{Equation 7}$$

Where:

- $Number\ of\ days$ – average age of all core indicator in days

Observed limitation: The current implementation calculates the days elapsed for the Recentness score from the date the source data was logged into the system rather than the date the source data was collected or published. This systematic error allows old data to be re-logged periodically, artificially increasing the reliability score and leading to misleadingly high confidence in outdated information.

The system logic must be corrected to calculate the Recentness score exclusively using the Data Collection Date or the Data Publication Date provided by the original source. This ensures that the time elapsed accurately reflects the true age of the data used in the Severity Index calculation.

9.3 Information gap

This Information gap measure reflects strategic information loss. It is designed to quantify the degree of data completeness and sufficiency for each crisis and assess significance of the missing data at the component level. While missing data does not necessarily reflect inaccuracies, this dimension aims to flag potential limits in the robustness of the final Severity score due to the absence of key inputs that should be considered when interpreting the results.

If **more than 3 components cannot be calculated due to too many missing indicators**, the maximum penalty of 5 (worst reliability) is assigned, otherwise, the score is calculated using the following formula, which inverts the score so that **more missing data results in a higher score (worse reliability)**:

$$Information\ gap = 5 - \left(\frac{3 - Number\ of\ missing\ components}{3}\right) \times 5 \qquad \textbf{Equation 8}$$

Where:

- $Number\ of\ missing\ components$ – number of components not being calculated due to too many missing values

Observed limitation: The current implementation calculates the Information gap based on the number of missing *indicators* that are either unavailable or rely on proxy estimation. The current implementation weights all missing indicators equally just as a technical count, regardless of the component they represent. A component with 10 indicators will inherently suffer more from missing data than a component with 3, purely due to indicator count, even if the one missing indicator in the smaller component is far more critical. This approach leads to two significant issues:

1. **Disproportionate scaling** - If the maximum potential missing indicator count is indeed only 3, applying a standard scaling/normalization method will cause this component to have an extreme and unfair influence on the final aggregate score,
2. **Unintended correlation with recentness:** Information gap (is the data available?) and Recentness (is the available data timely?) must be treated as independent dimensions to provide distinct insights. If the calculation conflates the two, the index loses analytical power.

By defining the maximum acceptable age for an indicator, we can correctly apply the methodology and avoid the unintended correlation. Data failing the maximum age threshold is flagged as unavailable, allowing the Information gap to focus purely on structural gaps at the component level.

9.4 Discussion: the growing importance and future of the Reliability index

The Reliability Index is an increasingly critical tool, evolving from a simple transparency measure to a key component of evidence-based prioritization. Building on its methodological premise that the crisis data environment often prevents full trust in available information, the index provides the necessary measure of consistency and quality—especially where indicators are aggregated or patched using different sources across countries to achieve global coverage. In the current climate of funding cuts and resource scarcity, this transparency is no longer optional; it necessitates a better, more granular identification of which indicators or data sources are suffering the most from quality issues to inform resource allocation and data collection strategies.

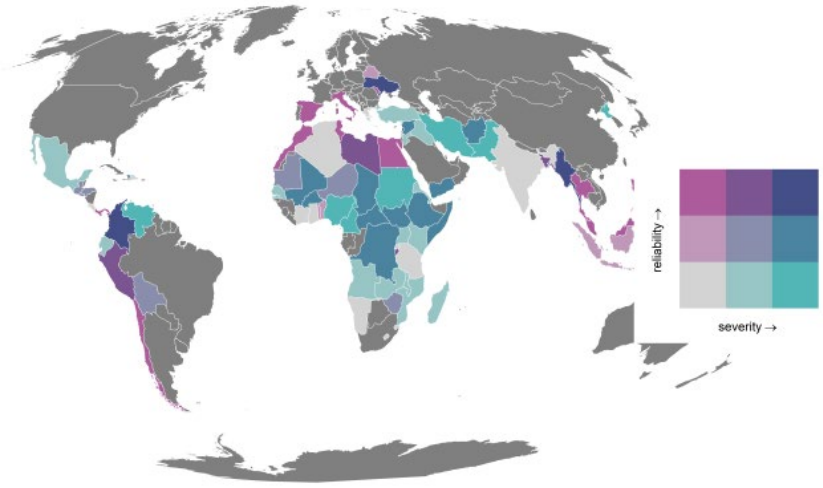
Analysis: Reliability vs. Severity

To understand the relationship between reliability and crisis severity, we map the Reliability Index against the final Severity Score (**Figure 22**). This comparison allows users to contextualize the severity assessment based on the confidence level of the underlying data.

A visual comparison of the two indices provides two general insights:

- **Expected correlation:** Crises rated at **very high severity** (Level 4 and 5) often correspond to **low or very low reliability**. This correlation is expected, as severe, complex conflicts frequently prevent comprehensive, timely, and impartial data collection, thus lowering confidence in the resulting scores.
- **Prioritization awareness:** Where a high severity score is coupled with a low reliability, humanitarian actors must exercise caution. This comparison allows users to contextualize the severity assessment based on the confidence level of the underlying data.

Figure 22: Reliability Index against the final INFORM Severity Score.

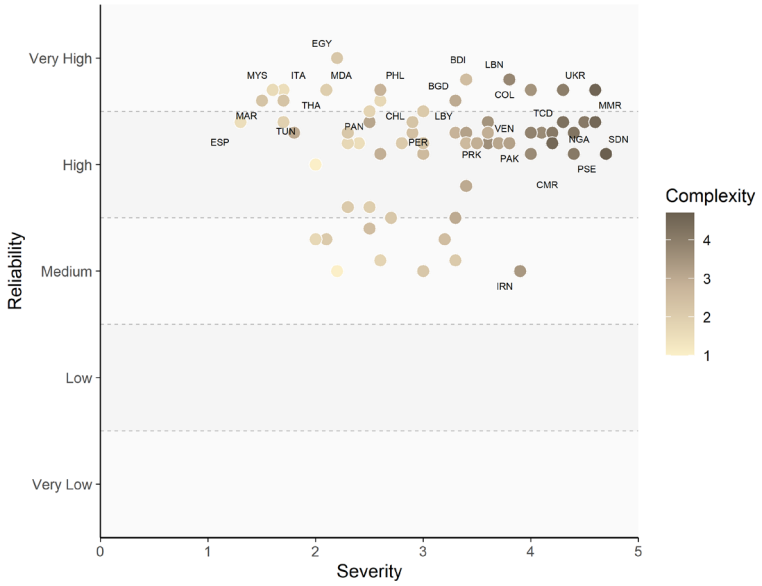


Source: authors

Furthermore, **Figure 22** highlights distinct regional patterns that explain the drivers of the Reliability Index:

- **Displacement crises (South America, Asia, North Africa):** Countries experiencing primarily displacement crises tend to show **Medium to High Reliability** scores. This high confidence reflects the strong presence and established methodologies of key partners like **UNHCR and IOM**, whose data are considered highly reliable due to their frequent updates (monthly or weekly) and robust methodologies, often based on direct counts.
- **Complex crises (Sahel Region):** In contrast, countries in the Sahel region consistently show **Low Reliability** scores, mainly because of limited data availability. Analysts often rely on proxy sources like Cadre Harmonisé or IPC data for multi-dimensional crises that cover conflict and displacement impacts. The reliance on these sources, which may not capture the full scope of a multi-sectoral crisis, contributes to the lower confidence rating.
- **Data lag and outliers:** A few outliers, such as **Tanzania, Namibia, and Algeria**, show low reliability due to the use of outdated or incomplete sources. For instance, the use of a time-delayed IPC analysis in Tanzania and Namibia, or outdated migration figures in Algeria, significantly lowers confidence in the aggregated scores.
- **Natural disasters (Pakistan, India, Afghanistan):** Natural disaster-affected countries also scored lower in reliability. This is likely because post-disaster **population estimates** are inherently difficult to capture accurately and quickly, leading analysts to rate those specific sources as less reliable despite the clear, high severity of the disaster.

Figure 23: Scatterplot of Reliability versus severity index across countries in the September 2025 INFORM Severity release. Point color represents complexity scores.



Source: authors

The scatterplot (**Figure 23**) shows:

- **countries with complex crises** such as **Myanmar, Sudan, Palestine, and Nigeria** tend to have **medium to high reliability scores** despite their high complexity. This could be because analysts marked almost all **access indicators ("yes")** in the access dataset, since there is **consistent evidence of events** linked to those indicators. This broad evidence base often results in **moderate-to-high source reliability ratings**.
- Conversely, countries like **Italy, Egypt, and Spain**, which only experience **mixed migration crises**, also appear with **relatively high reliability**. This may be because analysts marked most access indicators as **"no"** (for example, "The country is run with one or more governments"), which accurately reflects the **stable context**. Since this information is well-documented and uncontested, the **reliability of these "no" scores** are understandably high.

Structural limitations and opportunities for refinement of Reliability index: Experience gained from the current approach highlights several limitations that, if addressed, could significantly enhance the utility and precision of the Reliability Index.

- **Ignoring inconsistent data dynamics:** The current aggregation model often fails to account for the fundamentally different dynamic properties of core indicators. Conditions of people affected indicators (e.g., population displacement) are highly dynamic and require very recent data to be relevant. Complexity of the crisis indicators (e.g., ethnic fractionalization) are structural and change slowly over years. The current system may equally penalize an outdated structural indicator and an outdated dynamic indicator, despite the latter having a far greater negative impact on the accuracy of the current severity assessment. This issue could be resolved by establishing a Shared Framework on Data Time Validity (see Section 7.4), which directly addresses these inconsistencies.

- **Lack of granular reliability assessment:** Currently, the final Reliability Index is a single aggregate score, masking which dimension of the INFORM Severity Index is driving the reliability problem. Presenting a single number prevents users from immediately discerning if the low reliability is driven by poor Conditions data (e.g., IPC analysis) or outdated Complexity data (e.g., governance scores). It would be highly beneficial to provide the reliability score for each dimension (Impact, Conditions, Complexity), which are already calculated during the aggregation process. This disaggregation would allow analysts to better identify which data are suffering the reliability the most, directly informing data collection efforts and resource allocation.
- **Challenges in source credibility assessment:** Data analysts often face difficulties when assessing Data Reliability because data providers, particularly those involved in secondary data collection, do not propagate the necessary reliability metrics from their primary collection process. Consequently, the data analyst is often forced to judge the credibility of the organization providing the information (organizational trust) rather than the quality of the data itself (methodological soundness). This substitutes an organizational proxy for a necessary methodological judgment. Improving data quality to obtain source reliability meta-data is essential for higher confidence in the Data Reliability score.

10 Limitations

Humanitarian crises are extremely complex phenomena and therefore any attempt to model them is a simplification of reality. This chapter provides a critical self-assessment of the INFORM Severity Index outlining its key limitations. These limitations primarily arise from two areas: the inherent compromises necessary in the aggregation methodology and the constraints imposed by the source data itself.

10.1.1 Methodological limitations

Simplification and precision: While the Index categorizes crises into five severity levels for clarity, this simplification may give an impression of greater accuracy than intended. For example, crises with scores near category boundaries (e.g., 2.9 versus 3.1) should be interpreted with caution, as such differences may not represent significant changes in the humanitarian situation.

Crises affect people differently with some individuals experiencing severe conditions even in crises classified as less severe overall. The Index aims to capture the distribution of severity within a crisis, but it cannot fully reflect the diverse range of experiences among affected populations. It is important to recognise that all crises include individuals who require assistance, regardless of the overall severity classification.

Dual nature of displacement data and cross-crisis counting: Displacement data (refugees, IDPs) must be carefully interpreted, as the same population is cross-counted to accurately reflect its dual role in a crisis. This occurs both cross-dimensionally (e.g., outgoing refugees reflect 'Human Impact' while the same incoming group reflects 'Human Impact' and 'Conditions of People Affected') and cross-crisis (where international refugees are intentionally counted in both the source and destination countries). This systematic approach is essential to capture the full scope of displacement's impact and consequences, but users must be aware of this inherent overlap when comparing or aggregating related crisis scores.

10.1.2 Data limitations

Data quality and expert judgement: The INFORM Severity Index aggregates information from a wide range of sources to provide a standardised measure of crisis severity. However, the availability, type, and quality of data vary between crises, requiring judgements about which data to include and how to ensure comparability between indicators. These decisions can introduce unintended bias or errors. Users should consider the results as indicative rather than definitive and consult original sources for the most accurate and up-to-date data.

Reliance on primary data: The Index is entirely reliant on primary data collected through various methods during crises. It does not generate or improve primary data but instead depends on its quality. Consequently, the Index is only as reliable as the underlying data. Efforts to improve the quality, standardisation, and coverage of primary data collection remain essential and are outside the scope of the Index.

Data availability: While many indicators identified as relevant by experts are included in the model, others are omitted due to insufficient data coverage. For example, indicators such as illness rates, injury counts, physical damage, and economic losses are not yet incorporated, highlighting gaps in data availability.

11 Conclusion and way forward

The comprehensive review of the INFORM Severity index—the key international tool for systematically measuring humanitarian crises—confirms that this product remains invaluable for the global community. Anchored by five years of operational data and crucial user feedback, the Index is successfully adapting to the alarming upward trend in humanitarian needs and the rapid changes in the global data landscape. This successful outcome was secured through sustained, open collaboration between JRC and ACAPS, allowing for data-driven compromises that enhanced the Index's methodology while preserving its core principles of objectivity and comparability.

This report details how the revision successfully addressed key challenges by strengthening both the methodology and scope. The extensive statistical audit and backward analysis validated the core mathematical framework while leading to critical refinements. These include updates to the normalization limits, greater precision in aggregation, and, notably, a revision of the Complexity dimension by successfully replacing outdated indicators with more stable, high-quality sources. These changes ensure the Index is robust against contemporary geopolitical and data environment realities. Furthermore, new conceptual approaches were developed for estimating the Concentration of conditions within a crisis.

An essential result of this analysis was the identification of data quality limitations that led to the proposal of a shared framework on data time validity by establishing maximum acceptable age thresholds with technical partners. This resulted in significant conceptual work on the Reliability index, a new feature designed to provide greater transparency. This work directly responds to user demands by addressing changing expectations and data challenges. The technical foundation for this new analysis will ensure decision-makers act appropriately—whether that means proceeding cautiously when data reliability is low, or directing efforts to improve data collection where it is most critically needed.

The INFORM Severity index is positioned as a core component of the wider INFORM suite, providing the indispensable evidence base that connects global risk assessment to real-time crisis. To ensure maximum consistency and interpretability across all INFORM products, we recommend rescaling the Severity score from the current 0-5 range to a new 0-10 range. The continuous validation of the methodology is key to the platform's success, and the documented user cases confirm the practical applicability of the updates and the Index's essential role in evidence-based decision-making. Crucially, these reliable and refined severity metrics are a vital input for the next generation of the INFORM suite: the INFORM Warning tool, ensuring the Index becomes a foundation for quantifying anticipation and early action mechanisms.

To finalize this process and ensure seamless integration of the revised methodology, the Way Forward requires three critical steps: first, the agreed-upon methodological changes must be translated into a detailed Implementation plan and receive final feasibility sign-off from ACAPS; and second, a necessary backward calculation of the revised historical data must be performed, and third, building on the successful interim adaptation deployed in 2024, future research must focus on a statistically robust, long-term methodology for estimating People in Need (PiN) by severity, ensuring resilience against the ongoing evolution of the JIAF framework. The first two steps guarantee a consistent, reliable time-series dataset under the new methodology, preserving the Index's essential utility for trend and change analysis.

The 2026 review thus ensures the INFORM Severity index continues to fulfil its mandate: providing the systematic, objective, and data-driven measure required to inform humanitarian response and planning in a world of complex and rapidly evolving crises.

References

ACAPS, 2024. *Humanitarian Access Overview: Spotlight on violence against aid workers*. https://reliefweb.int/report/world/crisisinsight-humanitarian-access-overview-spotlight-violence-against-aid-workers-december-2024 accessed 20/10/2025

ACAPS, 2024. *INFORM Severity Index. Data Collection Manual.*, ACAPS, https://www.acaps.org/fileadmin/Dataset/Methodology_files/20240930_ACAPS_Severity_index_data_collection_manual.pdf accessed 20/11/2025

ACAPS, 2025. *MYANMAR: INFORM Severity Index Trends*, Thematic Report 09 January 2025, ACAPS.

Akoglu, H., 2018. User's guide to correlation coefficients. In *Turkish Journal of Emergency Medicine* (Vol. 18, Issue 3, pp. 91–93). Emergency Medicine Association of Turkey. https://doi.org/10.1016/j.tjem.2018.08.001

Avis, W., 2019. *Challenges religious minorities face in accessing humanitarian assistance. K4D Helpdesk Report 666*.

CIDCM, 2009.*Minorities at Risk Project*. http://www.mar.umd.edu/mar_data.asp

Cingranelli, D. L., Richards, D. L., & Clay, C. K., 2014. *The CIRI Human Rights Dataset. Version 2014.04.14*. http://www.humanrightsdata.com

Coppedge, M., John Gerring, Carl Henrik Knutsen, Staffan I. Lindberg, Jan Teorell, Kyle L. Marquardt, Juraj Medzihorsky, Daniel Pemstein, Linnea Fox, Lisa Gastaldi, Eitan Tzelgov, Yi-ting Wang, & Steven Wilson, 2025. *V-Dem Methodology v15" Varieties of Democracy (V-Dem) Project*. https://v-dem.net/documents/56/methodology.pdf

De Groeve T, Poljansek K, Vernaccini L., 2014. Index for Risk Management - InfoRM: Concept and Methodology. EUR 26528. Ispra (Italy): Publications Office of the European Union. JRC87617.

Dubey, R., Altay, N., & Blome, C., 2019. Swift trust and commitment: The missing links for humanitarian supply chain coordination? *Annals of Operations Research*, *283*(1–2), 159–177. https://doi.org/10.1007/S10479-017-2676-Z/METRICS

Hodler, R., & Knight, D. S., 2012. Ethnic Fractionalisation and Aid Effectiveness. *Journal of African Economies*, *21*(1), 65–93. https://doi.org/10.1093/JAE/EJR036

Inter-Agency Standing Committee and the European Commission, INFORM REPORT 2023; Shared evidence for managing crises and disasters, Publications Office of the European Union, Luxembourg, 2023, doi:10.2760/073809, JRC134138.

JIAF, 2024. JIAF 2 Technical Manual, https://humanitarian.atlassian.net/wiki/download/attachments/3993829401/JIAF-2-Technical-Manual_Final-for-2025-HPC.pdf?api=v2 accessed 20/11/2025

JRC, 2020. *Your 10-Step Pocket Guide to Composite Indicators & Scoreboards.*, Publications Office of the European Union ,Luxembourg, 2020.

Marzi, S., J. Mysiak, A.H. Essenfelder, M. Amadio, S. Giove, and A. Fekete, 'Constructing a Comprehensive Disaster Resilience Index: The Case of Italy', *PLoS ONE, Public Library of Science*, Vol. 14, No. 9, September 1, 2019.

Marzi, S., J. Mysiak, and S. Santato, 'Comparing Adaptive Capacity Index across Scales: The Case of Italy', *Journal of Environmental Management, Academic Press*, Vol. 223, October 1, 2018, pp. 1023–1036.

Marzi, S., Mysiak, J., Essenfelder, A. H., Pal, J. S., Vernaccini, L., Mistry, M. N., Alfieri, L., Poljansek, K., Marin-Ferrer, M., & Vousdoukas, M., 2021. Assessing future vulnerability and risk of humanitarian crises using climate change and population projections within the INFORM framework. *Global Environmental Change*, *71*, 102393. https://doi.org/10.1016/J.GLOENVCHA.2021.102393

Mulder, F., Hilhorst, D., & Raju, E., 2020. Governing the Humanitarian Knowledge Commons. *Politics and Governance*, *8*(4), 407–420. https://doi.org/10.17645/PAG.V8I4.3138

OCHA, 2025. *The Global Humanitarian Overview*. https://www.unocha.org/publications/report/world/global-humanitarian-overview-2025-enarfres accessed 20/11/2025

OECD and JRC, *Handbook on Constructing Composite Indicators: Methodology and User Guide.*, OECD publications, 2008.

Poljanšek K., Marin-Ferrer M., Vernaccini L., Marzi S., Messina L., 2019. Review of the Sendai Framework Monitor and Sustainable Development Goals indicators for inclusion in the INFORM Global Risk Index, EUR 29753 EN, doi:10.2760/54937

Poljansek, K., Disperati, P., Vernaccini, L., Nika, A., Marzi, S. and Essenfelder, A.H., 2020. INFORM Severity Index, EUR 30400 EN, Publications Office of the European Union, Luxembourg, ISBN 978-92-76-23014-4 (online),978-92-76-23015-1 (print), doi:10.2760/94802 (online),10.2760/613430 (print), JRC122162.

Poljansek, K., Marzi, S., Galimberti, L., Dalla Valle, D., Pal, J., Essenfelder, A.H., Mysiak, J. and Corbane, C., 2022. INFORM Climate Change Risk Index, EUR 31138 EN, Publications Office of the European Union, Luxembourg, ISBN 978-92-76-54411-1 (online),978-92-76-54410-4 (print), doi:10.2760/822072 (online),10.2760/732121 (print), JRC129896.

Richards, D. L., Gelleny, R. D., & Sacko, D. H., 2001. Money with a Mean Streak? Foreign Economic Penetration and Government Respect for Human Rights in Developing Countries. *International Studies Quarterly*, *45*(2), 219–239. https://doi.org/10.1111/0020-8833.00189

Saisana, M., A. Saltelli, and S. Tarantola, 2005. 'Uncertainty and Sensitivity Analysis Techniques as Tools for the Quality Assessment of Composite Indicators.', *J. R. Statist. Soc. A*, Vol. 168, No. 2, pp. 307–323.

Saltelli A., Ratto M., Andres T., Campolongo F., Cariboni J., Gatelli D., Saisana M., and Tarantola S., 2008. *Global Sensitivity Analysis. The Primer.*, John Wiley & Sons Ltd.

Sobol, I.M., 2001. 'Global Sensitivity Indices for Nonlinear Mathematical Models and Their Monte Carlo Estimates.', *Mathematics and Computers in Simulation*, Vol. 55, 2001, pp. 271–280.

The Integrated Food Security Phase Classification (IPC) Global Partners, *Integrated Food Security Phase Classification. Technical Manual Version 3.0. Evidence and Standards for Better Food Security and Nutrition Decisions.*, Rome, 2019.

Vogt, M., Bormann, N. C., Rüegger, S., Cederman, L. E., Hunziker, P., & Girardin, L., 2015. Integrating Data on Ethnicity, Geography, and Conflict. *Journal of Conflict Resolution*, *59*(7), 1327–1342. https://doi.org/10.1177/0022002715591215

List of abbreviations and definitions

Abbreviations	Definitions
ACAPS	Assessment Capacities Project
CERF	Central Emergency Response Fund
ECHO	European Commission: European Civil Protection and Humanitarian Aid Operations
FCDO	Foreign, Commonwealth and Development Office
GPI	Global Peace Index
HDX	Humanitarian Data Exchange
HNPW	Humanitarian Networks and Partnerships Weeks
IASC	Inter-Agency Standing Committee
IFRC	International Federation of Red Cross and Red Crescent Societies
INFORM	Index for Risk Management
IPC	Integrated Food Security Phase Classification
JIAF	Joint Intersectoral Analysis Framework
JRC	Joint Research Centre
OCHA	United Nations Office for the Coordination of Humanitarian Affairs
PIN	People in need
SDC	Swiss Agency for Development and Cooperation
SIDA	Swedish International Development Cooperation Agency
UNOCC	United Nations Operations Crisis Centre
WHO	World Health Organization

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Annex 1. Fact sheets of core indicators

Table 14. List of core indicators of INFORM Severity index.

No.	Name of core indicator		Position in the INFORM Severity model		
1	Affected area (absolute)		Area affected	Geographical	Impact of the crisis
2	Affected area (relative to the total area of the country)				
3	People in the affected area (absolute)		People in the affected area		
4	People in the affected area (relative to the total population of the country)				
5	People affected (absolute)		People affected	Human	
6	People affected (relative to the people in the affected area)				
7	Displaced (absolute)	Displaced	People affected by category		
8	Displaced (relative to affected people)				
9	Fatalities (absolute)	Fatalities			
10	Fatalities (relative to affected people)				
11	People in extreme conditions -Level 5 (absolute)		Cumulative distribution	People in need	Conditions of people affected
12	People in severe conditions -Level 4 (absolute)				
13	People in moderate conditions -Level 3 (absolute)				
14	People in stressed conditions -Level 2 (absolute)				
15	People in none/minimal conditions -Level 1 (absolute)				
16	People in extreme conditions -Level 5 (relative to population in the affected area)		Relative cumulative distribution	Concentration of conditions	
17	People in severe conditions -Level 4 (relative to population in the affected area)				
18	People in moderate conditions -Level 3 (relative to population in the affected area)				
19	People in stressed conditions -Level 2 (relative to population in the affected area)				
20	People in none/minimal conditions -Level 1 relative to population in the affected area)				
21	Empowerment	Trust in society	Social cohesion	Society and safety	Complexity of the crisis
22	BTI – Democracy status				
23	Ethnic fractionalization	Ethnic fractionalization			
24	Size of excluded ethnic groups				
25	Gender inequality	Inequality			
26	GINI coefficient				
27	Conflict intensity		Safety and security		
28	Fatalities in all crises				
29	Corruption perception		Rule of law		
30	Rule of law (WGI)				
31	Rule of law (BTI)				
32	Freedom in the world				
33	Humanitarian profile		Diversity of groups affected	Operating environment	
34	Impediments to entry into country	Access of humanitarian actors to affected population	Humanitarian access		
35	Restriction of movement				
36	Interference into implementation of humanitarian activities				
37	Violence against personnel, facilities and assets				
38	Denial of existence of humanitarian needs or entitlements to assistance	Access of people in need to aid			
39	Restriction and obstruction of access to services and assistance				
40	Ongoing insecurity/hostilities affecting humanitarian assistance	Physical and security constraints			
41	Presence of mines and improvised explosive devices				
42	Physical constraints in the environment				

Source: Authors

Core indicators of Impact of the crisis dimension

Component	Affected area - absolute
Indicator	Total # of square kilometres affected by the crisis
Description	Total # of square kilometres affected by the crisis
Source	Multiple sources are used: • World Bank: https://databank.worldbank.org • Humanitarian Data Exchange: https://data.humdata.org/ • National statistics agencies • …
Data processing	Logarithmic transformation MIN-MAX normalisation using the following parameters: MIN: 10^4, MAX: 10^7

Component	Area affected - relative
Indicator	% of square kilometres affected by the crisis on the total area of the country
Description	% of square kilometres affected by the crisis on the total area of the country
Source	• Humanitarian Data Exchange: https://data.humdata.org/ • IPC/Cadre Harmonise (especially for droughts, food crises and crop failure) • UNOCHA HNO • National statistics agencies • …
Data processing	MIN-MAX normalisation using the following parameters: MIN: 2%, MAX: 100%

Component	People living in the affected area - absolute
Indicator	Total # of people living in the affected area
Description	Total # of people living in the affected area
Source	• Humanitarian Data Exchange: https://data.humdata.org/ • IPC/Cadre Harmonise (especially for droughts, food crises and crop failure) • UNOCHA HNO • National statics agencies • …
Data processing	Logarithmic transformation MIN-MAX normalisation using the following parameters: MIN: 10^6, MAX: 10^8

Component	People living in the affected area - relative
Indicator	% of people living in the affected area on the total population of the country
Description	% of people living in the affected area on the total population of the country
Source	• Humanitarian Data Exchange: https://data.humdata.org/ • IPC/Cadre Harmonise (especially for droughts, food crises and crop failure) • UNOCHA HNO • National statistics agencies • …
Data processing	MIN-MAX normalisation using the following parameters: MIN: 1%, MAX: 100%

Component	People affected - absolute
Indicator	Total # of people affected by the crisis
Description	Total # of people affected by the crisis
Source	• Humanitarian Data Exchange: https://data.humdata.org/ • IPC/Cadre Harmonise (especially for droughts, food crises and crop failure) • UNOCHA HNO • National statistics agencies
Data processing	Logarithmic transformation MIN-MAX normalisation using the following parameters: MIN: $10^{4.5}$, MAX: $10^{7.5}$

Component	People affected - relative
Indicator	% of total population affected on the total population living in the affected area
Description	% of total population affected on the total population living in the affected area
Source	• Humanitarian Data Exchange: https://data.humdata.org/ • IPC/Cadre Harmonise (especially for droughts, food crises and crop failure) • UNOCHA HNO • National statistics agencies
Data processing	MIN-MAX normalisation using the following parameters: MIN: 1%, MAX: 100%

Component	People displaced - absolute
Indicator	Total # of crisis related displaced people
Description	Total # of displaced people generated by the crisis. These include outgoing refugees and IDPs.
Source	• UNHCR: https://data2.unhcr.org • IOM DTM • UNRWA: https://www.unrwa.org • National statistics agencies
Data processing	Logarithmic transformation MIN-MAX normalisation using the following parameters: MIN: $10^{3.5}$, MAX: $10^{7.5}$

Component	People displaced - relative
Indicator	% of total population displaced on the total population affected
Description	% of displaced people generated by the crisis on the total population affected
Source	• UNHCR: https://data2.unhcr.org • IOM DTM • UNRWA: https://www.unrwa.org • National statistics agencies
Data processing	MIN-MAX normalisation using the following parameters: MIN: 0%, MAX: 50%

Component	Fatalities - absolute
Indicator	Total # of crisis related fatalities
Description	Total # of crisis related fatalities in the last 6 months
Source	A primary source for this indicator is the ACLED dataset (https://www.acleddata.com/data) If the ACLED dataset is not available, the following sources are utilized: • IOM Missing Migrants Project: https://missingmigrants.iom.int • Deep South Watch: https://deepsouthwatch.org • Flash situation reports published by UNOCHA • National statistics
Data processing	Logarithmic transformation MIN-MAX normalisation using the following parameters: MIN: 1, MAX: 10^4

Component	Fatalities - relative
Indicator	% of fatalities in the total population affected
Description	% of crisis related fatalities in the last 6 months on the total population affected
Source	A primary source for this indicator is the ACLED dataset (https://www.acleddata.com/data) If the ACLED dataset is not available, the following sources are utilized: • IOM Missing Migrants Project: https://missingmigrants.iom.int • Deep South Watch: https://deepsouthwatch.org • Flash situation reports published by UNOCHA • National statistics
Data processing	MIN-MAX normalisation using the following parameters: MIN: 0%, MAX: 0.05%

Core indicators of Conditions of affected people dimension

Component	People in need
Indicator	People in need (level 3-5)
Description	Total # of people with identified humanitarian needs included in Level 3–5
Source	• Humanitarian Response: https://www.humanitarianresponse.info • Humanitarian Data Centre: https://data.humdata.org • IPC: http://www.ipcinfo.org; Cadre Harmonise • Humanitarian Needs Overview • UNHCR: http://data.unhcr.org
Data processing	Logarithmic transformation. MIN-MAX normalisation using the following parameters: MIN: $10^{3.5}$, MAX: $10^{7.5}$

Component	Concentration of conditions
Indicator	% of people facing none/minimal humanitarian conditions related to the total population of the affected area (level 1)
Description	People are facing none or minor shortages or/and accessibility problems regarding basic services, such as food, health, shelter, and WASH. People are able to meet basic needs without having to apply to irreversible coping strategies
Source	• Humanitarian Response: https://www.humanitarianresponse.info • Humanitarian Data Centre: https://data.humdata.org • IPC: http://www.ipcinfo.org; Cadre Harmonise • Humanitarian Needs Overview • UNHCR: http://data.unhcr.org
Data processing	Relative values (i.e., cumulative relative frequency expresses in % of people in affected area) and equals to the level with cumulative relative frequency just greater than 5%.

Component	Concentration of conditions
Indicator	% of people facing stressed humanitarian conditions related to the total population of the affected area (level 2)
Description	People are facing some shortages or/and some availability and accessibility problems in regard to basic services, but they are not life-threatening. Needs are more increased but are still not life-threatening. The affected population can meet their need by applying copying strategies. There may exist localized/targeted incidents of violence and/or human rights violations.
Source	• Humanitarian Response: https://www.humanitarianresponse.info • Humanitarian Data Centre: https://data.humdata.org • IPC: http://www.ipcinfo.org; Cadre Harmonise • Humanitarian Needs Overview • UNHCR: http://data.unhcr.org
Data processing	Relative values (i.e., cumulative relative frequency expresses in % of people in affected area) and equals to the level with cumulative relative frequency just greater than 5%.

Component	Concentration of conditions
Indicator	% of people facing moderate humanitarian conditions and needs related to the total population of the affected area (level 3)
Description	People are facing shortages and/or availability and accessibility problems in regard to basic services that cause discomfort and/or a high level of suffering which can result in irreversible damages to the health status, but they are not life-threatening. Significant gaps are visible, or people are marginally able to meet minimum needs only with irreversible coping strategies. As a result of shortages and disruption of services, they may face potentially life-threatening consequences if not provided assistance. People may also face malnutrition. There may be physical and mental harm in populations resulting in a loss of dignity.
Source	• Humanitarian Response: https://www.humanitarianresponse.info • Humanitarian Data Centre: https://data.humdata.org • IPC: http://www.ipcinfo.org; Cadre Harmonise • Humanitarian Needs Overview • UNHCR: http://data.unhcr.org
Data processing	Relative values (i.e., cumulative relative frequency expresses in % of people in affected area) and equals to the level with cumulative relative frequency just greater than 5%.

Component	Concentration of conditions
Indicator	% of people facing severe humanitarian conditions and needs related to the total population of the affected area (level 4)
Description	People are facing life-threatening conditions and significant shortages and/or availability and accessibility problems in regard to basic services causing high level of suffering and irreversible damages to health status. People may face severe food consumption gaps and have started to deplete their assets or already face an extreme loss of assets. This may result in very high levels of acute malnutrition and excess mortality. Presence of irreversible harm and heightened mortality as well as widespread grave violations of human rights.
Source	• Humanitarian Response: https://www.humanitarianresponse.info • Humanitarian Data Centre: https://data.humdata.org • IPC: http://www.ipcinfo.org; Cadre Harmonise • Humanitarian Needs Overview • UNHCR: http://data.unhcr.org
Data processing	Relative values (i.e., cumulative relative frequency expresses in % of people in affected area) and equals to the level with cumulative relative frequency just greater than 5%.

Component	Concentration of conditions
Indicator	% of people facing extreme humanitarian conditions and needs related to the total population of the affected area (level 5)
Description	People are facing extreme shortages or availability and accessibility problems in regard to basic services. Deaths are directly caused by the current conditions and there is widespread mortality. People face a complete lack of food and/or other basic needs, and starvation, death, and destitution are evident. Acute malnutrition may be widely reported. They may face grave human rights violations.
Source	• Humanitarian Response: https://www.humanitarianresponse.info • Humanitarian Data Centre: https://data.humdata.org • IPC: http://www.ipcinfo.org; Cadre Harmonise • Humanitarian Needs Overview • UNHCR: http://data.unhcr.org
Data processing	Relative values (i.e., cumulative relative frequency expresses in % of people in affected area) and equals to the level with cumulative relative frequency just greater than 5%.

Core indicators of Complexity of the crisis dimension

Component	Social cohesion/ Trust in society
Indicator	Empowerment
Description	This is an additive index constructed from the Foreign Movement, Domestic Movement, Freedom of Speech, Freedom of Assembly & Association, Workers' Rights, Electoral Self-Determination, and Freedom of Religion indicators. It ranges from 0 (no government respect for these seven rights) to 14 (full government respect for these seven rights).
Source	CIRI Human Rights Dataset: http://www.humanrightsdata.com/p/data-documentation.html
Data processing	MIN-MAX normalisation using the following parameters: MIN: 0, MAX: 14
Unit of measure	Non dimensional number ranging from 0 to 14

Component	Social cohesion/ Trust in society
Indicator	BTI - Democracy status
Description	The Bertelsmann Stiftung's Transformation Index (BTI) analyzes and evaluates the quality of democracy, a market economy and political management in 129 developing and transition countries. It measures successes and setbacks on the path toward a democracy based on the rule of law and a socially responsible market economy. It also entails an evaluation of the rule of law including the separation of powers and the prosecution of office abuse.
Source	Bertelsmann Stiftung's Transformation Index (BTI): https://www.bti-project.org/en/index/
Data processing	MIN-MAX normalisation using the following parameters: MIN: 0, MAX: 10
Unit of measure	Non dimensional number ranging from 0 to 10

Component	Social cohesion/ Ethnic fractionalization
Indicator	Ethnic fractionalization
Description	Ethnic fractionalization Index is calculated using a simple Herfindahl concentration index from Ethnic Power Relations (EPR) Dataset.
Source	ETH Zurich GREG
Data processing	MIN-MAX normalisation using the following parameters: MIN: 0, MAX: 1
Unit of measure	Non dimensional number ranging from 0 to 1

Component	Social cohesion/ Ethnic fractionalization
Indicator	Size of excluded ethnic groups
Description	The Minorities at Risk (MAR) project monitors and analyzes the status and conflicts of politically active communal groups in all countries. The focus of the MAR project has been "minorities at risk.
Source	The Minorities at Risk (MAR) project, Center for International Development and Conflict Management (CIDCM): http://www.mar.umd.edu/mar_data.asp
Data processing	MIN-MAX normalisation using the following parameters: MIN: 0, MAX: 0.6
Unit of measure	Non dimensional number ranging from 0 to 1

Component	Social cohesion/ Inequality
Indicator	Gender inequality
Description	The Gender Inequality Index (GII) reflects gender-based disadvantages in three dimensions—reproductive health, empowerment and the labour market. The value of GII range between 0 to 1, with 0 being 0% inequality, indicating women fare equally in comparison to men and 1 being 100% inequality, indicating women fare poorly in comparison to men.
Source	UNDP: http://hdr.undp.org/en/content/gender-inequality-index-gii
Data processing	MIN-MAX normalisation using the following parameters: MIN: 0.1, MAX: 0.8
Unit of measure	Non dimensional number ranging from 0 to 1

Component	Social cohesion/ Inequality
Indicator	Income Gini coefficient
Description	The Gini index measures the extent to which the distribution of income or consumption expenditure among individuals or households within an economy deviates from a perfectly equal distribution. A Gini index of 0 represents perfect equality, while an index of 100 implies perfect inequality.
Source	World Bank: https://data.worldbank.org/indicator/SI.POV.GINI
Data processing	MIN-MAX normalisation using the following parameters: MIN: 20, MAX: 60
Unit of measure	Non dimensional number ranging from 0 to 100

Component	Safety and security
Indicator	Conflict intensity
Description	The HIIK's annual publication Conflict Barometer describes the recent trends in global conflict developments, escalations, de-escalations, and settlements.
Source	Conflict Barometer: https://www.hiik.de/en/konfliktbarometer/
Data processing	MIN-MAX normalisation using the following parameters: MIN: 0, MAX: 5
Unit of measure	Non dimensional number ranging from 0 to 5

Component	Safety and security
Indicator	People killed in all crises
Description	Total people killed by conflict in the country hosts the crisis
Source	A primary source for this indicator is the ACLED dataset (https://www.acleddata.com/data) If the ACLED dataset is not available, the following sources are utilized: • IOM Missing Migrants Project: https://missingmigrants.iom.int • Deep South Watch: https://deepsouthwatch.org • Flash situation reports published by UNOCHA • National statistics
Data processing	MIN-MAX normalisation using the following parameters: MIN: 0, MAX: 5
Unit of measure	Non dimensional number ranging from 1 to 5

Component	Rule of Law
Indicator	Corruption perception index
Description	The CPI scores and ranks countries/territories based on how corrupt a country's public sector is perceived to be. It is a composite index, a combination of surveys and assessments of corruption
Source	Transparency International: http://www.transparency.org/research/cpi/
Data processing	MIN-MAX normalisation using the following parameters: MIN: 0, MAX: 65
Unit of measure	Non dimensional number ranging from 0 to 100

Component	Rule of Law
Indicator	Rule of law (WGI)
Description	Rule of law captures perceptions of the extent to which agents have confidence in and abide by the rules of society, and in particular the quality of contract enforcement, property rights, the police, and the courts, as well as the likelihood of crime and violence.
Source	Worldwide Governance Indicators World Bank: http://info.worldbank.org/governance/wgi/index.aspx
Data processing	MIN-MAX normalisation using the following parameters: MIN: -2.5, MAX: 1
Unit of measure	Non dimensional number ranging from -2.5 to 2.5

Component	Rule of Law
Indicator	Rule of law (BTI)
Description	The Bertelsmann Stiftung's Transformation Index (BTI) analyzes and evaluates the quality of democracy, a market economy and political management in 129 developing and transition countries. It measures successes and setbacks on the path toward a democracy based on the rule of law and a socially responsible market economy. It also entails an evaluation of the rule of law including the separation of powers and the prosecution of office abuse. BTI focuses on transformation towards democracy under the rule of law and a market economy anchored in principles of social justice in its analysis, it excludes countries that might be considered long-consolidated democratic systems and in which economic development can be regarded as well-advanced
Source	Bertelsmann Stiftung's Transformation Index (BTI): https://www.bti-project.org/en/index/
Data processing	MIN-MAX normalisation using the following parameters: MIN: 0, MAX: 10
Unit of measure	Non dimensional number ranging from 0 to 10

Component	Rule of Law
Indicator	Freedom in the World
Description	Freedom in the World is Freedom House's annual flagship report, assessing the condition of political rights and civil liberties around the world. It is composed of numerical ratings and supporting descriptive texts for 195 countries.
Source	Freedom house: www.freedomhouse.org
Data processing	MIN-MAX normalisation using the following parameters: MIN: 0, MAX: 100
Unit of measure	Non dimensional number ranging from 0 to 100

Component	Diversity of groups affected
Indicator	Humanitarian profile: # of different types of affected population groups
Description	Number of different types of affected population groups, based on categories of the IASC Humanitarian profile COD 2012. The final value represents a count of types of affected group.
Source	Various sources, including: UNOCHA HNO, FEWSNET for crisis involving food security sector, UNHCR for crises involving refugee response.
Data processing	Non dimensional number ranging from 1 to 5.
Unit of measure	Non dimensional number ranging from 1 to 5.

Component	Humanitarian access
Indicator	Impediments to entry into the country (bureaucratic and administrative)
Description	This indicator refers to the general access of international actors into the country. It refers to registration, accreditation and visa policies, provision of taxes or fees on activities or goods; policies related to import and logistics; visa or accreditation delays or denial; discretional registration or visas by authorities, and presence of humanitarian organisations and workers in the country being allowed to operate.
Source	ACAPS Humanitarian Access Report: https://www.acaps.org
Data processing	Non dimensional number ranging 0 to 3
Unit of measure	Non dimensional number ranging 0 to 3

Component	Humanitarian access
Indicator	Restriction of movement (impediments to freedom of movement and/or administrative restrictions)
Description	This indicator refers to the in-country mobility of humanitarian workers in order to reach the affected population and transport relief items. It includes presence of taxes and fines on passage of goods and people, quotas and limits on relief items in specific areas, assistance seized, agencies on hold despite being ready to intervene, checkpoints, or closure of border crossings.
Source	ACAPS Humanitarian Access Report: https://www.acaps.org
Data processing	Non dimensional number ranging 0 to 3
Unit of measure	Non dimensional number ranging 0 to 3

Component	Humanitarian access
Indicator	Interference into implementation of humanitarian activities
Description	This indicator refers to factors such as conditions imposed on the type of aid, or the modality of aid delivery. It includes operational restrictions imposed by government as well as confiscation or diversion of aid.
Source	ACAPS Humanitarian Access Report: https://www.acaps.org
Data processing	Non dimensional number ranging 0 to 3
Unit of measure	Non dimensional number ranging 0 to 3

Component	Humanitarian access
Indicator	Violence against personnel, facilities and assets
Description	This indicator considers security incidents involving humanitarian organisations. Incidents include attacks, abduction, execution, kidnapping of workers, and looting of humanitarian warehouses or humanitarian assets.
Source	ACAPS Humanitarian Access Report: https://www.acaps.org
Data processing	Non dimensional number ranging 0 to 3
Unit of measure	Non dimensional number ranging 0 to 3

Component	Humanitarian access
Indicator	Denial of existence of humanitarian needs or entitlements to assistance
Description	This indicator considers statements that demonstrate a recognition or denial of needs of a population or the rights of minorities, and any discrepancy between the reported humanitarian needs and official statements.
Source	ACAPS Humanitarian Access Report: https://www.acaps.org
Data processing	Non dimensional number ranging 0 to 3
Unit of measure	Non dimensional number ranging 0 to 3

Component	Humanitarian access
Indicator	Indicator Restriction and obstruction of access to services and assistance
Description	This indicator refers to the affected population's perspective. It assesses whether people are prevented from reaching aid or services – through various restrictions, such as prevention of the crossing of borders to seek refuge, administrative barriers, or requirements to have specific documents. Sieges, roadblocks, curfews, and harassment are being considered.
Source	ACAPS Humanitarian Access Report: https://www.acaps.org
Data processing	Non dimensional number ranging 0 to 3
Unit of measure	Non dimensional number ranging 0 to 3

Component	Humanitarian access
Indicator	Ongoing insecurity/hostilities affecting humanitarian assistance
Description	This indicator considers the presence of ongoing hostilities or violence that affects humanitarian operations, leading to decisions to divert or suspend aid, or to evacuate or modify operations.
Source	ACAPS Humanitarian Access Report: https://www.acaps.org
Data processing	Non dimensional number ranging 0 to 3
Unit of measure	Non dimensional number ranging 0 to 3

Component	Humanitarian access
Indicator	Presence of mines and improvised explosive devices
Description	This indicator looks into how the presence of landmines or Unexploded Ordnance (UXOs) might hinder humanitarian access.
Source	ACAPS Humanitarian Access Report: https://www.acaps.org
Data processing	Non dimensional number ranging 0 to 3
Unit of measure	Non dimensional number ranging 0 to 3

Component	Humanitarian access
Indicator	Physical constraints in the environment (obstacles related to terrain, climate, lack of infrastructure, etc.)
Description	This indicator looks into seasonal events or weather conditions as well as pre-existing infrastructure. Status of roads, bridges, and airfields are also considered, along with communications and logistical constraints such as lack of fuel or assets hampering physical accessibility to people in need.
Source	ACAPS Humanitarian Access Report: https://www.acaps.org
Data processing	Non dimensional number ranging 0 to 3
Unit of measure	Non dimensional number ranging 0 to 3

Annex 2. Normalisation limits analysis

This annex provides the detailed descriptive statistics, data scope, and results that informed the revision of the normalization limits for the INFORM Severity Index core indicators, as referenced in Section 8.1.

Data scope and statistical methodology

Data scope: For this analysis, data from all INFORM Severity core indicators collected between February 2019 and October 2024 were examined. After excluding units with erroneous values, the full dataset comprised 6,236 observations.

Update procedure: The update procedure was designed to adjust the limits based on the actual observed data distribution while excluding statistical outliers. It employed the following rigorous techniques:

- **Interquartile range (IQR) Rule:** The proposed limits were primarily derived to fall within the range (Q1 - 1.5 IQR, Q3 + 1.5 IQR), which establishes boundaries based on the bulk of the data.
- **Skewness and kurtosis:** Indicators were considered for specific outlier treatment if their absolute **skewness was greater than 2.0** and their **kurtosis was greater than 3.5**, or if the kurtosis was very high (> 10). This ensured that the new limits mitigated extreme statistical distortion.

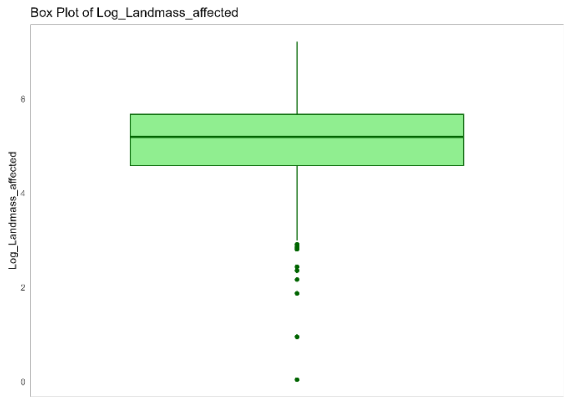
Descriptive statistics of all core indicators and adjustments of min – max limits

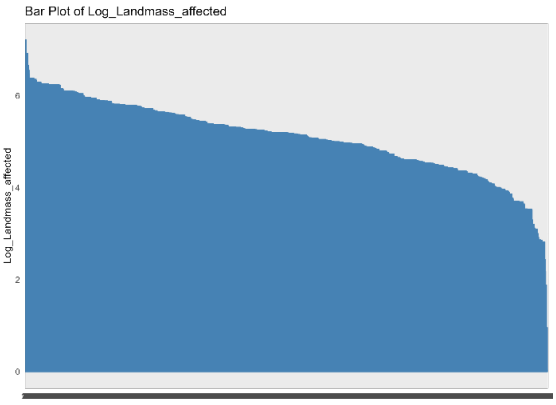
The normalization limits were adjusted for several indicators across all three dimensions. The statistics and graphs for each indicator are presented on the following pages, alongside the original minimum and maximum limits and the newly proposed limits. Additional explanations are provided where necessary.

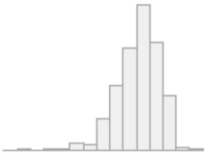
1. Affected area – absolute (log)

Landmass affected (log)

Mean	5.1	IQR	1.1
Std.Dev	0.8	Q1-1.5IQR	3.0
Min	0.0	Q3+1.5IQR	7.3
Q1	4.6	CV	0.2
Median	5.2	Skewness	-0.9
Q3	5.7	Kurtosis	2.0
Max	7.2	N.Valid	6236
MAD	0.8	Pct.Valid	100





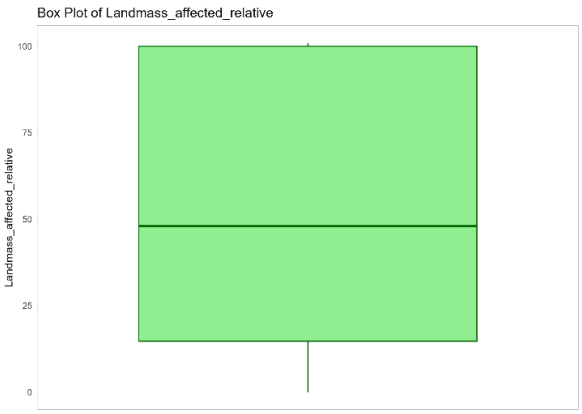
Variable	Stats / Values	Freqs (% of Valid)	Graph	Valid	Missing
Log_Landmass_affected [numeric]	Mean (sd) : 5.1 (0.8) min ≤ med ≤ max: 0 ≤ 5.2 ≤ 7.2 IQR (CV) : 1.1 (0.2)	447 distinct values		6236 (100.0%)	0 (0.0%)

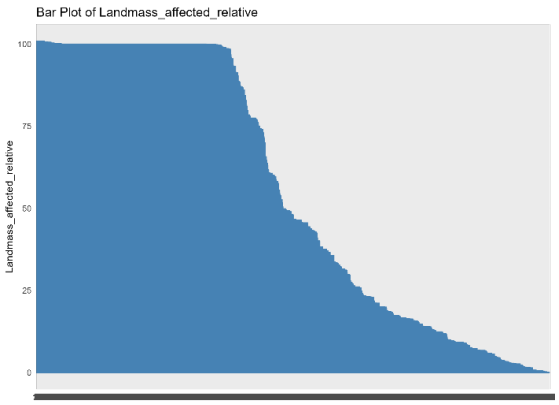
	min	max
old	10^3	10^6
new	10^4	10^7

2. Affected area (% of total area)

Landmass affected (% total area)

Mean	55.1	IQR	85.3
Std.Dev	40.3	Q1-1.5IQR	-113.2
Min	0.0	Q3+1.5IQR	227.9
Q1	14.7	CV	0.7
Median	48.0	Skewness	0.0
Q3	100.0	Kurtosis	-1.7
Max	101.0	N.Valid	6236
MAD	62.8	Pct.Valid	100





Variable	Stats / Values	Freqs (% of Valid)	Graph	Valid	Missing
Landmass_affected_relative [numeric]	Mean (sd) : 55.1 (40.3) min ≤ med ≤ max: 0 ≤ 48 ≤ 101 IQR (CV) : 85.3 (0.7)	424 distinct values		6236 (100.0%)	0 (0.0%)

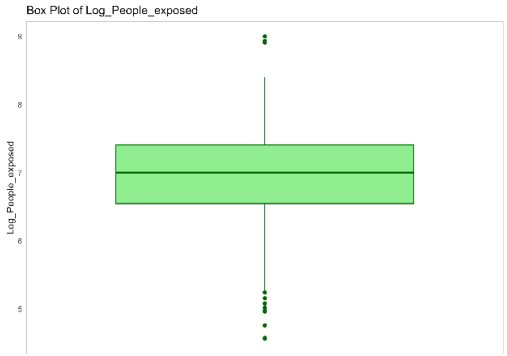
	min	max
old	2%	100%
new	2%	100%

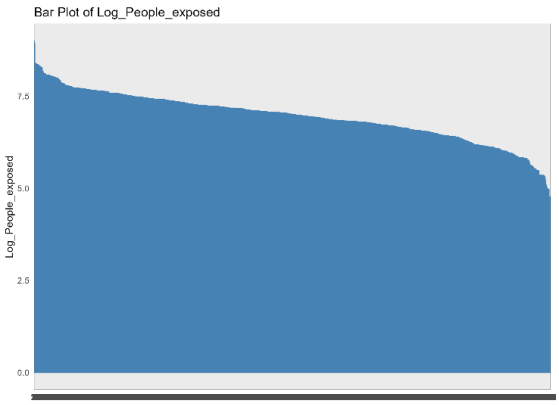
We considered setting the limits to 0–100 but decided to retain the existing range, as there may have been a reason to avoid 0s in the workflow.

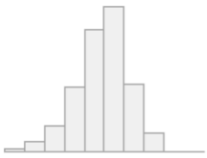
3. People exposed (absolute) (log)

People exposed (log)

Mean	6.9	IQR	0.9
Std.Dev	0.7	Q1-1.5IQR	5.3
Min	4.6	Q3+1.5IQR	8.7
Q1	6.6	CV	0.1
Median	7.0	Skewness	-0.5
Q3	7.4	Kurtosis	0.3
Max	9.0	N.Valid	6236
MAD	0.6	Pct.Valid	100



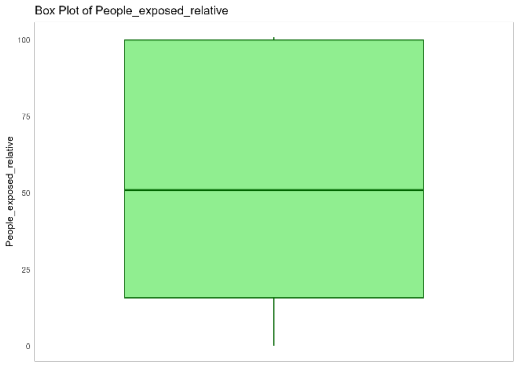


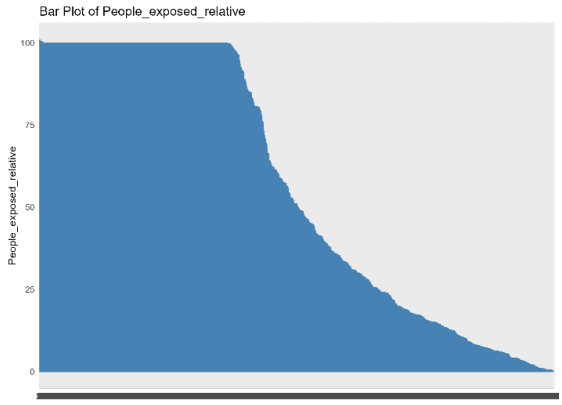
Variable	Stats / Values	Freqs (% of Valid)	Graph	Valid	Missing
Log_People_exposed [numeric]	Mean (sd) : 6.9 (0.7) min ≤ med ≤ max: 4.6 ≤ 7 ≤ 9 IQR (CV) : 0.9 (0.1)	1262 distinct values		6236 (100.0%)	0 (0.0%)

	min	max
old	10^6	$10^{7.5}$
new	10^6	10^8

4. People exposed (relative to the total population of the country)

People exposed (% total population)			
Mean	56.0	IQR	84.2
Std.Dev	39.7	Q1-1.5IQR	-110.5
Min	0.1	Q3+1.5IQR	226.3
Q1	15.8	CV	0.7
Median	51.0	Skewness	0.0
Q3	100.0	Kurtosis	-1.7
Max	100.9	N.Valid	6236
MAD	66.4	Pct.Valid	100





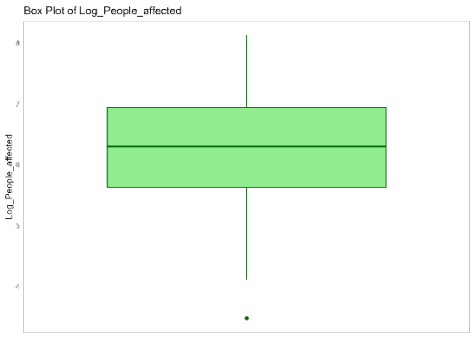
Variable	Stats / Values	Freqs (% of Valid)	Graph	Valid	Missing
People_exposed_relative [numeric]	Mean (sd) : 56 (39.7) min ≤ med ≤ max: 0.1 ≤ 51 ≤ 100.9 IQR (CV) : 84.2 (0.7)	1346 distinct values		6236 (100.0%)	0 (0.0%)

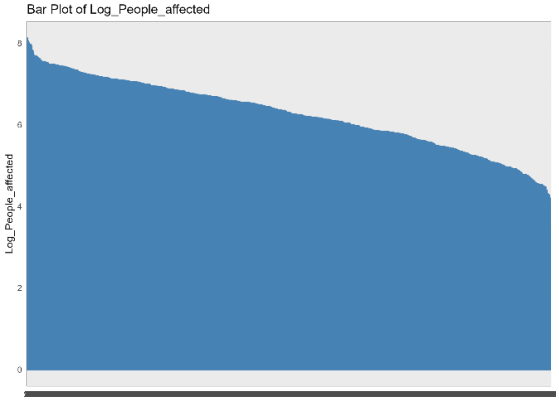
	min	max
Old	1%	100%
new	1%	100%

We considered setting the limits to 0–100 but decided to retain the existing range, as there may have been a reason to avoid 0s in the workflow.

5. People affected (absolute) (log)

People affected (log)			
Mean	6.3	IQR	1.3
Std.Dev	0.8	Q1-1.5IQR	3.6
Min	3.5	Q3+1.5IQR	8.9
Q1	5.6	CV	0.1
Median	6.3	Skewness	-0.3
Q3	6.9	Kurtosis	-0.7
Max	8.1	N.Valid	6236
MAD	1.0	Pct.Valid	100



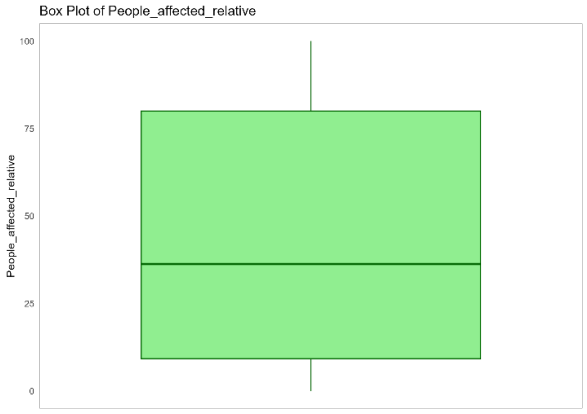


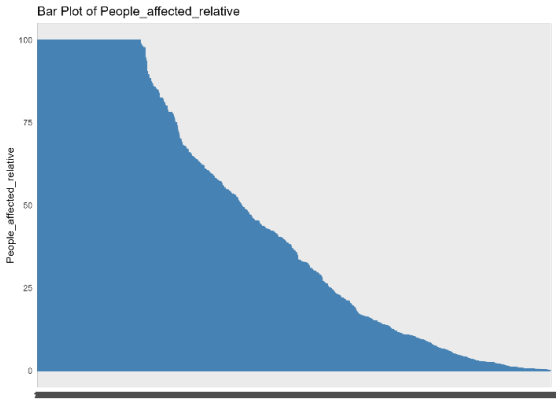
Variable	Stats / Values	Freqs (% of Valid)	Graph	Valid	Missing
Log_People_affected [numeric]	Mean (sd) : 6.3 (0.8) min ≤ med ≤ max: 3.5 ≤ 6.3 ≤ 8.1 IQR (CV) : 1.3 (0.1)	1247 distinct values		6236 (100.0%)	0 (0.0%)

	min	max
Old	$10^{4.5}$	$10^{7.5}$
new	$10^{4.5}$	$10^{7.5}$

6. People affected (relative to the people in the affected area)

People affected (% exposed)			
Mean	43.8	IQR	70.8
Std.Dev	37.0	Q1-1.5IQR	-96.9
Min	0.0	Q3+1.5IQR	186.3
Q1	9.3	CV	0.8
Median	36.3	Skewness	0.4
Q3	80.1	Kurtosis	-1.4
Max	100.0	N.Valid	6236
MAD	44.5	Pct.Valid	100





Variable	Stats / Values	Freqs (% of Valid)	Graph	Valid	Missing
People_affected_relative [numeric]	Mean (sd) : 43.8 (37) min ≤ med ≤ max: 0 ≤ 36.3 ≤ 100 IQR (CV) : 70.8 (0.8)	1532 distinct values		6236 (100.0%)	0 (0.0%)

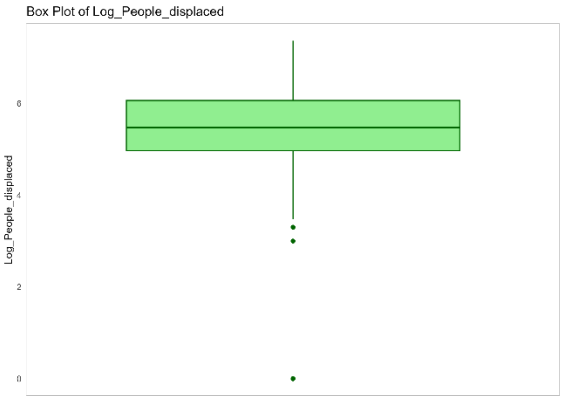
	min	max
Old	1%	100%
new	1%	100%

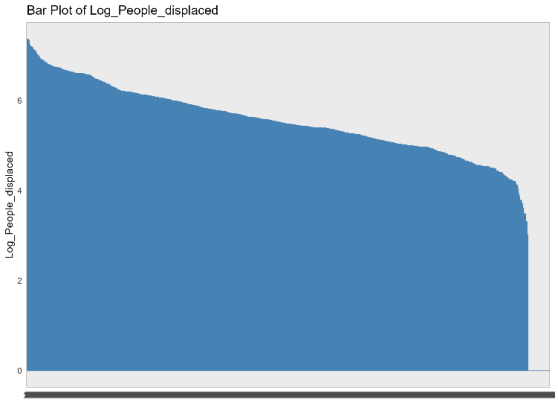
We considered setting the limits to 0–100 but decided to retain the existing range, as there may have been a reason to avoid 0s in the workflow.

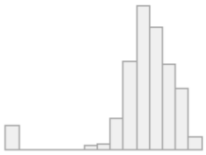
7. Displaced (absolute) (log)

People displaced (log)

Mean	5.3	IQR	1.1
Std.Dev	1.3	Q1-1.5IQR	3.3
Min	0.0	Q3+1.5IQR	7.7
Q1	5.0	CV	0.3
Median	5.5	Skewness	-2.5
Q3	6.1	Kurtosis	7.8
Max	7.4	N.Valid	6236
MAD	0.8	Pct.Valid	100





Variable	Stats / Values	Freqs (% of Valid)	Graph	Valid	Missing
Log_People_displaced [numeric]	Mean (sd) : 5.3 (1.3) min ≤ med ≤ max: 0 ≤ 5.5 ≤ 7.4 IQR (CV) : 1.1 (0.3)	1326 distinct values		6236 (100.0%)	0 (0.0%)

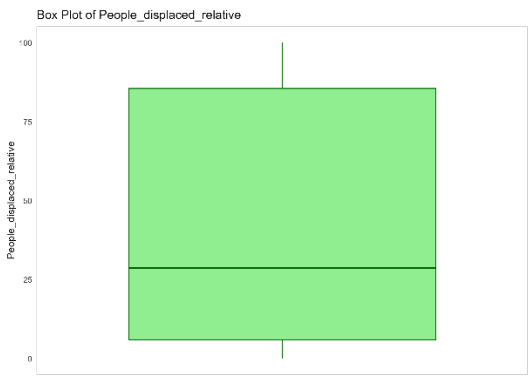
	min	max
Old	10^{3}	$10^{6.5}$
new	$10^{3.5}$	$10^{7.5}$

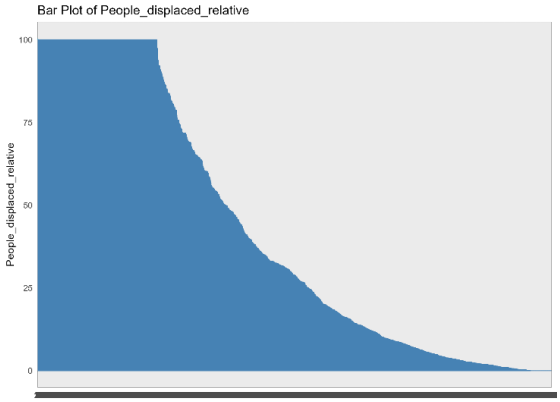
Displaced people are expected to increase significantly. We are adjusting the limit with future years in mind.

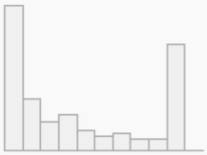
8. Displaced (relative to affected people)

People displaced (% exposed)

Mean	41.7	IQR	79.6
Std.Dev	38.8	Q1-1.5IQR	-113.4
Min	0.0	Q3+1.5IQR	205.0
Q1	6.0	CV	0.9
Median	28.7	Skewness	0.5
Q3	85.6	Kurtosis	-1.4
Max	100.3	N.Valid	6236
MAD	39.0	Pct.Valid	100





Variable	Stats / Values	Freqs (% of Valid)	Graph	Valid	Missing
People_displaced_relative [numeric]	Mean (sd) : 41.7 (38.8) min ≤ med ≤ max: 0 ≤ 28.7 ≤ 100.3 IQR (CV) : 79.6 (0.9)	1877 distinct values		6236 (100.0%)	0 (0.0%)

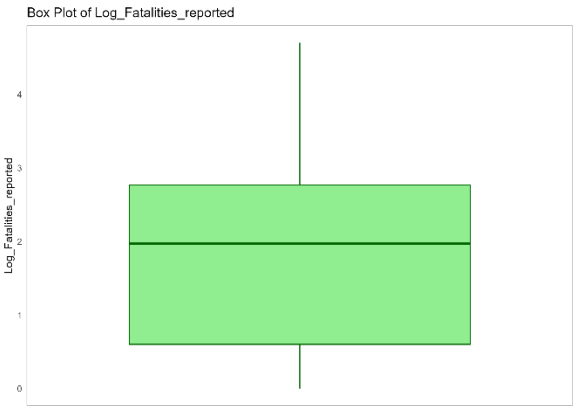
	min	max
old	0%	15%
new	0%	50%

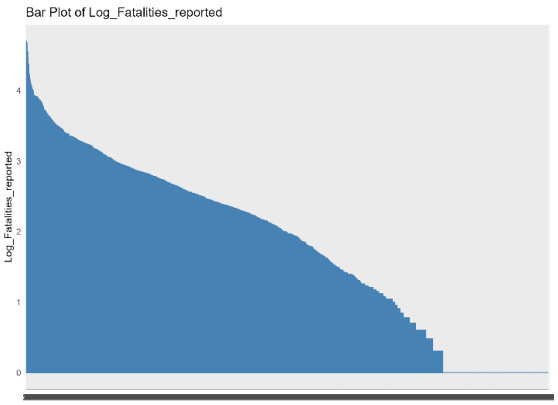
The previous limit of 15% appears to be extremely low. We decided to increase it to 50%, as even the interquartile range (IQR) reaches 80%. For example, we examined the results from October 2024: with the 15% maximum limit, nearly 60% of crises received a score of 5. By applying the 50% maximum limit, the proportion of crises with a score of 5 decreases to 37%, which appears to be a more reasonable figure.

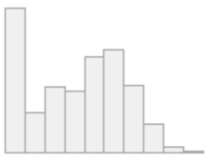
9. Fatalities (absolute) (log)

Fatalities (log)

Mean	1.8	IQR	2.2
Std.Dev	1.2	Q1-1.5IQR	-2.6
Min	0.0	Q3+1.5IQR	6.0
Q1	0.6	CV	0.7
Median	2.0	Skewness	-0.1
Q3	2.8	Kurtosis	-1.2
Max	4.7	N.Valid	6236
MAD	1.4	Pct.Valid	100



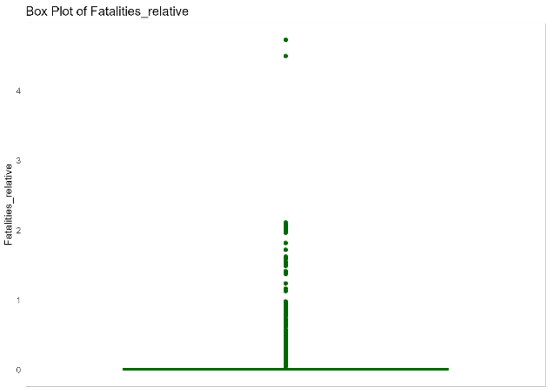


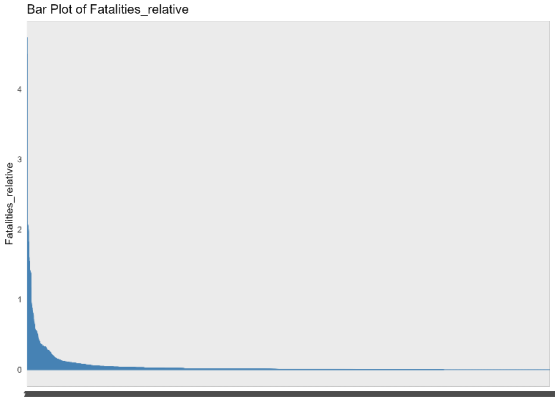
Variable	Stats / Values	Freqs (% of Valid)	Graph	Valid	Missing
Log_Fatalities_reported [numeric]	Mean (sd) : 1.8 (1.2) min ≤ med ≤ max: 0 ≤ 2 ≤ 4.7 IQR (CV) : 2.2 (0.7)	1267 distinct values		6236 (100.0%)	0 (0.0%)

	min	max
old	1	$10^{3.5}$
new	1	10^{4}

10. Fatalities (relative to affected people)

Fatalities (% affected people)			
Mean	0.05	IQR	0.02
Std.Dev	0.20	Q1-1.5IQR	-0.03
Min	0.00	Q3+1.5IQR	0.05
Q1	0.00	CV	4.2
Median	0.00	Skewness	11.0
Q3	0.02	Kurtosis	178.1
Max	4.73	N.Valid	6236
MAD	0.01	Pct.Valid	100





Variable	Stats / Values	Freqs (% of Valid)	Graph	Valid	Missing
Fatalities_relative [numeric]	Mean (sd) : 0 (0.2) min ≤ med ≤ max: 0 ≤ 0 ≤ 4.7 IQR (CV) : 0 (4.2)	2816 distinct values		6236 (100.0%)	0 (0.0%)

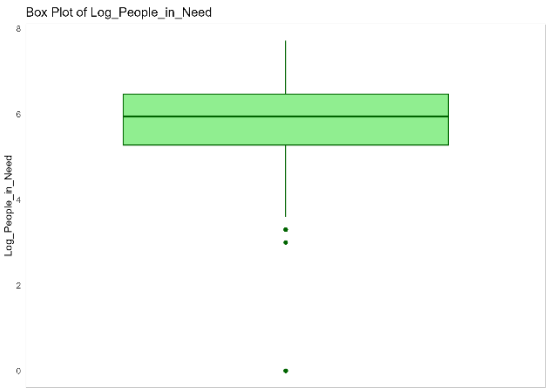
	min	max
old	0%	0.01%
new	0%	0.05%

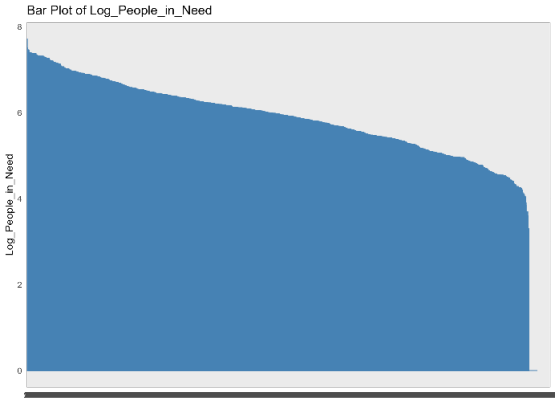
This distribution is highly skewed. We considered applying a logarithmic transformation, but after several trials and combinations, we decided to simply adjust the normalisation thresholds. With the new limits, the resulting distribution is no longer skewed and exhibits improved variability compared to the previous version.

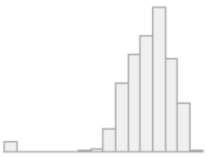
11. People in Need (PIN)

People in Need (log)

Mean	5.8	IQR	1.2
Std.Dev	1.1	Q1-1.5IQR	3.5
Min	0.0	Q3+1.5IQR	8.3
Q1	5.3	CV	0.2
Median	5.9	Skewness	-2.4
Q3	6.5	Kurtosis	10.4
Max	7.7	N.Valid	6088
MAD	0.9	Pct.Valid	97.6267





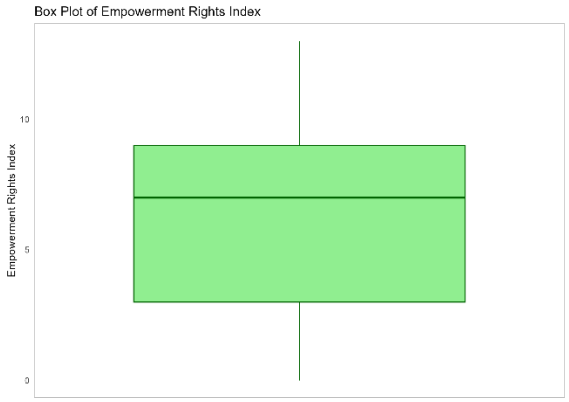
Variable	Stats / Values	Freqs (% of Valid)	Graph	Valid	Missing
Log_People_in_Need [numeric]	Mean (sd) : 5.8 (1.1) min ≤ med ≤ max: 0 ≤ 5.9 ≤ 7.7 IQR (CV) : 1.2 (0.2)	1066 distinct values		6088 (97.6%)	148 (2.4%)

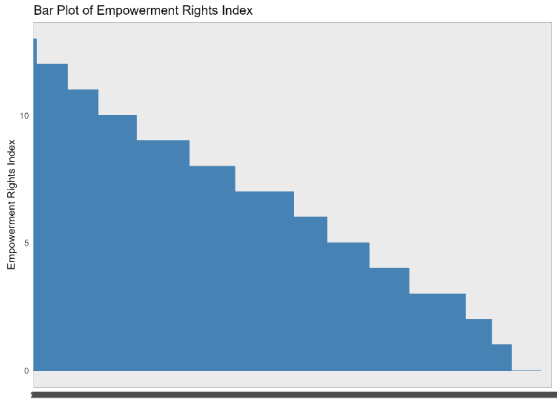
	min	max
old	10^4	10^7
new	$10^{3.5}$	$10^{7.5}$

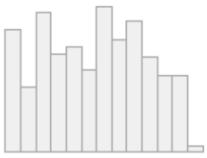
12. Empowerment

Empowerment Rights Index

Mean	6.3	IQR	6.0
Std.Dev	3.4	Q1-1.5IQR	-6.0
Min	0.0	Q3+1.5IQR	18.0
Q1	3.0	CV	0.5
Median	7.0	Skewness	-0.1
Q3	9.0	Kurtosis	-1.0
Max	13.0	N.Valid	6106
MAD	4.4	Pct.Valid	98





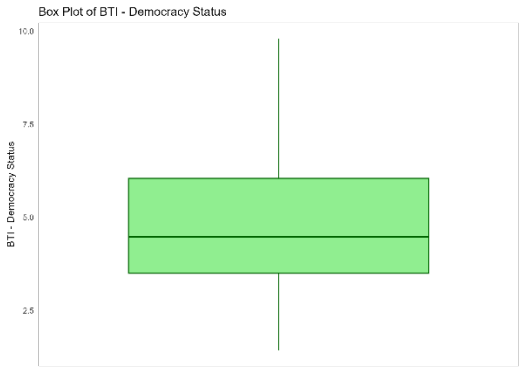
Variable	Stats / Values	Freqs (% of Valid)	Graph	Valid	Missing
Empowerment Rights Index [numeric]	Mean (sd) : 6.3 (3.4) min ≤ med ≤ max: 0 ≤ 7 ≤ 13 IQR (CV) : 6 (0.5)	14 distinct values		6106 (97.9%)	130 (2.1%)

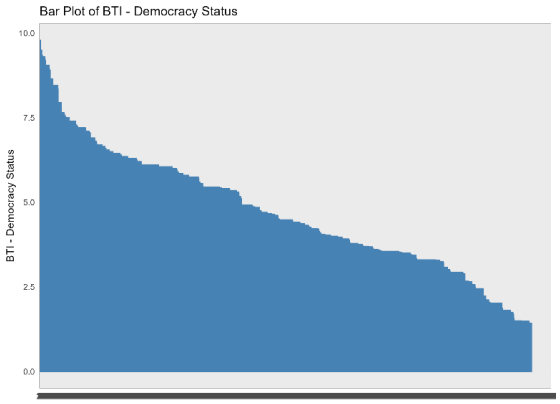
	min	max
old	0	14
new	0	14

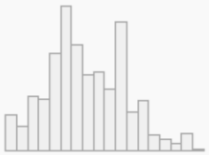
13. BTI – Democracy status

BTI - Democracy Status

Mean	4.7	IQR	2.6
Std.Dev	1.8	Q1-1.5IQR	-0.3
Min	1.4	Q3+1.5IQR	9.9
Q1	3.5	CV	0.4
Median	4.5	Skewness	0.3
Q3	6.1	Kurtosis	-0.4
Max	9.8	N.Valid	6002
MAD	1.9	Pct.Valid	96





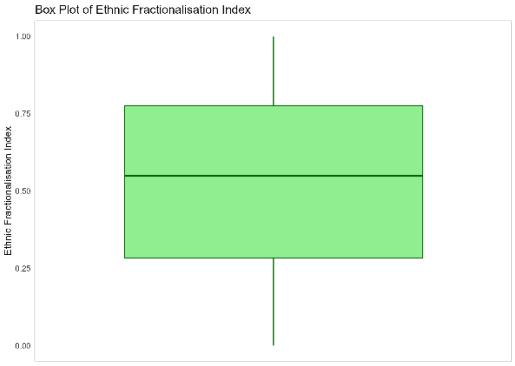
Variable	Stats / Values	Freqs (% of Valid)	Graph	Valid	Missing
BTI - Democracy Status [numeric]	Mean (sd) : 4.7 (1.8) min ≤ med ≤ max: 1.4 ≤ 4.5 ≤ 9.8 IQR (CV) : 2.5 (0.4)	157 distinct values		6002 (96.2%)	234 (3.8%)

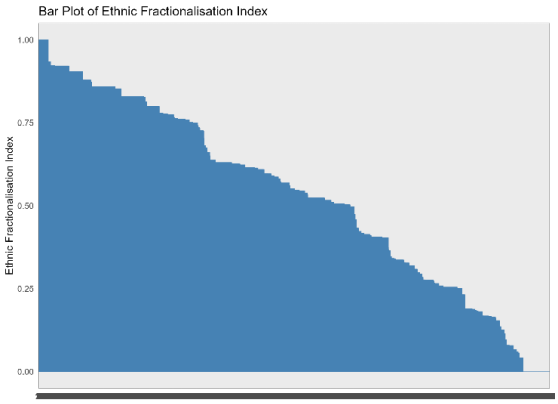
	min	max
old	0	10
new	0	9.5

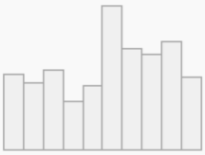
14. Ethnic fractionalization

Ethnic Fractionalisation Index

Mean	0.5	IQR	0.5
Std.Dev	0.3	Q1-1.5IQR	-0.5
Min	0.0	Q3+1.5IQR	1.5
Q1	0.3	CV	0.5
Median	0.5	Skewness	-0.3
Q3	0.8	Kurtosis	-1.0
Max	1.0	N.Valid	6236
MAD	0.4	Pct.Valid	100





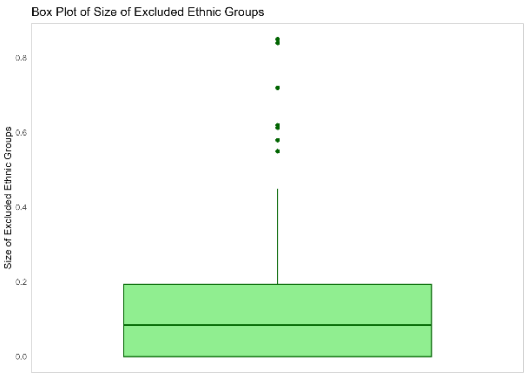
Variable	Stats / Values	Freqs (% of Valid)	Graph	Valid	Missing
Ethnic Fractionalisation Index [numeric]	Mean (sd) : 0.5 (0.3) min ≤ med ≤ max: 0 ≤ 0.5 ≤ 1 IQR (CV) : 0.5 (0.5)	141 distinct values		6236 (100.0%)	0 (0.0%)

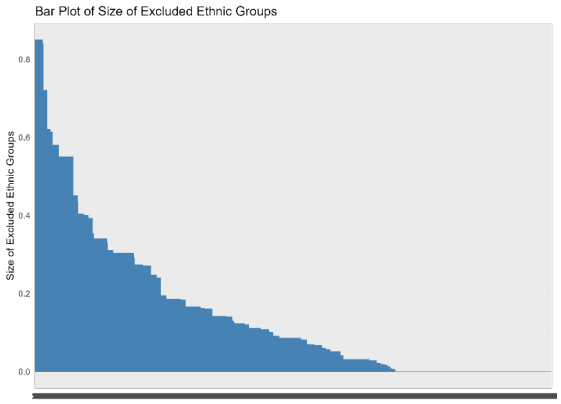
	min	max
old	0	1
new	0	1

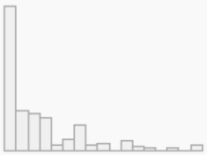
15. Size of excluded ethnic groups

Size of Excluded Ethnic Groups

Mean	0.1	IQR	0.2
Std.Dev	0.2	Q1-1.5IQR	-0.3
Min	0.0	Q3+1.5IQR	0.5
Q1	0.0	CV	1.3
Median	0.1	Skewness	1.7
Q3	0.2	Kurtosis	2.8
Max	0.9	N.Valid	6236
MAD	0.1	Pct.Valid	100





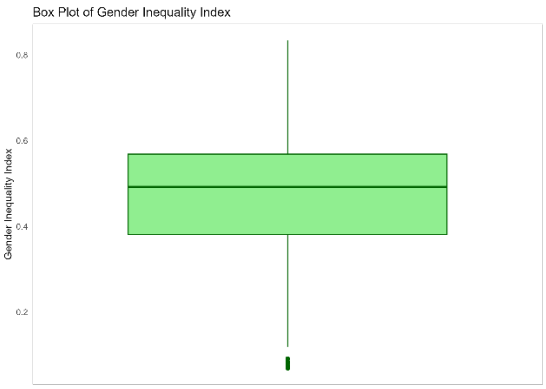
Variable	Stats / Values	Freqs (% of Valid)	Graph	Valid	Missing
Size of Excluded Ethnic Groups [numeric]	Mean (sd) : 0.1 (0.2) min ≤ med ≤ max: 0 ≤ 0.1 ≤ 0.8 IQR (CV) : 0.2 (1.3)	63 distinct values		6236 (100.0%)	0 (0.0%)

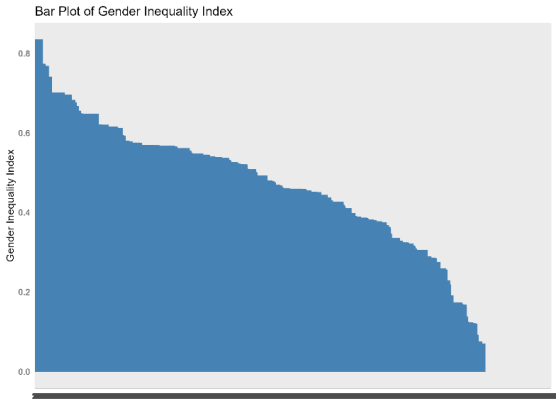
	min	max
old	0	0.5
new	0	0.6

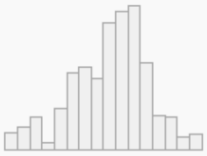
16. Gender inequality

Gender Inequality Index

Mean	0.5	IQR	0.2
Std.Dev	0.2	Q1-1.5IQR	0.1
Min	0.1	Q3+1.5IQR	0.9
Q1	0.4	CV	0.3
Median	0.5	Skewness	-0.4
Q3	0.6	Kurtosis	0.0
Max	0.8	N.Valid	5441
MAD	0.1	Pct.Valid	87.3





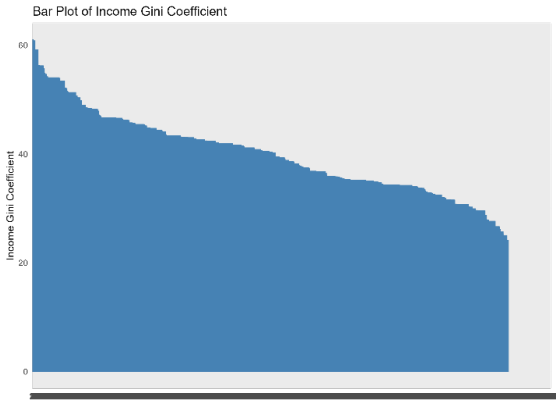
Variable	Stats / Values	Freqs (% of Valid)	Graph	Valid	Missing
Gender Inequality Index [numeric]	Mean (sd) : 0.5 (0.2) min ≤ med ≤ max: 0.1 ≤ 0.5 ≤ 0.8 IQR (CV) : 0.2 (0.3)	143 distinct values		5441 (87.3%)	795 (12.7%)

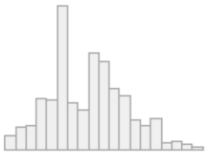
	min	max
old	0	0.8
new	0.1	0.8

17. GINI coefficient

Gini Income Coefficient

Mean	39.9	IQR	10.4
Std.Dev	7.3	Q1-1.5IQR	18.7
Min	24.1	Q3+1.5IQR	60.3
Q1	34.3	CV	0.2
Median	40.3	Skewness	0.3
Q3	44.7	Kurtosis	-0.3
Max	61.0	N.Valid	5726
MAD	7.9	Pct.Valid	92



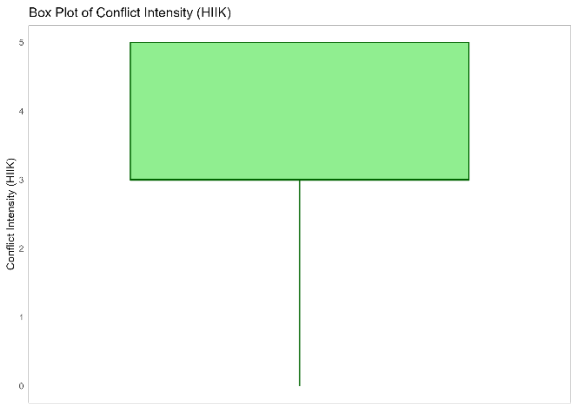
Variable	Stats / Values	Freqs (% of Valid)	Graph	Valid	Missing
Income Gini Coefficient [numeric]	Mean (sd) : 39.9 (7.3) min ≤ med ≤ max: 24.1 ≤ 40.3 ≤ 61 IQR (CV) : 10.4 (0.2)	187 distinct values		5726 (91.8%)	510 (8.2%)

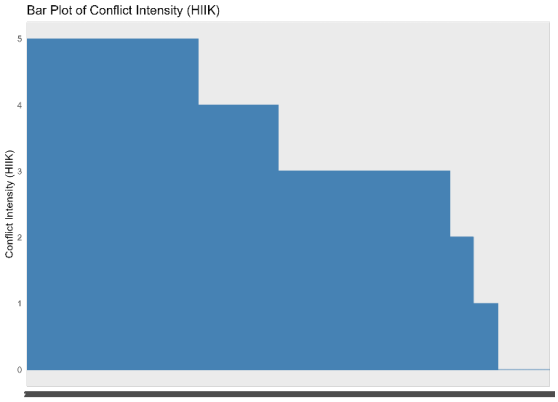
	min	max
old	25	65
new	20	60

18. Conflict intensity

Conflict Intensity (HIIK)

Mean	3.4	IQR	2.0
Std.Dev	1.6	Q1-1.5IQR	0.0
Min	0.0	Q3+1.5IQR	8.0
Q1	3.0	CV	0.5
Median	3.0	Skewness	-0.8
Q3	5.0	Kurtosis	-0.2
Max	5.0	N.Valid	6236
MAD	1.5	Pct.Valid	100





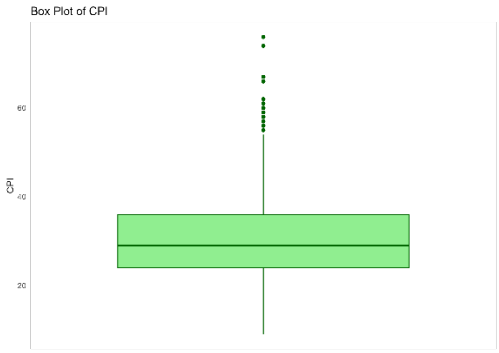
Variable	Stats / Values	Freqs (% of Valid)	Graph	Valid	Missing
Conflict Intensity (HIIK) [numeric]	Mean (sd) : 3.4 (1.6) min ≤ med ≤ max: 0 ≤ 3 ≤ 5 IQR (CV) : 2 (0.5)	0 : 620 (9.9%) 1 : 291 (4.7%) 2 : 281 (4.5%) 3 : 2050 (32.9%) 4 : 955 (15.3%) 5 : 2039 (32.7%)		6236 (100.0%)	0 (0.0%)

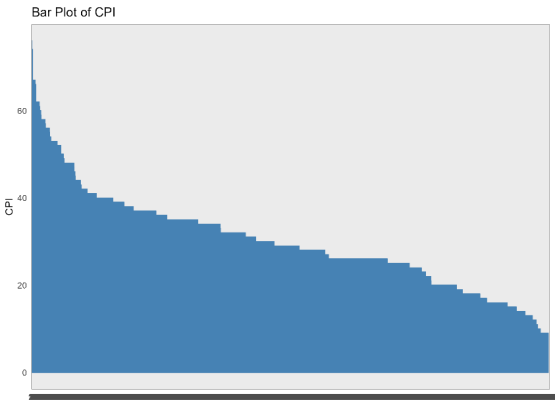
HIIK is based on scores and is already on a 0–5 scale, so no transformation is required.

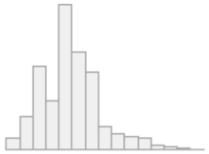
19. Corruption perception

CPI

Mean	30.0	IQR	12.0
Std.Dev	11.1	Q1-1.5IQR	6.0
Min	9.0	Q3+1.5IQR	54.0
Q1	24.0	CV	0.4
Median	29.0	Skewness	0.7
Q3	36.0	Kurtosis	0.9
Max	76.0	N.Valid	6217
MAD	8.9	Pct.Valid	100





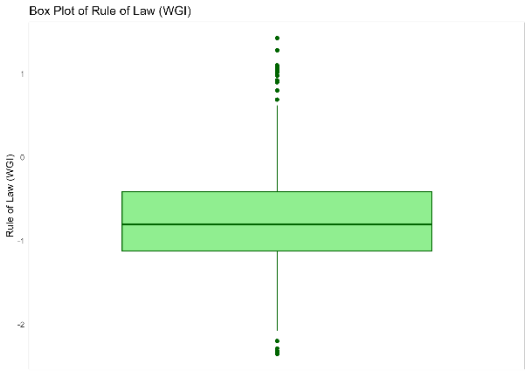
Variable	Stats / Values	Freqs (% of Valid)	Graph	Valid	Missing
CPI [numeric]	Mean (sd) : 30 (11.1) min ≤ med ≤ max: 9 ≤ 29 ≤ 76 IQR (CV) : 12 (0.4)	57 distinct values		6217 (99.7%)	19 (0.3%)

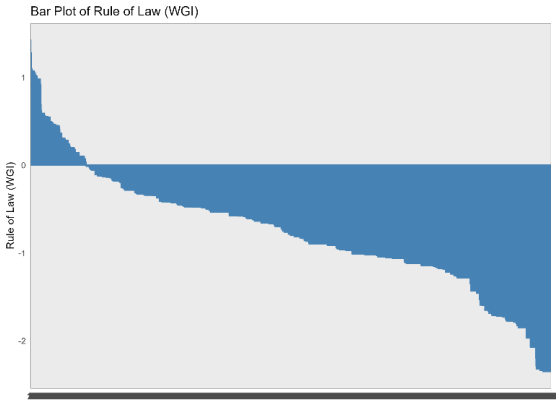
	min	max
old	0	100
new	0	65

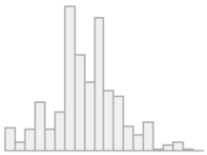
20. Rule of law (WGI)

Rule of Law (WGI)

Mean	-0.8	IQR	0.7
Std.Dev	0.7	Q1-1.5IQR	-2.2
Min	-2.4	Q3+1.5IQR	0.7
Q1	-1.1	CV	-0.9
Median	-0.8	Skewness	0.1
Q3	-0.4	Kurtosis	0.3
Max	1.4	N.Valid	6236
MAD	0.5	Pct.Valid	100





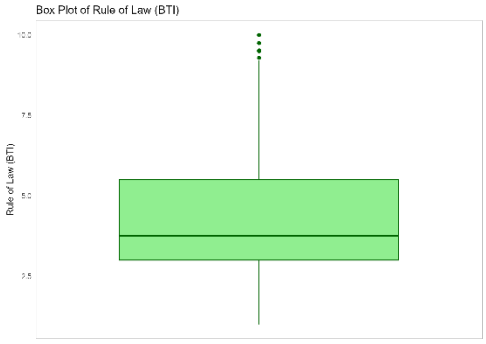
Variable	Stats / Values	Freqs (% of Valid)	Graph	Valid	Missing
Rule of Law (WGI) [numeric]	Mean (sd) : -0.8 (0.7) min ≤ med ≤ max: -2.4 ≤ -0.8 ≤ 1.4 IQR (CV) : 0.7 (-0.9)	236 distinct values		6236 (100.0%)	0 (0.0%)

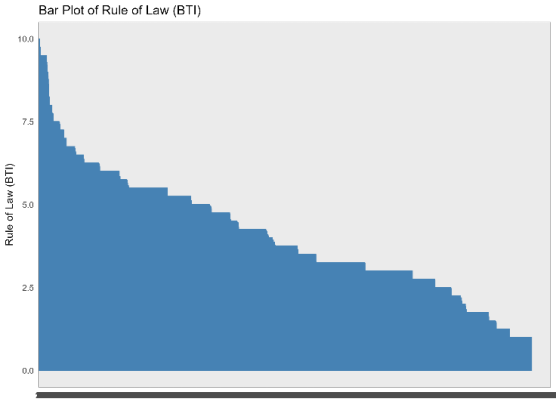
	min	max
old	-2.5	2.5
new	-2.5	1

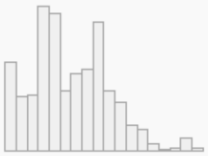
21. Rule of law (BTI)

Rule of Law (BTI)

Mean	4.1	IQR	2.5
Std.Dev	1.8	Q1-1.5IQR	-0.8
Min	1.0	Q3+1.5IQR	9.3
Q1	3.0	CV	0.4
Median	3.8	Skewness	0.5
Q3	5.5	Kurtosis	0.1
Max	10.0	N.Valid	6002
MAD	1.9	Pct.Valid	96



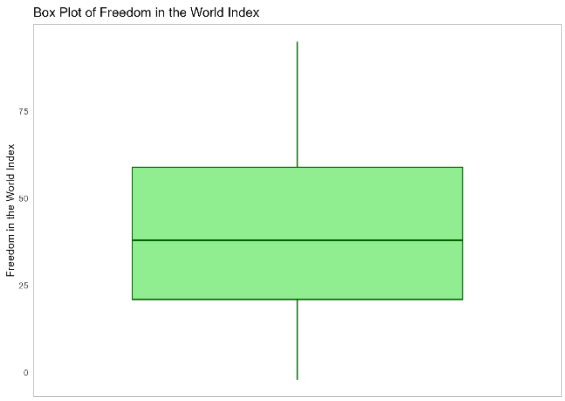


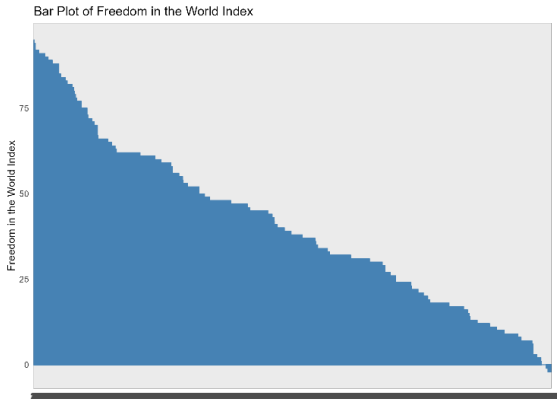
Variable	Stats / Values	Freqs (% of Valid)	Graph	Valid	Missing
Rule of Law (BTI) [numeric]	Mean (sd) : 4.1 (1.8) min ≤ med ≤ max: 1 ≤ 3.8 ≤ 10 IQR (CV) : 2.5 (0.4)	100 distinct values		6002 (96.2%)	234 (3.8%)

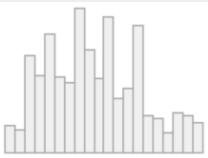
	min	max
old	0	10
new	0	10

22. Freedom in the world

Freedom in the World Index			
Mean	40.6	IQR	38.0
Std.Dev	23.6	Q1-1.5IQR	-36.0
Min	-2.0	Q3+1.5IQR	116.0
Q1	21.0	CV	0.6
Median	38.0	Skewness	0.3
Q3	59.0	Kurtosis	-0.7
Max	95.0	N.Valid	6236
MAD	29.7	Pct.Valid	100





Variable	Stats / Values	Freqs (% of Valid)	Graph	Valid	Missing
Freedom in the World Index [numeric]	Mean (sd) : 40.6 (23.6) min ≤ med ≤ max: -2 ≤ 38 ≤ 95 IQR (CV) : 38 (0.6)	88 distinct values		6236 (100.0%)	0 (0.0%)

	min	max
old	0	100
new	0	100

Recalculation results: impact on dimension scores and index classification

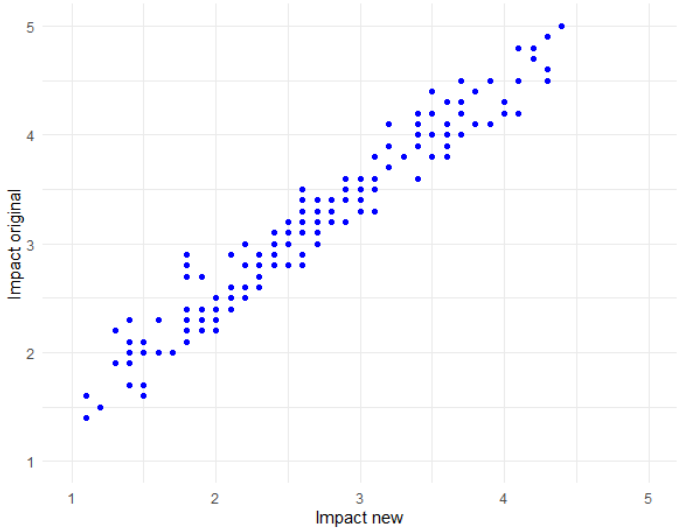
The Severity Index was recalculated using the updated normalization limits, and the differences between the original and revised versions were analysed. As the minimum and maximum normalisation values were adjusted for many core indicators, it is not surprising that changes occurred in the dimension scores, overall index scores, and, in many cases, the associated index classes.

Impact of the crisis dimension

Within the 'Impact of the Crisis' dimension, modifications were proposed for six of the ten indicators. In most cases, these adjustments led to slight decreases in scores:

- When rounding scores to assign a 'class,' as applied in the overall index, 48% of cases (76 out of 159) experienced a one-point reduction. Specifically, 30 cases shifted from class 3 to class 2, 27 cases from class 4 to class 3, and 19 cases from class 5 to class 4.
- These adjustments have resulted in more changes within the lower severity classes and greater variability than previously (**Figure 24**).

Figure 24: Comparison between original and updated Impact of the crisis dimension



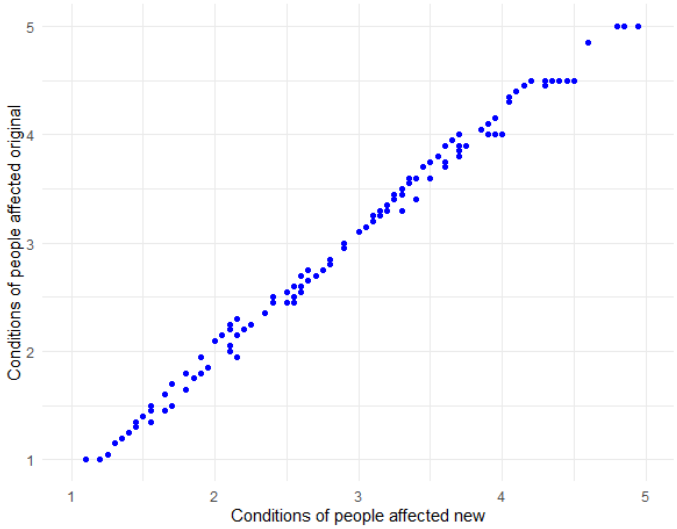
Source: authors

Conditions of people affected dimension

In the 'Conditions of People Affected' dimension, only the People in Need (PIN) indicator underwent a slight modification:

- This adjustment led to changes in 9% of cases (15 out of 159).
- Among these, 4% of cases experienced a one-class reduction, while 5% saw an increase of one class after rounding, as outlined above.

Figure 25: Comparison between original and updated Conditions of people affected dimension



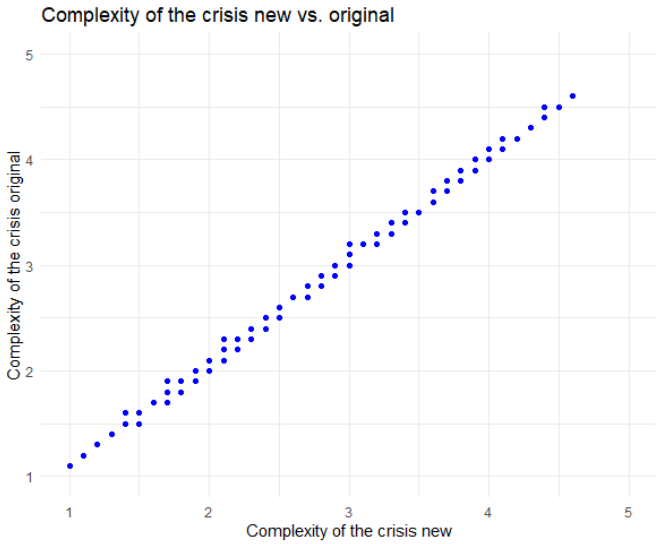
Source: authors

Complexity of the crisis dimension

In the "Complexity of the Crisis" dimension, six indicators were modified:

- These adjustments resulted in a one-class reduction in 7% of cases (11 out of 159) after rounding

Figure 26: Comparison between original and updated Complexity of the crisis dimension



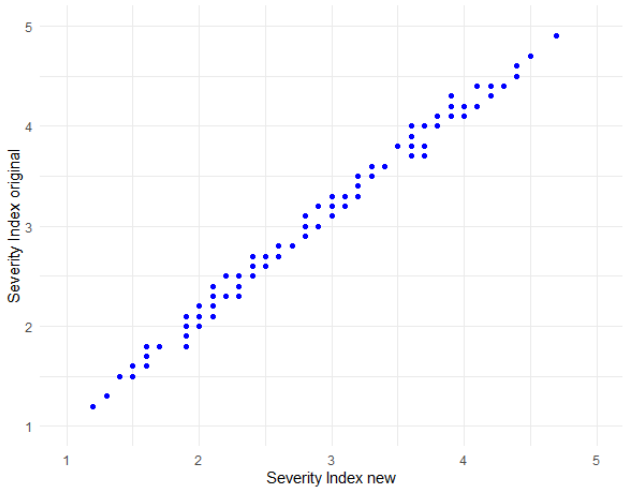
Source: authors

INFORM Severity index (Overall)

Overall, these changes had a focused, modest impact on the final INFORM Severity Index score, primarily affecting the upper-end saturation.

- At the index level, 18% of cases (28 out of 159) experienced a one-class reduction.

Figure 27: Comparison between original and updated INFORM Severity score



Source: authors

Annex 3. Continuous scoring for Concentration of conditions: Sudan and Colombia case analysis

The following examples:

1. Complex Crises in Sudan
2. Conflict and climatic shocks in Colombia

demonstrate how the proposed approach for continuous scoring described in Section 6.2.1 precisely captures the nuanced distribution of affected people, illustrating the enhanced discrimination.

Case study 1: Complex crises in Sudan (May 2025 release)

Since April 2023, Sudan has faced a catastrophic humanitarian crisis due to conflict between rival military forces, with 30 million people in need of assistance as of May 2025, including 16 million children. The country has the world's largest internal displacement crisis with over 11 million displaced, famine conditions confirmed in parts of Darfur, and collapsed basic services, with women and children disproportionately affected by widespread violence. Table below shows the number of people in each severity level [million] according to INFORM Severity database.

Country	# of people in none/minimal conditions - Level 1 - S_1	# of people in stressed conditions - level 2 - S_2	# of people in moderate conditions - level 3 - S_3	# of people severe conditions - level 4 - S_4	# of people extreme conditions - level 5 - S_5	Total number of people in all condition levels
Sudan	0.00	17.06	12.50	15.62	2.32	47.50

In order to calculate the concentration of conditions we follow these steps:

- First, we rearrange the classes in decreasing order $S_{(j)}$ where $n_{(1)} = n_5$ as shown below.

Country	# of people extreme conditions - level 5 – $S_{(1)}$	# of people severe conditions - level 4 – $S_{(2)}$	# of people in moderate conditions - level 3 – $S_{(3)}$	# of people in stressed conditions - level 2 – $S_{(4)}$	# of people in none/minimal conditions - Level 1 – $S_{(5)}$	Total number of people in all condition levels
Sudan	2.32	15.62	12.50	17.06	0.00	47.50

- Second, we calculate the relative frequency for each level as $\frac{n_{(j)}}{N} \times 100$.

Country	Relative frequency extreme conditions - level 5 – $S_{(1)}$ [%]	Relative frequency severe conditions - level 4 – $S_{(2)}$ [%]	Relative frequency moderate conditions - level 3 – $S_{(3)}$ [%]	Relative frequency stressed conditions - level 2 – $S_{(4)}$ [%]	Relative frequency none/minimal conditions - Level 1 – $S_{(5)}$ [%]	Relative frequency of people in all condition levels [%]
Sudan	4.89	32.88	26.31	35.91	0.00	100

- Third, we calculate the cumulative relative frequency as:

Country	Cumulative relative frequency extreme conditions - level 5 – $S_{(1)}$ [%]	Cumulative relative frequency severe conditions - level 4 – $S_{(2)}$ [%]	Cumulative relative frequency moderate conditions - level 3 – $S_{(3)}$ [%]	Cumulative relative frequency stressed conditions - level 2 – $S_{(4)}$ [%]	Cumulative relative frequency none/minimal conditions - Level 1 – $S_{(5)}$ [%]
Sudan	4.89	37.77	64.08	100	100

- Forth, we have to identify the j^* where the cumulative relative frequency is equal or greater than 5 percent:

$\frac{n_{(1)}}{N} = 4.89 \geq 5 \rightarrow No$

$\frac{n_{(1)}+n_{(2)}}{N} = 37.77 \rightarrow Yes$

$\frac{n_{(1)}+n_{(2)}+n_{(3)}}{N} = 64.08 \rightarrow Yes$

$\frac{n_{(1)}+n_{(2)}+n_{(3)}+n_{(4)}}{N} = 100 \rightarrow Yes$

$\frac{n_{(1)}+n_{(2)}+n_{(3)}+n_{(4)}+n_{(5)}}{N} = 100 \rightarrow Yes$

Therefore, the min order of j where the cumulative relative frequency is equal or greater than 5 percent j^* is equal to 2.

Since $\frac{n_{(1)}}{N} = 4.89$ and $j^* = 2$, then $\sum_{(j)=1}^{j^*-1} \frac{n_{(j)}}{N} = 4.89$. Hence:

$$P_{(j^*)} = 0.05 - \sum_{(j)=1}^{j^*-1} \frac{n_{(j)}}{N} = 0.05 - 0.0489 = 0.0011$$

- The final concentration of conditions score is calculated as:

$$\overline{S} = \frac{\sum_{(j)=1}^{j^*} S_{(j)}.P_{(j)}}{\sum_{(j)=1}^{j^*} P_{(j)}} = \frac{S_{(1)}.P_{(1)} + S_{(2)}.P_{(2)}}{P_{(1)+}P_{(2)}} = \frac{5 \times 0.0489 + 4 \times 0.0011}{0.0489 + 0.0011} = 4.978$$

The original score calculated using the previous method yields a Concentration of conditions score of 4, which underestimate the severity of conditions experienced by the affected population. By applying the proposed method, we account for these extreme conditions in the calculation, yielding a score of 4.97—a difference of nearly one full category. This adjustment more accurately reflects the presence of serious humanitarian concerns and enables appropriate resource prioritization.

Case study 2: Conflict and climatic shocks in Colombia

Colombia faces a complex humanitarian crisis driven by both conflict and climatic shocks, leaving 9 million people in need of humanitarian assistance, with the entire country affected by potential consequences of the conflict and internal violence in Colombia, such as mass displacement, confinement and killings, particularly as there has been an expansion and re-configuration of the

non-state armed groups (NSAGs) since 2016. Also, the whole country is at risk of climatic shocks such as floods and dry spells. The table below presents the population distribution across severity levels [million] based on the INFORM Severity database.

Country	# of people in none/minimal conditions - Level 1 - S_1	# of people in stressed conditions - level 2 - S_2	# of people in moderate conditions - level 3 - S_3	# of people severe conditions - level 4 - S_4	# of people extreme conditions - level 5 - S_5	Total number of people in all condition levels
Colombia	0.00	44.00	7.10	1.59	0.36	53.05

The Concentration of conditions is calculated as follows:

- First, we arrange the classes in descending order $S_{(j)}$ where $n_{(1)} = n_5$ as shown below.

Country	# of people extreme conditions - level 5 – $S_{(1)}$	# of people severe conditions - level 4 – $S_{(2)}$	# of people in moderate conditions - level 3 – $S_{(3)}$	# of people in stressed conditions - level 2 – $S_{(4)}$	# of people in none/minimal conditions - Level 1 – $S_{(5)}$	Total number of people in all condition levels
Colombia	0.36	1.59	7.10	44.00	0.00	53.05

- Second, we calculate the relative frequency for each level as $\frac{n_{(j)}}{N} \times 100$.

Country	Relative frequency extreme conditions - level 5 – $S_{(1)}$ [%]	Relative frequency severe conditions - level 4 – $S_{(2)}$ [%]	Relative frequency moderate conditions - level 3 – $S_{(3)}$ [%]	Relative frequency stressed conditions - level 2 – $S_{(4)}$ [%]	Relative frequency none/minimal conditions - Level 1 – $S_{(5)}$ [%]	Relative frequency of people in all condition levels [%]
Colombia	0.68	2.99	13.38	82.93	0.00	100

- Third, the cumulative relative frequency is calculated as:

Country	Cumulative relative frequency extreme conditions - level 5 – $S_{(1)}$ [%]	Cumulative relative frequency severe conditions - level 4 – $S_{(2)}$ [%]	Cumulative relative frequency moderate conditions - level 3 – $S_{(3)}$ [%]	Cumulative relative frequency stressed conditions - level 2 – $S_{(4)}$ [%]	Cumulative relative frequency none/minimal conditions - Level 1 – $S_{(5)}$ [%]
Colombia	0.68	3.67	17.05	100	100

- Forth, we identify the j^* where the cumulative relative frequency is equal or greater than 5 percent:

$\frac{n_{(1)}}{N} = 0.68 \geq 5 \rightarrow No$

$\frac{n_{(1)}+n_{(2)}}{N} = 3.67 \rightarrow No$

$\frac{n_{(1)}+n_{(2)}+n_{(3)}}{N} = 17.05 \rightarrow Yes$

$\frac{n_{(1)}+n_{(2)}+n_{(3)}+n_{(4)}}{N} = 100 \rightarrow Yes$

$\frac{n_{(1)}+n_{(2)}+n_{(3)}+n_{(4)}+n_{(5)}}{N} = 100 \rightarrow Yes$

Thus, the minimum order of j where the cumulative relative frequency is equal or greater than 5 percent j^* is equal to 3.

- Fifth, the weights $P_{(j)}$ and P_{j^*} are calculated as:

$$P_{(1)} = \frac{n_{(1)}}{N} = 0.68$$

$$P_{(2)} = \frac{n_{(2)}}{N} = 2.99$$

$$P_{(j^*)} = 0.05 - \sum_{(j)=1}^{j^*-1} \frac{n_{(j)}}{N} = 0.05 - \sum_{(j)=1}^{3-1} \frac{n_{(j)}}{N} = 0.05 - (0.0068 + 0.0299) = 0.0133$$

- Lastly, the final concentration of conditions score is calculated as:

$$\overline{S} = \frac{\sum_{(j)=1}^{j^*} S_{(j)}.P_{(j)}}{\sum_{(j)=1}^{j^*} P_{(j)}} = \frac{S_{(1)}.P_{(1)} + S_{(2)}.P_{(2)} + S_{(3)}.P_{(j^*)}}{P_{(1)} + P_{(2)} + P_{(j^*)}} = \frac{5 \times 0.0068 + 4 \times 0.0299 + 3 \times 0.0133}{0.0068 + 0.0299 + 0.0133}$$
$$= 3.87$$

Under the previous method, the 5% saturation threshold is met at level 3, resulting in a Concentration of conditions score of 3. However, this approach overlooks the population in levels 4 and 5 who are experiencing more severe conditions. The proposed method incorporates these higher severity levels into the calculation, producing a score of 3.87. This nearly one-category increase better captures the full spectrum of humanitarian need and supports more informed resource allocation.

Annex 4. Technical justification for Complexity of the crisis indicator revisions

This annex provides the detailed technical and conceptual justification for the revision of four outdated indicators within the Complexity of the Crisis dimension, as summarized in Section 6.3.1.

Ethnic fractionalization

Conceptual justification: Ethnic fractionalization weakens social cohesion and governance, causing coordination failures and politicized aid distribution that undermine humanitarian assistance. Evidence shows foreign aid boosts growth in ethnically homogenous societies but fails or harms in divided ones, especially in Sub-Saharan Africa. These divisions create institutional dysfunctions that hinder effective emergency response and equitable resource use during crises (Hodler & Knight, 2012).

Proposed replacement: In the last methodology report (Poljanšek at al., 2020) we used Ethnic fractionalization Index calculated using a simple Herfindahl concentration index from Ethnic Power Relations (EPR) Dataset (Vogt et al., 2015). The EPR Dataset Family provides data on ethnic groups' access to state power, their settlement patterns, links to rebel organizations, transborder ethnic kin relations, and intraethnic cleavages. In June 2025 release, the indicator was updated with EPR (2021) instead of the 2018 version (2017 data).

Methodology: Ethnic fractionalization is considered as a composite indicator, with a low temporal variance, thus it does not need to be updated very often, and its score can be still representative using 2021 update. The formula for the the Ethnic Fractionalization Index (EFI) is:

$$EFI = 1 - \sum_{i=1}^{n} {s_i}^2 \qquad \textbf{Equation 9}$$

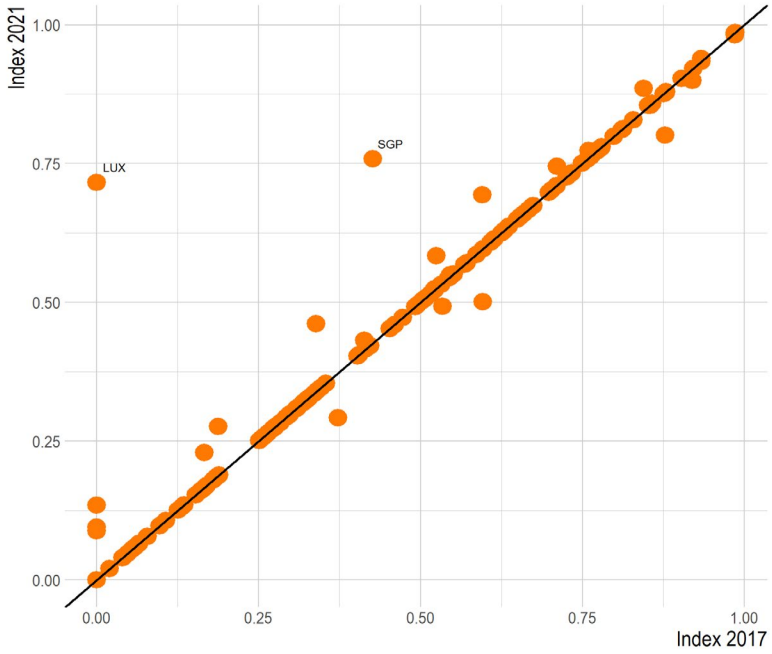
Where:

- s_i is the population share of ethnic group i within the country (in a given year),
- n is the number of politically relevant ethnic groups in that country-year,

The result reflects the probability that two randomly selected individuals belong to different groups.

Comparative analysis: The comparison between new and old version of the index reveals the correlation between the indices is very strong (0.98) with very few outliers (**Figure 28**) with significant change (more than 0.3 difference). Therefore, the new version do not change drastically the scores. Also the minimum and maximum thresholds to be used for the normalization procedure are the same.

Figure 28: Comparison between different versions of the Ethnic Fractionalization Index.



Source: authors

Size of excluded ethnic groups

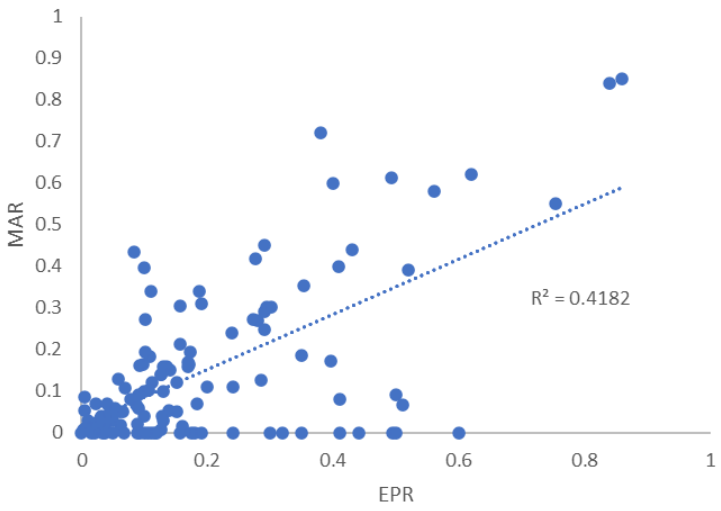
Conceptual justification: The size of excluded ethnic groups significantly undermines humanitarian assistance capacity by fragmenting governance structures and eroding the social cohesion necessary for effective emergency response. Evidence from humanitarian crises demonstrates these dynamics: in Myanmar, assistance for excluded Muslim minorities faced governmental barriers while relief was "not always distributed in a transparent or unbiased manner" along ethnic lines, and Syrian Christian and Druze refugees avoided formal registration due to sectarian tensions, creating parallel aid networks that fragmented coordination. Excluded minorities are often overlooked due to marginalization, weak socio-economic positions, and active targeting based on identity, reducing the operational reach and legitimacy of humanitarian institutions in regions where these groups predominate (Avis, 2019; Hodler & Knight, 2012). The Severity database draws on data about excluded ethnic groups from the Minorities At Risk (MAR) project (CIDCM, 2009), which monitors 284 politically-active ethnic groups worldwide from 1945 onward. MAR focuses on ethnopolitical groups—communal groups outside government—that are politically significant based on two criteria: they experience systematic discrimination or preferential treatment relative to other groups in society, and they engage in political mobilization and collective action to pursue their self-defined interests. Unfortunately, the last update of the dataset was completed in February 2009 for the years 2004-2006.

Proposed replacement: Here we propose replacing the outdated MAR dataset with a comparable measure constructed from the **Ethnic Power Relations (EPR) 2021** dataset. EPR categorizes all politically relevant ethnic groups based on the degree of access to central state power by those who claimed to represent them (Vogt et al., 2015). EPR assesses power access through three main categories, depending on whether a group monopolizes executive power, shares power with other ethnic groups, or is excluded from executive state power. However, the MAR and EPR datasets represent fundamentally different conceptual approaches to understanding ethnic politics. MAR

adopts a grievance-based framework, focusing on discrimination, cultural restrictions, and economic inequalities that drive political mobilization. In contrast, EPR employs a power-based approach that emphasizes the distribution of executive power among ethnic groups, categorizing them according to their access to state authority regardless of grievance levels. For studying humanitarian access and social cohesion, the power-based approach offers distinct advantages. It provides a more actionable lens for understanding humanitarian access, as it identifies the political arrangements that can facilitate aid delivery and promote stability even when underlying grievances remain unresolved.

Methodology: In order to extract information comparable to MAR from EPR, we consider only the category targeting excluded group which is composed of three sub groups namely powerless, discrimination and self-exclusion. The dataset measures relative size of politically relevant ethnic groups as a share of the total population. Therefore, we calculate country level excluded group as a sum of all group sizes in the country.

Figure 29: Scatter plot comparing MAR and EPR indices.

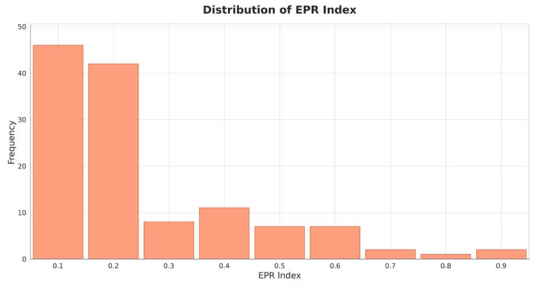
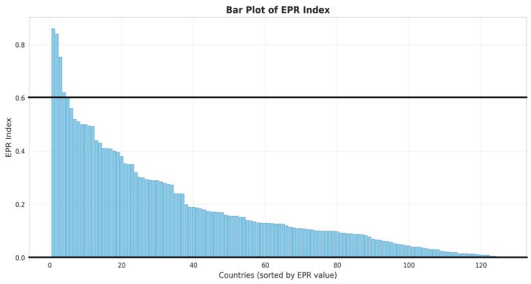


Source: authors

Comparative analysis: The Pearson correlation between the two indices, MAR and EPR, is moderate to strong (0.64), indicating statistical compatibility despite the differing conceptual approaches, according to the classes defined by Akoglu (2018). **Figure 29** illustrates the scatter plot of countries' sores across MAR and EPR.

To identify the minimum and maximum thresholds required for the normalization process, we first use skewness and kurtosis measures to detect outliers and determine whether any transformation should be applied. Subsequently, we employ the interquartile range and examine the distribution to identify appropriate thresholds, as shown in **Figure 30**.

Figure 30: Calculating minimum and maximum thresholds as part of the Normalization procedure for EPR.

	
$\boldsymbol{skewness = 1.567}$	$IQRmin = -0.2722$
$\boldsymbol{Kurtosis = 2.436}$	$IQRmax = 0.609$
$\boldsymbol{No\ need\ for\ transformation}$	$Min = 0, Max = 0.6$

Source: authors

Empowerment

Conceptual justification: Higher levels of civil and political liberties contribute to building societal trust, which then becomes the critical determinant of humanitarian assistance outcomes during and after crises. Trust—constructed through empowerment and other factors—shapes whether governments permit humanitarian access, whether communities cooperate with aid workers, whether information flows freely for needs assessment, and whether aid reaches intended beneficiaries without diversion (Dubey et al., 2019; Mulder et al., 2020; Richards et al., 2001). In the current methodology, we use empowerment index from the CIRI Human Rights Dataset (Cingranelli et al., 2014) which provides standards-based quantitative information on government respect for 15 internationally recognized human rights across 202 countries from 1981 to 2011. It is an additive index composed of seven indicators: Foreign Movement, Domestic Movement, Freedom of Speech, Freedom of Assembly & Association, Workers' Rights, Electoral Self-Determination, and Freedom of Religion indicators. It ranges from 0 (no government respect for these seven rights) to 14 (full government respect for these seven rights).

Proposed replacement: Since the update frequency of the dataset does not meet the criteria, we propose replacing the outdated CIRI Human Rights Dataset by a conceptually comparable index constructed from the **Varieties of Democracy (V-DEM) project** (Coppedge et al., 2025). V-Dem offers a multidimensional and disaggregated dataset that captures the complexity of democracy as a complex governing system extending beyond mere electoral processes. The dataset is organized around several main components: Electoral Democracy (clean elections and political freedoms), Liberal Democracy (constraints on government and individual liberties), Participatory Democracy (active citizen engagement), Deliberative Democracy (reasoned public debate), and Egalitarian Democracy (equal rights and resource distribution). These indices are built from hundreds of specific indicators covering institutions, practices, and outcomes, with both factual data and expert-coded assessments from thousands of country specialists worldwide.

V-DEM collects assessments from multiple country experts on various democracy indicators, then uses a Bayesian IRT model to combine these ratings while accounting for coder biases and uncertainty. The indicators are standardized to ensure comparability across different scales, then aggregated into higher-level indices (like Electoral or Liberal Democracy) using weighted averages based on theoretical importance. Finally, these indices are typically rescaled to a 0-1 range where

higher values indicate more democratic outcomes, enabling intuitive cross-country and over-time comparisons. In general, the methodology favors the approach that makes most theoretical sense in each case, instead of a one-size-fits-all general solution.

Component mapping and methodology: The Empowerment Index from the outdated CIRI dataset (composed of seven indicators) is replaced by a conceptually comparable index constructed from the Varieties of Democracy (V-DEM) Project. This mapping ensures that the theoretical coverage of civil and political liberties is maintained while leveraging V-DEM's superior timeliness and methodology.

Methodology: To calculate the empowerment index from V-DEM data, we use the arithmetic average of all indicators, assuming full compensation among them. Degree of compensation describes how trade-offs between indicators are handled during aggregation—specifically, whether deficiencies in some indicators can be balanced by strengths in others (Marzi et al., 2021).

Table 15: Component mapping with corresponding V-DEM Measure

Original CIRI Dimension	**CIRI Definition**	**Corresponding V-DEM Measure**
Freedom of Foreign Movement	Citizens' freedom to leave and return to their own country.	Identical V-DEM Indicator. Specifies the extent to which citizens can travel freely to/from the country and emigrate without public authority restrictions.
Freedom of Domestic Movement	Citizens' freedom to travel within their own country.	Comparable V-DEM Indicator. Measures the extent to which women are able to move freely (daytime/nighttime, across regions, establishing residency). The final V-DEM domestic movement indicator is calculated by averaging the men's and women's disaggregated indicators.
Freedom of Speech	Extent to which government censorship affects freedoms of speech and press (including media ownership).	Freedom of Expression and Alternative Sources of Information Index. Encompasses several components: freedom of academic and cultural expression, freedom of discussion (men/women), media bias, government censorship efforts, harassment of journalists, and media self-censorship.
Electoral Self-Determination	Extent to which citizens enjoy freedom of political choice and the ability to change officials through free and fair elections.	Electoral Democracy Index. Assesses whether rulers are responsive to citizens through competitive elections with extensive suffrage, clean processes, and the presence of freely operating political and civil society organizations.

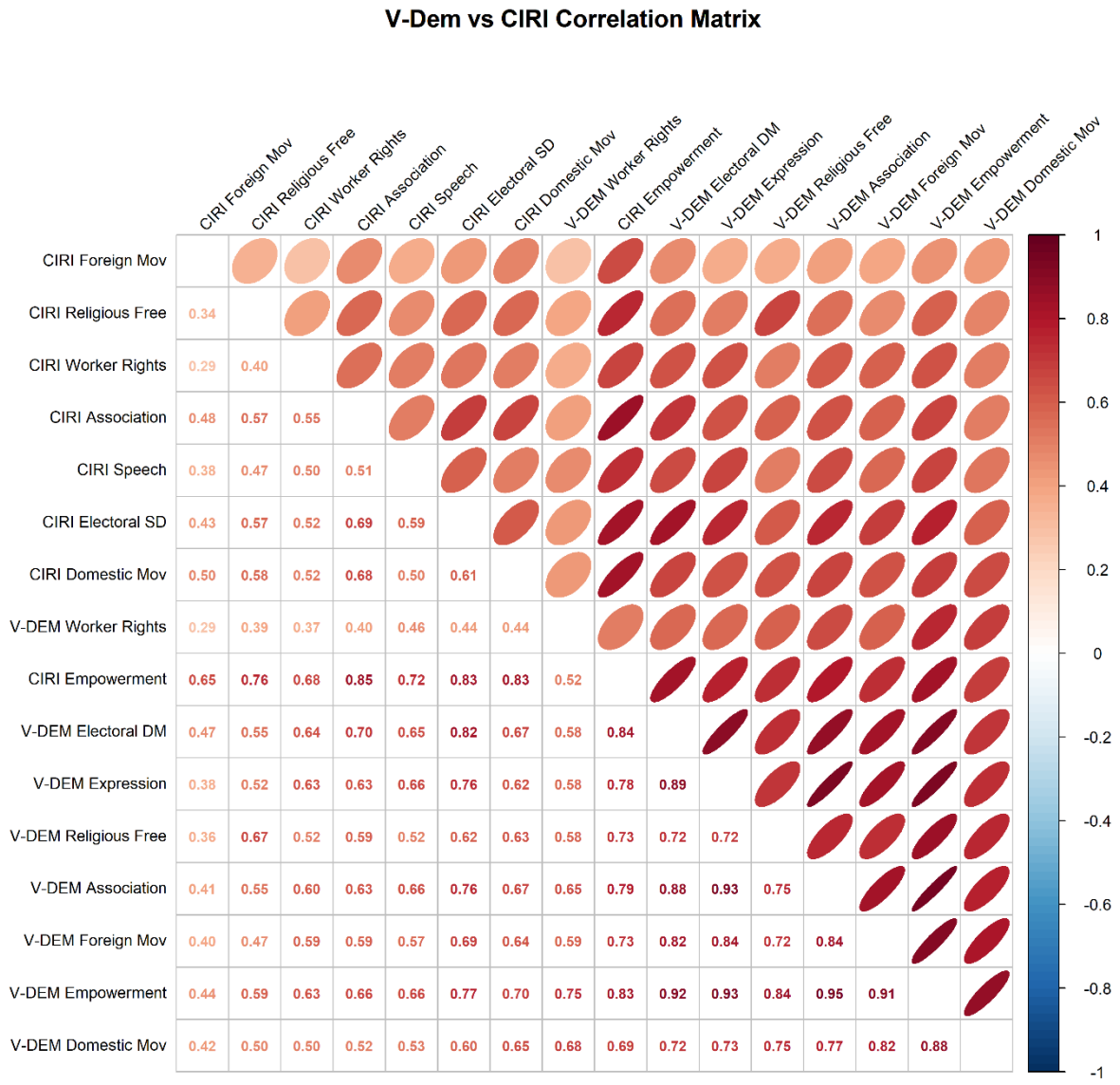
Original CIRI Dimension	CIRI Definition	Corresponding V-DEM Measure
Freedom of Religion	Degree to which government restrictions limit citizens' freedom to exercise and practice their religious beliefs.	Identical V-DEM Indicator. Assesses the extent to which individuals and groups have the right to choose, change, and practice their religion privately or publicly without restrictions from public authorities. Data is rescaled to a 0–1 range.
Workers' Rights	Assessment of internationally recognized labor rights: freedom of association, collective bargaining, prohibition of forced/child labor, minimum wage, and acceptable working conditions.	Constructed V-DEM Index. Since an identical index doesn't exist, a conceptually comparable index was constructed by averaging the standardized V-DEM variables for freedom from forced labor, labor rights, child labor laws, and minimum wage (rescaled to a 0–1 range).
Freedom of Assembly and Association	Extent to which the internationally recognized right of citizens to assemble freely and associate (in parties, unions, etc.) is subject to governmental limitations.	Freedom of Association Index. Includes components such as government control over civil society organizations (CSOs), repression of CSOs, existence of multi-party elections, barriers to political parties, and the autonomy of opposition parties.

Source: authors

Comparative analysis: Figure 31 shows the cross-correlations between the original variables and their V-DEM counterparts (2011 country-year), as well as the correlation between the original and newly constructed empowerment indices. Of the seven variables, four exhibit strong correlations (*freedom of domestic movement, freedom of speech, freedom of assembly and association, and freedom of religion*), *electoral self-determination* demonstrates a very strong correlation, *freedom of foreign movement* falls in the moderate range, and workers' rights displays a low to moderate correlation. The correlation between the original and new empowerment indices corresponds to a very strong correlation strength (0.83) as defined by Akoglu (2018), indicating that the two indices are statistically compatible.

The differences between the CIRI and V-DEM empowerment indices stem primarily from their distinct methodological approaches to data collection and aggregation. CIRI relies on systematic coding of textual information from the U.S. State Department's Country Reports on Human Rights Practices, supplemented by Amnesty International's Annual Report for physical integrity rights, with coders making binary or ordinal assessments based on these secondary sources. In contrast, V-DEM employs direct expert assessments from multiple country specialists who rate various dimensions of democracy and empowerment, which are then aggregated using a Bayesian item response theory (IRT) model that accounts for coder uncertainty and bias. While CIRI's approach prioritizes consistency through standardized coding of established reports, V-DEM's methodology emphasizes expert judgment and statistical modeling to capture nuance and cross-national comparability. Additionally, V-DEM's use of standardization and weighted aggregation differs from CIRI's more straightforward coding scales. We caution that these methodological distinctions—ranging from data sources and expert involvement to aggregation techniques—naturally produce indices that, while strongly correlated, are not identical in their final values.

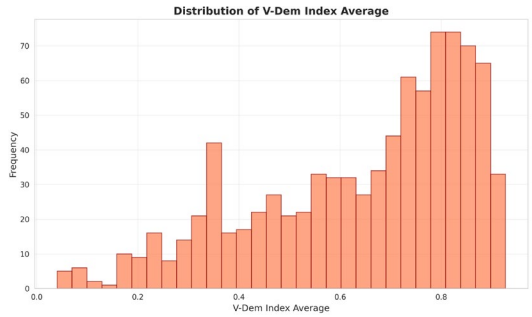
Figure 31: V-DEM vs. CIRI correlation matrix (correlations measured using Pearson correlation coefficient).

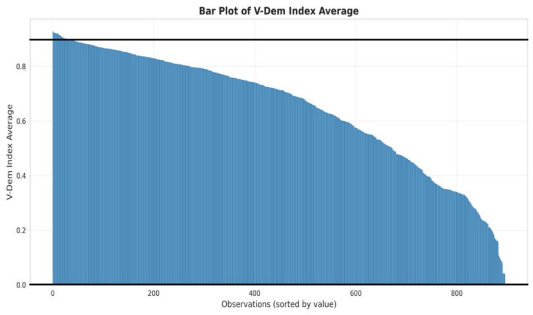


Source: authors

To implement the newly constructed index, we must **identify the minimum and maximum thresholds** required for normalization. We first use skewness and kurtosis measures to detect outliers and determine whether any transformation should be applied. Subsequently, we employ the interquartile range and examine the distribution to identify appropriate thresholds, as shown in **Figure 32**. To determine the minimum and maximum thresholds, we use data from 2020 to 2024. This broader time range captures a wider variety of index outcomes and ensures consistent thresholds that can be applied retrospectively if we wish to back-calculate the severity index using the new empowerment data.

Figure 32: Calculating minimum and maximum thresholds as part of the Normalization procedure for V-DEM empowerment index.





$\boldsymbol{skewness = -0.77}$	$IQRmin = 0.026$
$\boldsymbol{Kurtosis = -0.38}$	$IQRmax = 1.29$
$\boldsymbol{No\ need\ for\ transformation}$	$Min = 0, Max = 0.9$

Source: authors

Conflict intensity

Conceptual justification: Conflict intensity is a primary determinant of safety, security, and humanitarian access. In high-intensity conflict settings, multiple armed parties competing for territorial control create fragmented security landscapes where humanitarian operations face severe constraints, including road ambushes, targeted attacks, and restricted movement. Escalating conflict intensity disproportionately endangers national staff, who face elevated risks due to their proximity to communities and vulnerability to revenge killings, accusations of partisanship, and targeting based on perceived wealth. Without de-escalation in high-intensity conflicts such as those in Myanmar, Palestine, Sudan, and Ukraine, violence levels against humanitarian workers are expected to persist or worsen, further shrinking the operational space for reaching populations in need of life-saving assistance (ACAPS, 2024; OCHA, 2025). Currently, we use conflict intensity data from the Conflict Barometer developed by the Heidelberg Institute for International Conflict Research (HIIK), covering the period 2014–2023 with the last update in November 2024. As mentioned previously, dynamic data such as conflict-related variables must be updated frequently to remain reliable (green criteria). Unfortunately, HIIK does not meet this criterion and should be replaced with more dynamic alternative indicators.

Alternative sources and comparison: We introduce HIIK alongside alternative data sources from Armed Conflict Location & Event Data (ACLED) and the Global Peace Index (GPI). Each dataset has its own strengths and limitations, and the decision on replacement should be made by experts based on their experience and assessment of whether the data fit the intended purpose.

Conceptual alignment: The three indices – the ACLED Conflict Index, HIIK Conflict Barometer, and Global Peace Index (GPI) – as well as the Domestic & International Conflict domain of the GPI, share a common conceptual focus on measuring conflict and violence through structured indicators. All indices assess conflict intensity globally, though different methodologies are applied in scoring and aggregation:

- The HIIK Conflict Barometer focuses on conflict intensity and impact, measuring weapons use, personnel involved, casualties, displaced persons (refugees & IDPs), and destruction.

- The ACLED Conflict Index measures conflict severity and geographic spread through fatalities (deadliness), attacks on civilians (danger), the percentage of the country affected (diffusion), and the number of armed groups (fragmentation).
- The Global Peace Index (GPI) takes a broader approach, assessing internal and external conflicts, as well as factors such as terrorism, crime, militarization, and political instability.
- The Ongoing Domestic & International Conflict domain of the GPI aligns more closely with HIIK and ACLED, focusing on internal/external conflicts, deaths, conflict intensity, and relations with neighboring countries.

Overall, the HIIK, ACLED, and the Ongoing Domestic & International Conflict domain of the GPI are the most similar, whereas the Global Peace Index, as a whole, overlaps but also integrates broader peace and security factors.

Correlation analysis (2022 Data): To examine the statistical relationships between the indices, all scores were rescaled to a 0–5 scale. A correlation analysis was then performed, using Pearson's correlation coefficient for the scores of the indices, focusing on the year 2022. As shown in Table 4, all indices correlate reasonably well with each other. Apart from the strong correlation (90%) between the Global Peace Index and its Conflict domain, a high correlation (74%) is observed between the HIIK and both the Global Peace Index and its Conflict domain. All indices also correlate significantly, though to a lesser degree, with the ACLED Conflict Index (40%–50%).

Table 16: Comparing HIIK with alternative sources

Index	**Publisher & Source Recentness & Coverage**	**Key Indicators (What is Measured)**	**Scale & Aggregation Method**
Conflict Barometer (HIIK)	Heidelberg Institute for International Conflict Research. https://hiik.de/hiik/methodology/?lang=en Last update: Oct 2024 (Annual). Country Coverage: 117 Countries (115 INFORM countries).	Aggregates five indicators across two dimensions: Conflict Means (threat to existence, personnel, weapons) and Conflict Consequences (casualties, refugees/IDPs, destruction).	Scale: 1–5 (0 for no conflict). Annual score is typically the highest Regional Monthly Intensity observed in any subnational region.
ACLED Conflict Index	Armed Conflict Location & Event Data. https://acleddata.com/series/acled-conflict-index Last release: July 2024 (Bi-annual). Country Coverage: 243 Countries and territories (all 192 INFORM countries).	Evaluates four indicators over the preceding 12 months: Deadliness, Danger to Civilians, Geographic Diffusion, and Armed Group Fragmentation.	Scale: Indicators are Min-Max normalized; the final score is an average ranking that determines the overall conflict level (extreme, high, turbulent, or low/inactive).. Rescaled to 0–5 for INFORM Severity integration.

Index	Publisher & Source Recentness & Coverage	Key Indicators (What is Measured)	Scale & Aggregation Method
Global Peace Index (GPI) - Overall	Institute for Economics and Peace (IEP). https://www.economicsandpeace.org/global-peace-index/ Last update: 2024 (Annual). Country Coverage: 163 Countries and territories (161 INFORM countries).	Comprises 23 indicators across three domains: Ongoing Domestic/International Conflict, Societal Safety and Security, and Militarization.	Scale: 1–5 (lower is better). The indicators are also organized into two sub-indices—internal peace (60%) and external peace (40%)— combined into the overall composite score using weighted arithmetic averaging.
GPI - Domestic & International Conflict Domain	Institute for Economics and Peace (IEP). Sub-index of the overall GPI. Last update: 2024 (Annual). Country Coverage: 163 Countries and territories (161 INFORM countries).	Focuses specifically on indicators related to internal/external conflicts, deaths, conflict intensity, and relations with neighbouring countries.	A sub-index of the overall GPI used for direct comparison to HIIK

Source: authors

Table 17. Correlations among conflict indices.

	ACLED Conflict Index	HIIK Conflict Barometer	Global Peace Index	Domestic & International Conflict (GPI)
ACLED Conflict Index	1.00	0.38	0.49	0.52
HIIK Conflict Barometer	0.38	1.00	0.74	0.74
Global Peace Index	0.49	0.74	1.00	0.90
Domestic & International Conflict (GPI)	0.52	0.74	0.90	1.00

Source: authors

INFORM Severity recalculation: Recalculating the INFORM Severity Index using the alternative sources (October 2024 release) reveals the operational impact of each replacement (**Table 18**) measured with the number of changes in the scores and severity classes, when compared with the original scores and classes.

Limitations: The indices were tested using one month of the INFORM Severity Index. A more comprehensive analysis would require examining the similarities and changes over a longer period, such as six months of the INFORM Severity Index, and comparing average changes.

Final recommendation: Based on the evidence:

- All indices are deemed statistically suitable replacements for the HIIK Conflict Barometer.
- The ACLED Conflict Index is also a viable choice due to its high update frequency, though it results in more extensive changes to the underlying scores.
- The overall Global Peace Index is the least preferable option due to its broader conceptual scope (integrating factors like terrorism and militarization), which deviates from the core focus on conflict intensity.
- **The Ongoing Domestic & International Conflict domain of the GPI is the most appropriate choice.** This domain maintains a similar conceptual framework, exhibits a strong statistical correlation with the original HIIK, and introduces the most minimal changes to the overall Severity Index and its constituent components.

More detailed results can be found in **Table 19**-**Table 22**.

Table 18: Number of changes in the scores and class when compared with the original Severity index.

Changes (out of 159)	**ACLED Conflict Index**	**Global Peace Index**	**Domestic & International Conflict (GPI)**
Severity class	7	7	8
Severity score	86	38	40
Complexity score	130	86	97
Society and safety score	137	121	127

Source: authors

Table 19: Number of changes in the Severity Class when compared with the original index class.

ORIGINAL vs.	**ACLED Conflict Index**	**Global Peace Index**	**Domestic & International Conflict (GPI)**
changes	7	7	8
drops	7	2	4
ups	0	5	4
same	148	148	147
	95%	95%	95%

Source: authors

Table 20: Number of changes in the Severity Index score when compared with the original index score.

ORIGINAL vs.	ACLED Conflict Index	Global Peace Index	Domestic & International Conflict (GPI)
changes	86	38	40
drops	86	15	22
ups	0	23	18
same	69	117	115
	45%	75%	74%

Source: authors

Table 21: Number of changes in the Complexity score when compared with the original complexity score.

ORIGINAL vs.	ACLED Conflict Index	Global Peace Index	Domestic & International Conflict (GPI)
changes	130	86	97
drops	126	31	54
ups	4	55	43
same	29	73	62
	19%	47%	40%

Source: authors

Table 22: Number of changes in the Society and Safety score when compared with the original Society and Safety score.

ORIGINAL vs.	ACLED Conflict Index	Global Peace Index	Domestic & International Conflict (GPI)
changes	137	121	127
drops	133	56	75
ups	4	65	52
same	22	38	32
	14%	25%	21%

Source: authors

Fact sheets of newly proposed core indicators

Component	Ethnic fractionalization
Indicator	Ethnic fractionalization
Description	Ethnic fractionalization Index is calculated using a simple Herfindahl concentration index from Ethnic Power Relations (EPR) Dataset.
Source	ETHZurich Ethnic Power Relations (EPR) Dataset Family 2021 https://icr.ethz.ch/data/epr/
Data processing	MIN-MAX normalisation using the following parameters: MIN: 0 , MAX: 1
Unit of measure	Non dimensional number ranging 0 to 1

Component	Ethnic fractionalization
Indicator	Size of excluded ethnic groups
Description	The EPR dataset measures politically relevant ethnic groups' population shares. We calculate country-level excluded group size by summing all powerless, discriminated, and self-excluded groups within each country, following the data codebook classifications.
Source	ETHZurich Ethnic Power Relations (EPR) Dataset Family 2021 https://icr.ethz.ch/data/epr/
Data processing	MIN-MAX normalisation using the following parameters: MIN: 0 , MAX: 0.6
Unit of measure	Non dimensional number ranging 0 to 1

Component	Social cohesion/ Trust in society
Indicator	Empowerment
Description	This is a composite index constructed as the arithmetic average of the Freedom of foreign movement, Freedom of domestic movement, Freedom of Expression and Alternative Sources of Information , Electoral Democracy, Freedom of Association , Workers' Rights and Freedom of Religion indicators from from the Varieties of Democracy (V-Dem) Project.
Source	The Varieties of Democracy (V-Dem) Project https://v-dem.net/data/the-v-dem-dataset/
Data processing	MIN-MAX normalisation using the following parameters: MIN: 0, MAX: 0.9
Unit of measure	Non dimensional number ranging from 0 to 1

Component	Safety and security
Indicator	Conflict intensity
Description	To assess the intensity of ongoing conflicts, we use Ongoing Domestic and International Conflict scores from the Global peace Index (GPI). The index uses six statistical indicators to investigate the extent to which countries are involved in internal and external conflicts, as well as their role and duration of involvement in conflicts.
Source	Institute for Economics & Peace https://www.visionofhumanity.org/maps/#/
Data processing	MIN-MAX normalisation using the following parameters: MIN: 0 , MAX: 4
Unit of measure	Non dimensional number ranging from 1 to 5 on a three-decimal scale

Annex 5. Driver taxonomy (ACAPS Note)

This annex defines the most common drivers of need identified by ACAPS. It is not an exhaustive list of all humanitarian drivers. Rather, it serves to encourage specification of crisis categories (by driver) in order to support comparative analysis of the Severity Index.

Analysis process: most humanitarian contexts are characterised by overlapping factors that generate urgent needs for affected populations. Through contextual analysis and trend monitoring, drivers for a particular crisis are identified. In contexts where there are many drivers of need, an analyst should select the primary driver in terms of resulting in acute humanitarian needs. This not only encourages regular monitoring, as drivers can increase and decrease in relevance depending on political, economic, and social developments, but also ensures the crises in the index are defined.

Update frequency: crisis drivers should be reviewed every six months to ensure their accuracy and characterisation of recent developments.

Table 23: Drivers of needs taxonomy

Category	Origin	Driver/Factor
PRIMARY DRIVERS	Human-induced	Conflict/violence
		International displacement
		Political/Economic crisis
	Natural Hazards	Tropical cyclones/hurricanes/typhoons
		Drought and dry conditions
		Floods
		Earthquakes
		Volcanic eruption
AGGRAVATING FACTORS	Human-induced	Technological disaster
	Natural Hazards	Disease outbreak
		Cold wave
		Heatwave
		Wildfire
		Crop pest and disease

Source: Authors (ACAPS)

PRIMARY DRIVERS

The definitions of drivers outlined here are based on the definitions provided by relevant lead agencies and organisations.

Human-induced hazards

Conflict/violence

Armed conflict is a confrontation between either armed state forces (international armed conflict) or government authorities and organised or non-state armed groups within a state (non-international armed conflict). Conflict can be determined even if a state of war is not officially declared nor recognised by parties involved.

'Violence' and 'armed conflict' are distinct but related. Violence can occur outside of armed conflict, including events such as riots, isolated and sporadic attacks, and violence against individuals or

groups. Organised crime, high-stake elections, and intercommunal tensions can also result in armed violence, but not armed conflict. However, if violence reaches a high level of intensity—often of a collective nature (i.e. military forces involved or groups of people bound by identity politics)—it is considered 'armed conflict' [17].

From a humanitarian perspective, armed conflict and violence can result in direct and indirect mortality and morbidity from the resulting lack of access to emergency healthcare, water, sanitation, and food security. Conflict and displacement also disrupt communities' social fabric and family structures, potentially resulting in gender-based violence and child protection issues, including child labour and early marriage.

International displacement

International displacement is the movement of populations across international borders often in search of refuge, protection, and international assistance, regardless of legal status.

Internationally displaced people can include refugees, asylum seekers, undocumented migrants, and people in a 'refugee-like situation', all of whom may face protection risks[18].

A displacement crisis occurs when the influx of people outstrips local and national capacity to respond, or asylum seekers and refugees face unwelcoming state policy. An influx of displaced people often leads to the establishment of camps or camp-like temporary shelters. Overcrowded shelters can result in acute needs and strains limited resources, affecting the host community. Examples include the Sudan refugee crisis, Ukraine refugee crisis, and Syrian refugee crisis.

For the INFORM Severity Index, internal displacement is not considered a driver of needs. It is a consequence of a shock or hazard already occurring, most often related to conflict or seasonal or natural hazards.

Political/Economic crisis

Political instability is often identified by levels of corruption, patronage, and political fragmentation. Economic deterioration can include price volatility, hyperinflation, and currency collapse. The two are highly correlated and often co-exist in developing contexts, compounding other drivers. For example, in Malawi, economic contraction resulting in high food prices exacerbates the impacts of drought that result in crisis level food insecurity.

However, political/economic developments can threaten the safety and overall welfare of people. Such contexts include Lebanon, Venezuela, Yemen and Afghanistan where political fragmentation, contested elections, international sanctions and conflict have resulted in rapid economic deterioration.

Natural hazards

Tropical cyclones/hurricanes/typhoons

Tropical cyclones, hurricanes, and typhoons result in significant damage to infrastructure every year from their resultant flooding, destructive winds and storm surges, loss of livelihoods, and often loss

[17] https://www.icrc.org/en/document/icrc-opinion-paper-how-term-armed-conflict-defined-international-humanitarian-law accessed 16/04/2024

[18] https://www.migrationdataportal.org/themes/forced-migration-or-displacement accessed 20/06/2024

of life. The term 'tropical cyclone' is the generic term for a storm with wind speeds of 74imph or more. The name of the system, whether a hurricane, typhoon, or cyclone, depends on where it develops.

- Hurricanes form over the Atlantic and eastern North Pacific.
- Cyclones are formed in the South Pacific and Indian Ocean.
- Typhoons are formed over the western North Pacific[19].

Drought and dry conditions

Dry conditions are defined as an extended period of below-average precipitation. Dry conditions can be characterized by the delayed onset of seasonal rains, erratic distribution, and below-average cumulative rainfall. Recurrent dry spells and prolonged periods of below-average precipitation can quickly result in crisis-level needs in communities dependent on agricultural production for subsistence and livelihoods. In addition to livelihood losses, drought and dry conditions can significantly limit access to safe drinking water and disrupt sanitation systems, leading to a rise in waterborne diseases like cholera and acute watery diarrhoea (AWD).

Floods

Flood is the general term for the overflow of water onto normally dry land. Floods can be seasonal, associated either with the rainy season or the end of winter, when snow melt can cause rivers to overflow, or off-season, caused by heavy or excessive rainfall in a short period of time. Flooding can also result from ocean waves coming on shore during storms or the breaking of dams or levees[20]. Flooding can result in impacts, damaging infrastructure, agricultural land, and homes and driving displacement. Humanitarian consequences include disruption and reduced access to clean water, sanitation and hygiene, food insecurity, malnutrition, and disease outbreak.

Earthquakes

An earthquake is the ground shaking associated with the sudden movement of two blocks of the earth slipping. The largest earthquake is called the mainshock, which is always followed by aftershocks, or smaller earthquakes occurring in the same place[21]. Earthquakes often trigger landslides, tidal waves, and tsunamis. Powerful aftershocks frequently occur, causing further damage, deaths, injuries, and increasing psychological stress.

Volcanic eruption

Some volcanic eruptions are explosive and others are not. Both can be deadly. They release lava flows and volcanic gases with the potential to damage crops and infrastructure, pollute water, and cause health problems. Landslides, debris, ash falls, release of gas, and tsunamis are all hazards associated with volcanic activity[22].

[19] https://www.metoffice.gov.uk/research/weather/tropical-cyclones/facts#What%20is%20a%20TC accessed 15/04/2025

[20] https://www.nssl.noaa.gov/education/svrwx101/floods/ accessed 15/04/2025

[21] https://www.usgs.gov/programs/earthquake-hazards/hazards accessed 22/04/2025

[22] https://www.bgs.ac.uk/discovering-geology/earth-hazards/volcanoes/volcanic-hazards/ accessed 15/04/2025

AGGRAVATING FACTORS

Aggravating factors are more often compounding developments that exacerbate the impacts of a crisis driven by another hazard. However, these factors can be drivers depending on the scale and severity of the event.

Human-induced hazards

Technological disaster

Technological disasters originate from technological or industrial accidents, dangerous procedures, infrastructure failures, or certain human activities, which may cause the loss of life or injury, property damage, social and economic disruption, or environmental degradation. Technical disasters can include the accidental release or explosion of chemicals, nuclear explosion or radiation, and mine explosions. Such events commonly result in acid rain and pollution, which can have significant health effects. Technical disasters are only humanitarian on an exceptional basis, and when the event (i.e. toxic spill or gas explosion) results in a humanitarian impact.

Natural hazards

Disease outbreak

Disease outbreak is defined as the prevalence of disease cases above normal levels in a community, geographical area, or season. The classification of an outbreak depends on the cause of the disease, its prevalence, and previous exposure. An epidemic carries the same definition as an outbreak, except the number of people infected is higher across a larger geographical area[23]. ACAPS typically considers disease outbreaks and epidemics

as aggravating factors, as they tend to occur most often in conflict and natural hazard crises, when healthcare capacity is poor and difficult to access. Depending on the severity and scale of the disease outbreak, it can be considered a driver, notably disease outbreaks of pandemic levels, spreading across multiple countries and continents

Cold wave

A cold wave is defined as a period of abnormally cold weather, characterised by below-normal temperatures for two or more days and potentially aggravated by high winds. The exact temperature criteria for what constitutes a cold wave vary by location, depending on whether increased protection for agriculture, industry, and commercial and social activities is required[24]. Cold waves can cause respiratory problems and adverse effects on shelter, livelihoods and food security.

Heatwave

A heatwave is a prolonged period of significantly above-average temperatures, lasting from several days to a few weeks. In some regions, high humidity levels may accompany the heat, intensifying its effects on the human body. Heatwaves pose serious health risks—such as heat exhaustion and heatstroke—particularly for vulnerable groups like the elderly and young children. They can also cause major environmental and socio-economic impacts, especially when combined with extended

[23] https://archive.cdc.gov/www_cdc_gov/csels/dsepd/ss1978/lesson1/section11.html accessed 18/05/2012

[24] https://www.undrr.org/understanding-disaster-risk/terminology/hips/mh0040 accessed 15/04/2025

dry spells or drought. In such cases, extreme heat can reduce soil moisture, lower river flows, and deplete groundwater reserves. In agriculture, heatwaves can severely damage crops, reduce yields, and negatively affect livestock through increased mortality and decreased productivity[25].

Wildfire

Unplanned or uncontrolled landscape fire triggered either by natural causes (such as lightning or volcanic activity) or—more commonly at the global level—by human activities, mainly through the burning of live or dead vegetation in natural or human-altered ecosystems[26]. Wildfires can damage or destroy key infrastructure, lead to agriculture and livelihoods losses, as well as trigger an increase in health needs, particularly due to burns and respiratory problems.

Crop pest and disease

Sudden, significant increase in insect, pathogen, or weed populations in a given area, leading to damage in crops, forests, or natural ecosystems[27]. These outbreaks can severely impact agricultural productivity, biodiversity, and natural resources. Climate-related factors such as higher temperatures, extreme weather events, and drought stress can contribute to increased incidence of crop pests and diseases. Locust and armyworm infestations are examples of plagues that can trigger substantial humanitarian needs by causing widespread agricultural losses.

[25] https://climate.copernicus.eu/heatwaves-brief-introduction accessed 18/07/2024

[26] https://www.undrr.org/understanding-disaster-risk/terminology/hips/en0013 accessed 23/04/2025

[27] https://www.undrr.org/understanding-disaster-risk/terminology/hips/bi0401 accessed 23/04/2025

Annex 6: A prioritization interim solution to estimate PiN by severity in INFORM Severity (ACAPS Note)

Goal

This note outlines the data collection approach for People in Need (PIN) and severity levels used by ACAPS for the INFORM Severity Index April 2024 release.

This approach was applied to the following countries:

Afghanistan, Burkina Faso, Cameroon, Central African Republic, Chad, Colombia, DRC, El Salvador, Ethiopia, Guatemala, Haiti, Honduras, Madagascar, Mali, Mozambique, Myanmar, Nigeria, Somalia, South Sudan, Sudan, Syria, Ukraine, Venezuela, Yemen.

The presented approach is viewed as a temporary solution and should not be considered as formalized changes to the INFORM Severity Index methodology for data collection. This approach will be used for the next few releases of the INFORM Severity Index but, given the limitations, potential alternative options are being considered, and the method will be updated as soon as a better alternative is found. This approach has been shared with and reviewed by JRC.

Background

The new JIAF 2.0 methodology does not foresee the breakdown of PIN into severity levels. Therefore, most Humanitarian Needs Overview (HNO), Humanitarian Response Plan (HRP) and Humanitarian Needs and Response Plan (HNRP) documents released for the Humanitarian Programming Cycle (HPC) of 2024 do not contain this breakdown anymore. Instead, they provide the overall PIN for each analysis unit and the intersectoral severity. As described in the JIAF 2.0 methodology, the intersectoral severity is a single number for each analysis unit that describes "how severe is the humanitarian situation that results from the compounding effect of overlapping needs in different sectors". For further details on the JIAF 2.0, including definition of JIAF-specific keywords and processes, please refer to the JIAF 2.0 methodology, which is available here.

For HPC 2024, JIAF covers 24 of the 92 countries where the INFORM Severity Index has active crises (26%), and for these countries was the main source for PIN numbers and breakdown of PIN by Severity. The change in methodology with JIAF 2.0 has implications from the point of view of the data collection for the INFORM Severity Index. In particular, t**he lack of a breakdown of the PIN numbers into severity levels reduces the compatibility of the JIAF methodology with the INFORM Severity Index framework.** This is because the INFORM Severity Index framework (Poljanšek et al., 2020) requires both the overall PIN and the PIN by Severity levels for each crisis to compute the dimension "Condition of people affected". The former is provided in JIAF 2.0 methodology, while the latter is not.

List of approaches employed to compute overall PIN and PIN by severity levels per crisis

To have a consistent approach in the computation of PIN and PIN by Severity in the INFORM Severity Index, ACAPS has derived a prioritized list of approaches, that are ranked based on their recommended usage. Except for the first approach, all the others imply a two-step procedure: first, the overall PIN is computed, and in a second step it is disaggregated into the different severity levels. Depending on the approach, the overall PIN and PIN by Severity may or may not come from

the same source. Analysts used this list as a guideline for the prioritization of their approach in the computation of overall PIN and PIN by Severity levels for April 2024 INFORM Severity Index release. ACAPS decided to allow analysts to assign the reliability of each data point (which in turn affects the reliability of the final INFORM Severity Index score) based on their analytical judgement and the standard guidelines of the INFORM Severity Index following the crisis context, except for approach 4 (see more details below).

Approach 1. Use an alternative source that provides PIN and breakdown into severity levels.

- This is the standard approach used in the INFORM Severity data collection for all the countries that are not covered by HNO/HRP/HNRP documents.
- Often sources are focused on a specific sector. In this case, this approach is applicable to the crisis only if the sector covers the main drivers of the crisis and the PIN number for that sector is a reasonably good approximation of the overall PIN number (e.g. food security, displacement, etc.).

Approach 2. Use HNO/HRP/HNRP 2024 for overall PIN numbers and take the severity levels from an alternative source.

- This approach can be used when there is an alternative source that provides the severity breakdown and covers the most affected sectors, but the PIN from this source is not considered to be a good representation of the overall PIN.
- Level 4 and Level 5 will be taken from this source. To maintain the relationship between PIN and the Severity levels (i.e. PIN = Level 3 + Level 4 + Level 5), Level 3 will be the difference between the PIN number and the sum of Level 4 and Level 5.This is justified by the assumption that the alternative source is unlikely to provide an intersectoral PIN, and that the sectoral PIN will be lower or equal to the overall PIN from HNO/HRP/HNRP 2024.

Approach 3. Use HNO/HRP/HNRP 2024 for PIN and severity levels from HPC 2023 as percentages of PIN.

- This approach is applicable to crises where the situation is considered to be relatively stable with respect to the situation in 2023.
- The breakdown of PIN into severity levels can be computed based on the 2023 data. E.g. Level 4 = (PIN 2024) *(Level 4 2023) / (PIN 2023).
- The information from the 2023 data should be used as a percentage. It is advisable to use directly the Level 4 and Level 5 absolute numbers from 2023 only in cases where the number of PIN has NOT evolved with respect to 2023, but it is considered that the number of people in Level 4 and in Level 5 is consistent with 2023. This can be the case for instance in a country with multiple crises if the addition or removal of a specific crisis is not expected to impact Level 4 and Level 5 but will change the overall PIN.

Approach 4. Use HNO/HRP/HNRP 2024 for PIN and compute severity levels from the JIAF intersectoral severity (if possible, starting at admin 2 or lower granularity).

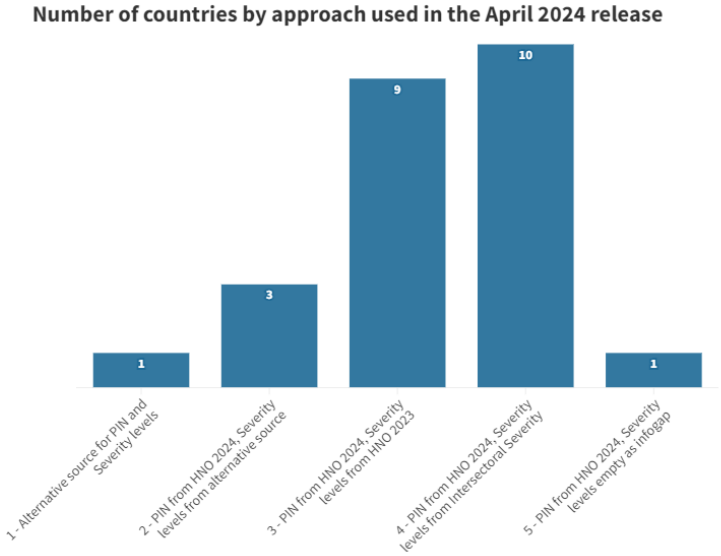
- All the PIN in each analysis unit is assigned to the severity condition in the INFORM Severity Index corresponding to the JIAF intersectoral severity of that analysis unit. Since PIN can be also in areas with JIAF severity 1 or 2, these are added to the Level 3 of the INFORM Severity Index classification of PIN by severity (that therefore covers the JIAF severity levels 1 + 2 + 3).
- This approach assumes that the whole population in a certain analysis unit is at the same level of severity, which we know empirically not to be the case.
- Where applicable, option 3. is preferred to option 4., as option 4. implies an extension of the interpretation of the JIAF intersectoral severity, and it does not consider the diversity of severity of needs within the same analysis unit.
- When this approach is used, the reliability of the data point should be set to "Low".

Approach 5. Use HNO/HRP/HNRP 2024 for PIN and leave severity levels empty as information gap.

- This is a viable option if it is expected that, given the context of the crisis, the number of people in Level 4 and in Level 5 will be negligible.
- It should only be considered as a last resort for all other cases.

Figure 33 shows the number of countries where each approach is used in the April 2024 release of the INFORM Severity Index.

Figure 33: Number of countries where each approach is used in the April 2024 release of the INFORM Severity Index.



Source: Authors (ACAPS)

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