Peer Review Framework for Predictive Analytics in Humanitarian Response

MODEL REPORT:
Global Displacement Monitoring

UN OCHA Centre for Humanitarian Data

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OCHA CENTRE FOR HUMANITARIAN DATA

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Model Report:
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1. Background

This document summarizes the documentation and findings of the peer review of the global displacement monitoring model that has been developed by the UN OCHA Centre for Humanitarian Data. This model creates a simple flagging system that uses global data sources to raise an alert when a potential shock or humanitarian consequence may have occurred that could require global attention. For this review, the focus is on a model flagging displacement data, where alerts are generated based on abnormal levels of displacement seen within a country or static thresholds being met, with different timepoints.

The review has been conducted between February and June 2023.

2. Main Findings and Recommendations

You can find all the documentation regarding the model, its application and the review process at the following links:

- The Model Card describes version 1.0 of the model and was completed in February 2023.
- The Model Evaluation Matrix was completed in February 2023 by an expert on displacement data.
- The Implementation Plan was completed in March 2023.It summarizes how the model output is used to alert the UN Central Emergency Response Fund team about a deteriorating situation.
- The Ethical Matrix aims to identify all stakeholders and potential issues regarding the intended use of the model. The Ethical Matrix was completed in May 2023 by Fanny Weicherding, Data Responsibility Officer at the UNOCHA Centre for Humanitarian Data.

A summary of the main findings and recommendations is provided below.

2.1 Technical Review

Model Development and Documentation

There are no major issues that would seriously impact the validity of the model. The main recommendation is to ensure that dynamic displacement situations are correctly flagged by the model. Also, in addition to percentile-based thresholds, additional warning thresholds based on the absolute number of people displaced could be added to the model.

Model Evaluation

It should be clarified in the documentation that the alert system has been designed with a specific use case in mind and may not be appropriate for other potential use cases. It is therefore recommended to better articulate the situations in which the model is expected to have good performance compared to those that the model is expected to miss.

2.2 Ethical Review

Inaccuracy

Inaccuracy refers to the output generated by the model not being accurate.
If the model is inaccurate, it does not improve the status quo of resource allocation/information available to the CERF. It is therefore recommended that the model inaccuracies are discussed in detail with the CERF team.

Insufficient Data

Insufficient data refers to gaps in data to the extent that no reliable prediction can be made.
For the end user (CERF) this would be a high priority risk as it would to the team relying on a model that doesn't provide reliable outputs.

Systematic Bias

Systematic bias refers to the datasets used to train the algorithm not reflecting the full complexity of the reality.
This issue is of high priority as it could potentially lead to ill informed decisions by the CERF team and eventually a misallocation of resources. It is therefore recommended to always validate the information from the model with local partners and use alternative tools, - where available - to complement/validate the model.

Feedback

The Centre invites individuals and organizations working in the humanitarian, academic, research and private sector to engage with us on the peer review process. Please send feedback on the Framework to centrehumdata@un.org.