

Data Science to Build Resilience and Improve Humanitarian Response

Thought Summit Narrative Report – August 2026

May 11-15, 2026 | Cornell University | Ithaca, New York

Overview

From May 11–15, 2026, CIDER and the Center for Data Science for Enterprise and Society brought together 49 researchers, humanitarian practitioners, funders, and government and multilateral partners for the Data Science to Build Resilience and Improve Humanitarian Response Thought Summit. The five-day meeting focused on how new data sources, data science, and AI can be used to improve early warning, humanitarian targeting, and decisions about when and how to respond to crises. The summit was organized by CIDER with sponsorship from the Center for Data Science for Enterprise and Society and the Cornell Atkinson Center for Sustainability.

We purposefully designed the agenda to combine public invited seminars, research presentations, practitioner panels, white paper working sessions, and an interdisciplinary pitch exercise designed to seed new collaborations. The early sessions focused on new data sources and advances in forecasting, including applications to poverty, food insecurity, child malnutrition, and climate risk. As the week progressed, we increasingly shifted toward the harder question of what happens after a forecast is produced: who uses it, whether they trust it, what action it should trigger, and whether financing is available to act.

Item	Summary
Dates	May 11-15, 2026
Primary location	Cornell University, with sessions in Warren Hall, Gates Hall, Atkinson Hall, and Physical Sciences
Theme	Using data science, AI, and integrated evidence systems to improve resilience, early warning, humanitarian targeting, and anticipatory response
Participants	49 participants: 29 from Cornell and 20 external participants
Core output	Shared research agenda and white paper workplan

Summit objectives and format

The summit was designed around a practical question: how can the data science community help humanitarian and development institutions make better decisions under time pressure, uncertainty, and severe resource constraints? Sessions deliberately bridged technical research and operational practice. The program began with framing around humanitarian needs and AI-enabled targeting, then turned to child malnutrition early warning, machine learning for crisis forecasting, data systems and measurement, climate risk and uncertainty, decision rules, anticipatory financing, and institutional adoption.

A recurring design feature was the movement from models to decisions. Technical sessions asked what data and model architectures can produce reliable signals, while practitioner sessions asked how those signals enter real institutions: national early warning systems, IPC analyses, WFP country planning, UNHCR protection and displacement systems, government disaster finance, and development finance risk governance.

Participants and institutional reach

The summit brought together 49 participants, including 29 Cornell participants and 20 external participants. External organizations represented included the African Development Bank Group, the World Bank Group, World Food Programme, UNHCR, Kenya National Drought Management Authority, IFPRI, NASA Jet Propulsion Laboratory, Rockefeller Foundation Catalytic Capital, the Eleanor Crook Foundation, Columbia University, U.C. Berkeley, NYU, Ohio State University, and the University of Edinburgh/Jameel Observatory. The mix of participants allowed the summit to pair cutting-edge methods with real decision systems and implementation constraints.

Major takeaways

- **Better prediction does not automatically lead to better decisions.** This was probably the most consistent message across the week. In many cases, the limiting factor comes after an early warning has been produced: financing may not be available, institutions may not trust the signal, or it may be unclear what response should follow.
- **The discussion did not support replacing traditional data collection with AI or remote sensing.** Surveys, administrative records, local monitoring, and other ground-level data remain essential, particularly for measuring human outcomes. The more promising direction is to combine these sources with satellite data, mobile data, sensors, and other newer sources.
- **The appropriate measure of model performance depends on the decision being made.** Participants repeatedly questioned whether standard measures such as accuracy or R-squared are sufficient. For operational systems, the more important question may be whether a model improves targeting, provides enough lead time to act, or reduces the cost of responding.
- **Forecasts need to be linked to triggers, actions, and financing.** The Kenya child malnutrition work provided a particularly concrete example of moving from a predictive model to an operational early warning system, while other sessions highlighted how difficult that transition remains in many settings.
- **Context matters.** The summit surfaced real limits to transferring models or data systems developed in one setting to another, particularly for pastoralist, displaced, conflict-affected, and otherwise poorly measured populations.
- **Participants saw substantial room for continued collaboration.** The working sessions produced several research directions that will now feed into the summit white paper and possible follow-on projects.

Emerging research and collaboration agenda

White paper working sessions and closing discussions identified several priority collaboration areas. These included geospatial prediction models for welfare and poverty estimation; probabilistic and scenario-based forecasting frameworks; integration of geospatial, climate, and AI-based signal extraction; ground-level data, low-cost sensing, and sampling under budget constraints; drought index disaggregation and SIF downscaling; and interpretable intermediate products that make complex models more legible to users.

The pitch exercise generated four early concept directions: an AI-supported adaptive data collection agent to help agencies decide what data are worth collecting under budget constraints; a food security and political instability model paired with improved public communication; rural staple food price forecasting for humanitarian planning and market monitoring; and anticipatory displacement prevention linking shock forecasts, response capacity, and pre-arranged financing instruments.

These discussions will provide the basis for the white paper now being developed by summit participants. The white paper is currently (August 2026) in draft, and we will share it with CDES and Atkinson upon completion. Participants also identified a number of possible follow-on collaborations, several of which participants began discussing during the summit and in the weeks afterward.

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Appendix A. Summit agenda

The agenda below summarizes the main sessions and working blocks held during the summit.

Monday, May 11 - Arrival and Framing

Time / session	Focus
13:30	Arrival and registration
14:00	Opening session: remarks from CDEES and Atkinson; summit objectives and framing; logistics
16:30	Public invited seminar: Joshua Blumenstock, “Applications of Machine Learning and AI to the Targeting of Humanitarian Aid”

Tuesday, May 12 - From Data to Decisions

Time / session	Focus
9:00	Kickoff remarks and foundation perspective from the Eleanor Crook Foundation
9:30	ML-based forecasting of acute child malnutrition for early warning
10:30	From forecasts to policy: ML-based early warning for child malnutrition in practice
11:00	AI safety in global contexts
13:15	Advances in predictive systems: time series forecasting, LLMs and decision support, sentinel site design, food crisis forecasting
14:45	White paper overview and assignments
16:30	Public invited seminar: David Newhouse, “Data integration for small area estimation and nowcasting”

Wednesday, May 13 - Data Modeling

Time / session	Focus
9:00	Kickoff: Earth observations, models, and foundation models for feature expansion
9:45	Climate risk and decision-making under uncertainty
11:15	Data systems: measurement, inference, and real-world constraints
13:30	Data systems: new data sources and digital infrastructure
14:30	Segue to decision systems: Rockefeller Foundation perspective and operationalizing modeled outputs into IPC analyses
15:00	Coffee and white paper working session

Thursday, May 14 - Decision Systems

Time / session	Focus
9:00	Kickoff: Insight to Impact - what development institutions need from data science to build resilience
9:30	Closing the loop: co-design and field decision-making in humanitarian AI

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Time / session	Focus
11:00	Decision rules and financing triggers
12:00	Pitchathon / interdisciplinary collaboration exercise
14:00	From data to local action: lessons, priorities, and next steps
16:00	Pitchathon presentations
17:00	White paper working session

Friday, May 15 - Future Directions

Time / session	Focus
9:00	White paper working session
11:00	Next steps and closing
12:00	Box lunch
15:00	Optional white paper working session

Appendix B. Participant list

Participant list is provided by name and affiliation. Contact details are available in the internal participant list.

Name	Affiliation
Adam Sobel	Columbia University
Aditya Vashistha	Cornell University
Akshatha Giridhar	Cornell University
Alex Diallo Mills	Cornell University
Allison (Alli) Greenberg	Rockefeller Foundation Catalytic Capital
Andrew Mude	African Development Bank Group
Angeline Pendergrass	Cornell University
Axel Schneider	Cornell University
Carey Okal Manwa	Cornell University
Chris Barrett	Cornell University
Chris Hillbruner	IFPRI (consultant)
Chuan Liao	Cornell University
Chungmann (Manny) Kim	IPC Global Support Unit; Johns Hopkins
Cindy Qiao	Cornell University
Daniel Mason-D'Croz	Cornell University
David Newhouse	World Bank Group
David Shmoys	Cornell University
Elizabeth Tennant	Cornell University

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Name	Affiliation
Ellyn Yakowenko	Eleanor Crook Foundation
Flavio Lehner	Cornell University
Fridah Mubichi-Kut	Cornell University
Hongdi Zhao	Cornell University
Ilin Kim	Cornell University
Jaron Porciello	Cornell University
Jennifer Denno Cissé	Cornell University
Jenny Aker	Cornell University
Joanna Upton	Cornell University
John Ougo	Kenya National Drought Management Authority
Joshua Blumenstock	U.C. Berkeley
Kelsey Schreiber	Cornell University
Kurt Waldman	Cornell University
Kyriacos Koupparis	World Food Programme
Lakshmi Subramanian	NYU
Leah Bevis	Ohio State University
Mario Herrero	Cornell University
Matthew Kibbee	Cornell University
Minjie Jia	Cornell University
Nathan Jensen	University of Edinburgh; Jameel Observatory
Nick Parazoo	NASA Jet Propulsion Laboratory
Peter Fisker	Independent Researcher (former Univ. of Copenhagen)
Rebeca Moreno Jimenez	UN Refugee Agency (UNHCR)
Rebecca Lyn Ten Eyck	Cornell University
Ruth Hill	IFPRI
Sumanta Basu	Cornell University
Susana Constenla-Villoslada	U.C. Berkeley
Talip Kilic	World Bank Group
Vivek Srikrishnan	Cornell University
Yanyan Liu	IFPRI
Ying Sun	Cornell University