

ITT9: Drought modelling

Ben Ashby, Eleanor Barry, Aoibheann Brady, Jon Gascoigne &
Elizabeth Gray

University of Bath & Willis Towers Watson

January 30st, 2019

When should aid be given?

WTW key question:

“What is the balance between an accurate warning compared with an early warning?”

Idea: Want to identify optimal time to intervene

When should aid be given?

WTW key question:

“What is the balance between an accurate warning compared with an early warning?”

Idea: Want to identify optimal time to intervene (& perhaps assess suitability of current metrics for drought).

When should aid be given?

WTW key question:

“What is the balance between an accurate warning compared with an early warning?”

Idea: Want to identify optimal time to intervene (& perhaps assess suitability of current metrics for drought).

Problem: Large number of false positives.

When should aid be given?

WTW key question:

“What is the balance between an accurate warning compared with an early warning?”

Idea: Want to identify optimal time to intervene (& perhaps assess suitability of current metrics for drought).

Problem: Large number of false positives.

Further problem: Ethical constraints!

- Access to aid a problem.
- Decisions are not necessarily supported by data.
- Incorrect census data, under/over-reporting of need for aid for political reasons, displacement of people.

Data:

- Water Requirement Satisfaction Index (WRSI) as a measure of drought.
- Hunger and undernourishment data.
- Crop production & animal data (FAOSTAT).
- Food insecurity classification (FEWSNET).

This week: A decision-theoretic approach

Plan:

- 1 Investigate how well drought predicts famine & other relevant covariates for a given country (For all countries — future work).

This week: A decision-theoretic approach

Plan:

- 1 Investigate how well drought predicts famine & other relevant covariates for a given country (For all countries — future work).
- 2 Construct a distribution for severity of outcome at each time point (eventually by location — future work). Involves calculating utility factoring in losses.

This week: A decision-theoretic approach

Plan:

- 1 Investigate how well drought predicts famine & other relevant covariates for a given country (For all countries — future work).
- 2 Construct a distribution for severity of outcome at each time point (eventually by location — future work). Involves calculating utility factoring in losses.
- 3 Develop a decision-theoretic framework for when to intervene.

This week: A decision-theoretic approach

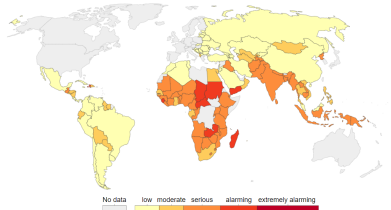
Plan:

- 1 Investigate how well drought predicts famine & other relevant covariates for a given country (For all countries — future work).
- 2 Construct a distribution for severity of outcome at each time point (eventually by location — future work). Involves calculating utility factoring in losses.
- 3 Develop a decision-theoretic framework for when to intervene.

Global Hunger Index, 2016

The Global Hunger Index (GHI) used to track hunger globally and nationally. The index score comprises of four key hunger indicators: prevalence of undernourishment in the total population; childhood wasting; childhood stunting; and child mortality. This calculation results in GHI scores on a 100-point scale where 0 is the best score (no hunger) and 100 the worst. A score ≥ 50 is defined as 'extremely alarming'; 35-50 as 'alarming'; 20-35 as 'serious'; 10-20 as 'moderate' and <10 as 'low'.

OurWorld
in Data



Source: International Food Policy Research Institute (2018)

CC BY-SA