Development of Standards for Official Statistics on Climate-Health Interactions

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Outline

- Motivation
- Project Introduction
- How this Project contribute to UNECE climate related statistics?
- Global standardized framework and knowledge sharing platform for NSOs and other government department- End users
- Heat and health (Pilot framework and tool)- under progress
- How statistics Informing climate change adaptation policies?
- Way forward and how to engage with our work?

Motivation – Wellcome funding

Support global providers of climate change statistics

Enable comparable and reliable evidence reporting health impacts

Support global action and policy change

The project

- 4-year project led by the UK Office for National Statistics and supported by the Wellcome Trust
- Primary aim is to define a statistical framework and unified methods for official reporting of climate change impacts on health, at national and local levels
- Will provide tools to operationalize a set of defined indicators consistently and help build expert capacity in NSOs focused on climate and health where there is currently a lack of support.

Climate and Health Project

Aims:

- Define a **statistical framework** and unified methods for official reporting of climate change impacts on health, at national and local levels
- Develop a global reporting and knowledge-sharing **platform** with an open-source toolset in line with the agreed framework

Discovery Phase 2022/23

- ONS Climate and Health team begin
- Project scoped
- Partner selection

Alpha Phase 2023/24

- First draft of statistical framework and platform
- Internal testing with project partners

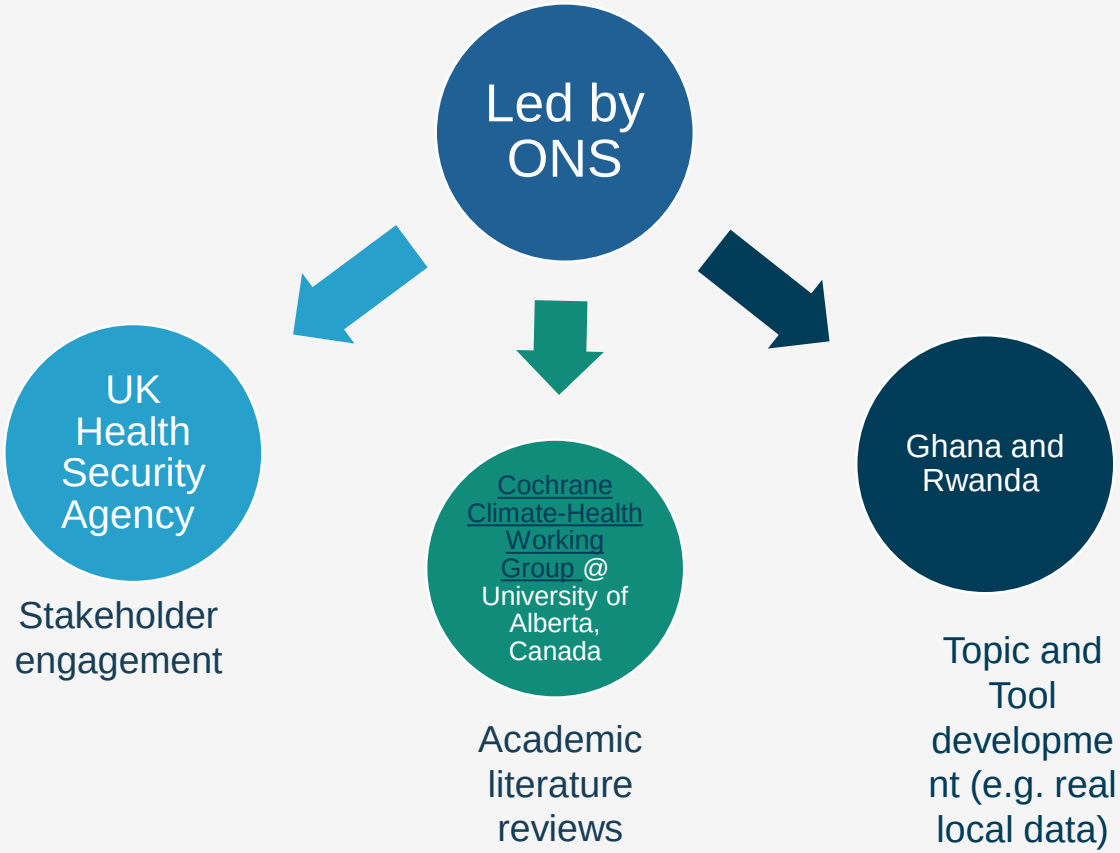
Beta Phase 2024/25

- Further refinement of framework and platform
- Global pilots for last stage of testing

Launch year 2025/26

- Final drafts signed off
- UNSD endorsement
- Launch platform and publish framework!!

Project Partners



Rwanda & Ghana

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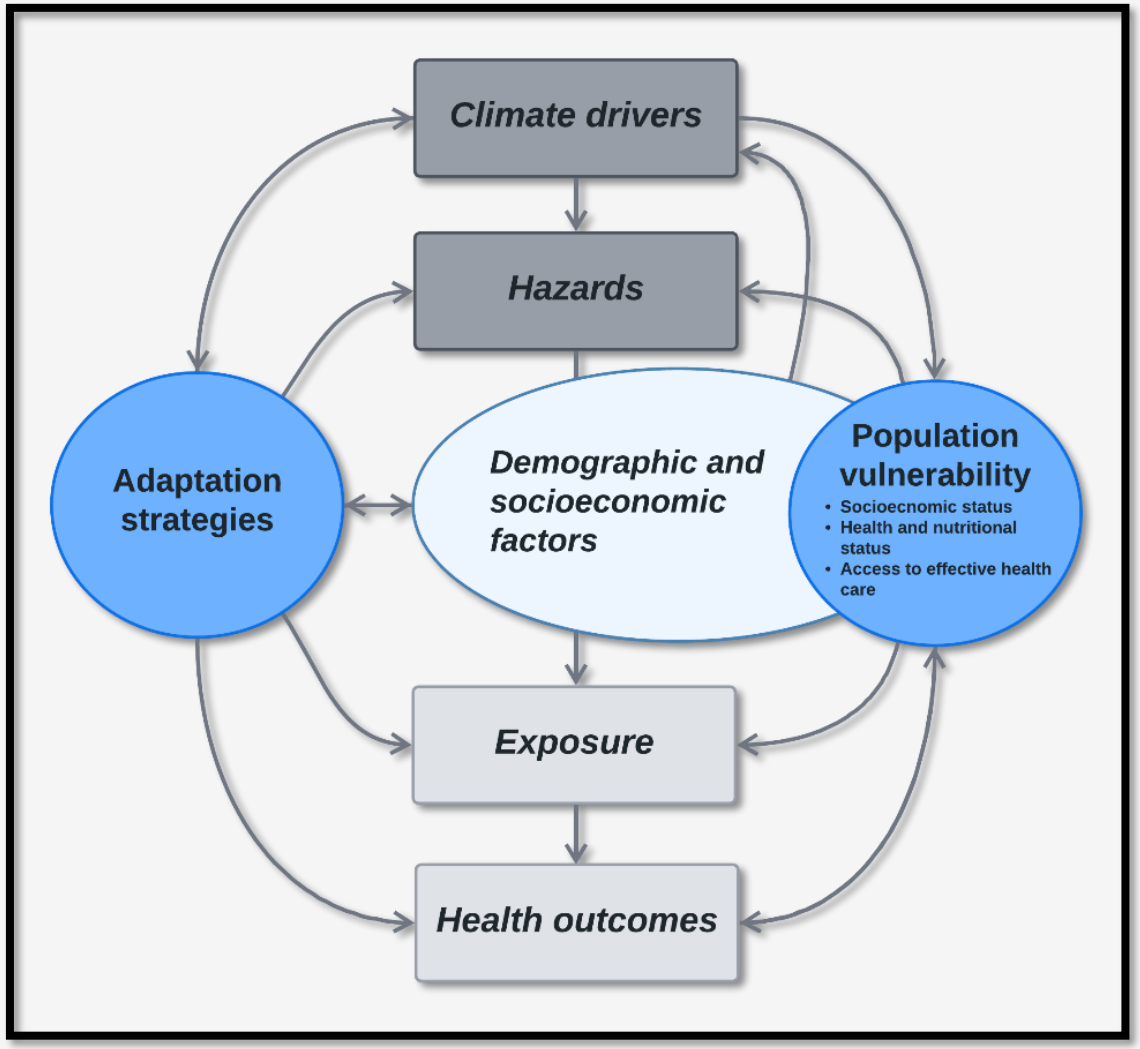
Climate and Health Pathways

- According to Intergovernmental Panel on Climate Change (IPCC) up to 3.6 billion people are living in conditions that are highly vulnerable to the impacts of climate change *(IPCC AR6 Report 2023)*
- Providing a single estimate of the overall health burden of climate change is challenging.*(WHO 2023, Nature Medicine).*
- How national statistical offices can contribute to achieving national climate objectives?- *UNECE task force objective!*



Project workstreams

1. Statistical framework

METRICS: Develop a transparent and globally generalisable framework for official statistics on climate change and health containing a series of appliable metrics

2. Online knowledge sharing platform

DATA: Develop a global reporting and knowledge-sharing platform and open-source toolset to facilitate high quality research and official statistics in line with the agreed framework

3. Statistical methods

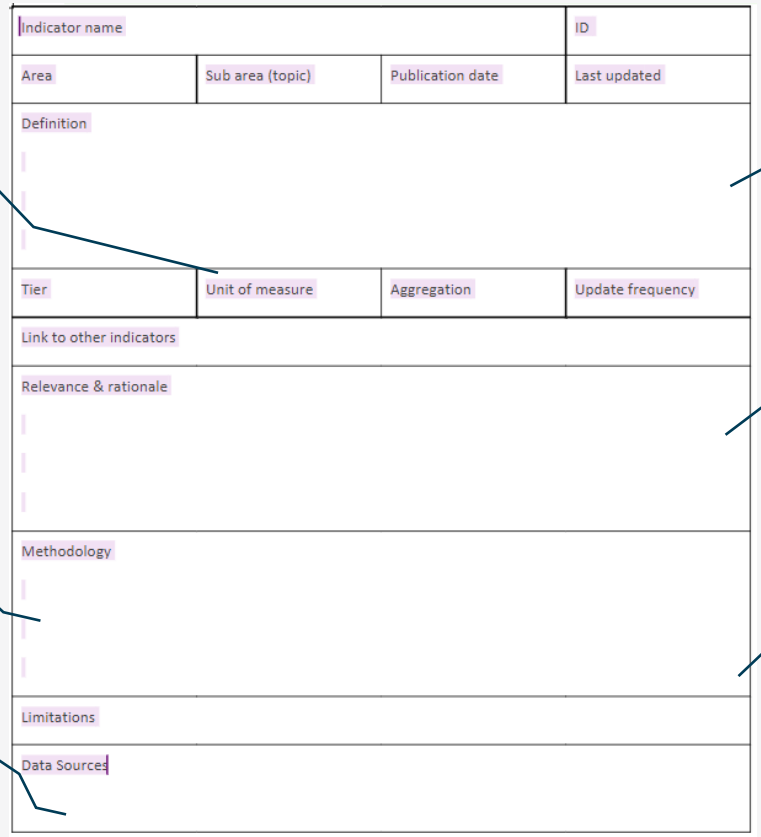
METHODS: Explore statistical methods to provide estimates of climate-related health risk using real world data sources, including novel and big data, and modelling local impacts

Existing framework example: UN Global set of Climate Change indicators

Statistical Framework

Defined metrics of health outcomes through a set of relevant indicators for each topic

Guidance on appropriate reporting



Unified definition

Clear relevance attributing climate change to health impact

Reproducible code in GitHub

Adoptable statistical methodology and limitations

Link to relevant data sources

Identified main climate-health topic areas

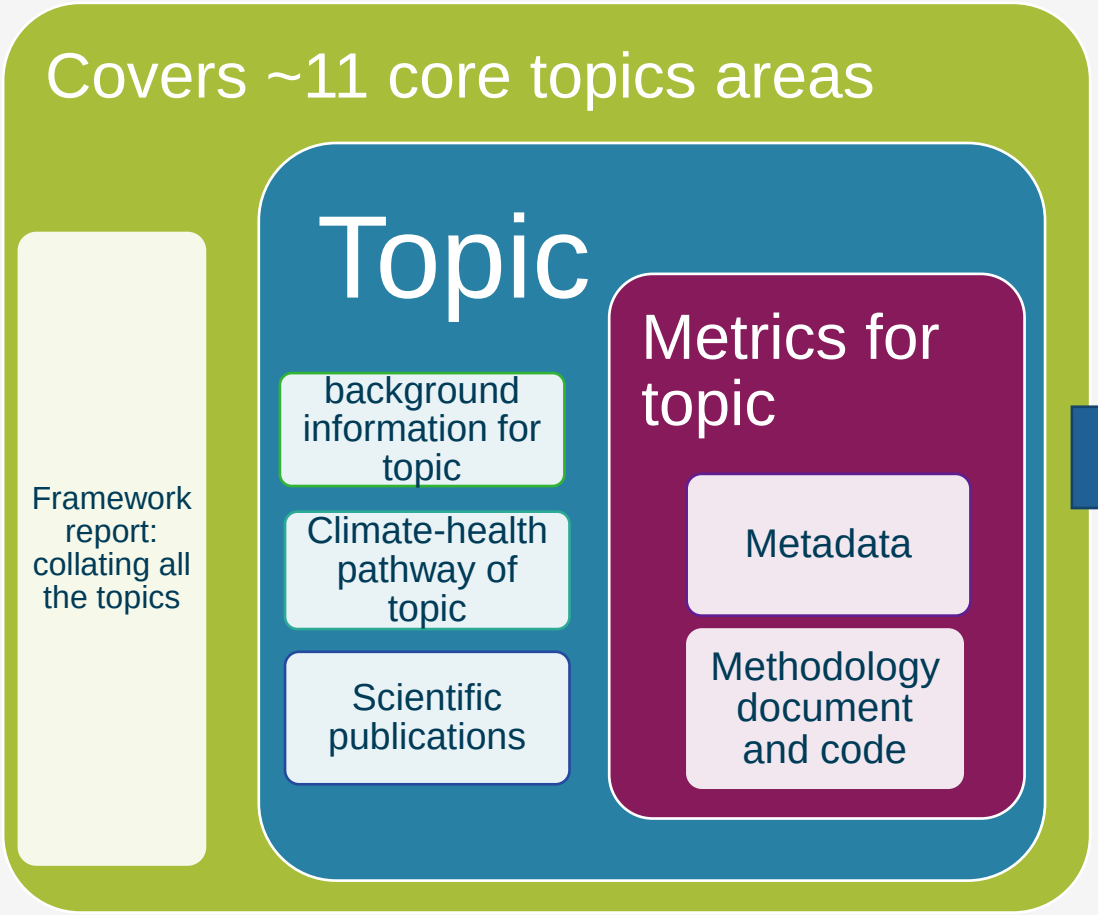
1. Injury and mortality from extreme weather events
2. Heat- and cold- related mortality and morbidity - (led by ONS)
3. Respiratory illnesses
4. Water-borne diseases and other water-related health impacts
5. Zoonoses
6. Vector-borne diseases
7. Malnutrition and food-borne diseases
8. Non-communicable diseases
9. Exposure to chemical contaminants
10. Mental and psychosocial health
11. Effects on health systems and facilities

Example indicator: Estimated excess all-cause mortality from extreme heat

Heat and Health- Pilot framework and Tool

(under progress)

Statistical Framework - Overview



Indicator ID number	**Category**		**Publication date**	**Last updated**
	Indicator name			
Area			**Sub area (topic)**	**Tier**
	Definition Indicator definition Concepts			
Unit of measure		**Disaggregation**		**Temporal breakdown**
	Link to other indicators			
	Link to other agreements/frameworks **SDGs**: **Paris Agreement**: **Sendai Framework**: **UN Global Set**: **Lancet Countdown:** **FDES 2013:**			
	Relevance & rationale			
	Methodology Where there are data limitations Code library			
	Interpretation & communication			
	Data Sources Data sources			
	Limitations			
	Updates & future developments			

Methods: How does temperature affect mortality risk?

Time Series Analysis

Bhaskaran et al

Remove effects of longer term and periodic factors affecting mortality
Determine appropriate adjustments for confounding factors primarily using Met Office data

Long Term Trend & Seasonality
Removing periodic mortality effects and longer term trends

Temperature Lag Terms
Allowing for delayed effects of hot & cold

Additional Confounders: Pollution, Humidity
Adjusting for additional factors related to temperature and mortality (potentially lagged)

Regression Modelling

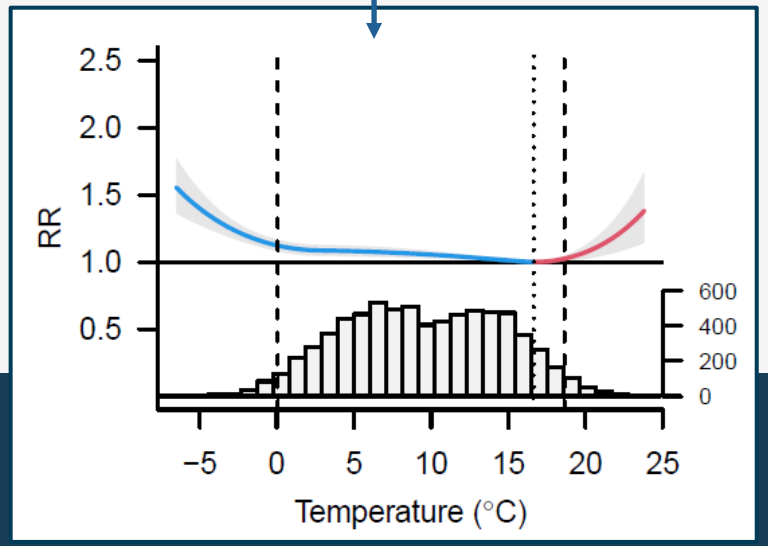
Gasparrini et al

Relative Risk of temperature exposure adjusting for confounders
Meta analysis to allow regions with smaller sample size to borrow power from other regions, adjustment for location specific factors, understanding regional heterogeneity

DLNM Poisson Time Series Regression Model
Regional Relative Risk estimates adjusting for confounding & allowing for delayed temperature effects

Results

Mortality temperature distribution
Relative Risk estimates x 9 English regions, Wales
Region specific factors / differences
Sensitivity analysis – testing model assumptions
Benchmarking to Gasparrini results



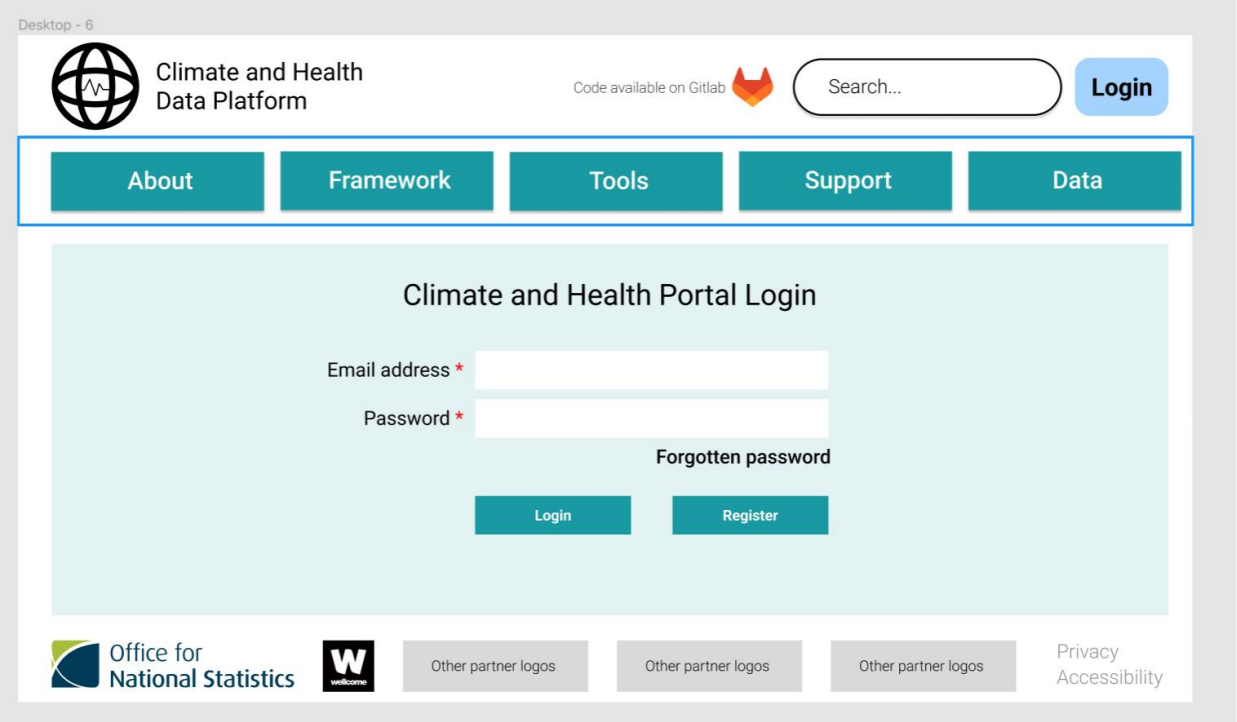
Online Knowledge Sharing Platform

Access to framework and methods

Open-source toolset to produce metrics

Login and upload data

Tool to explore and visualise data

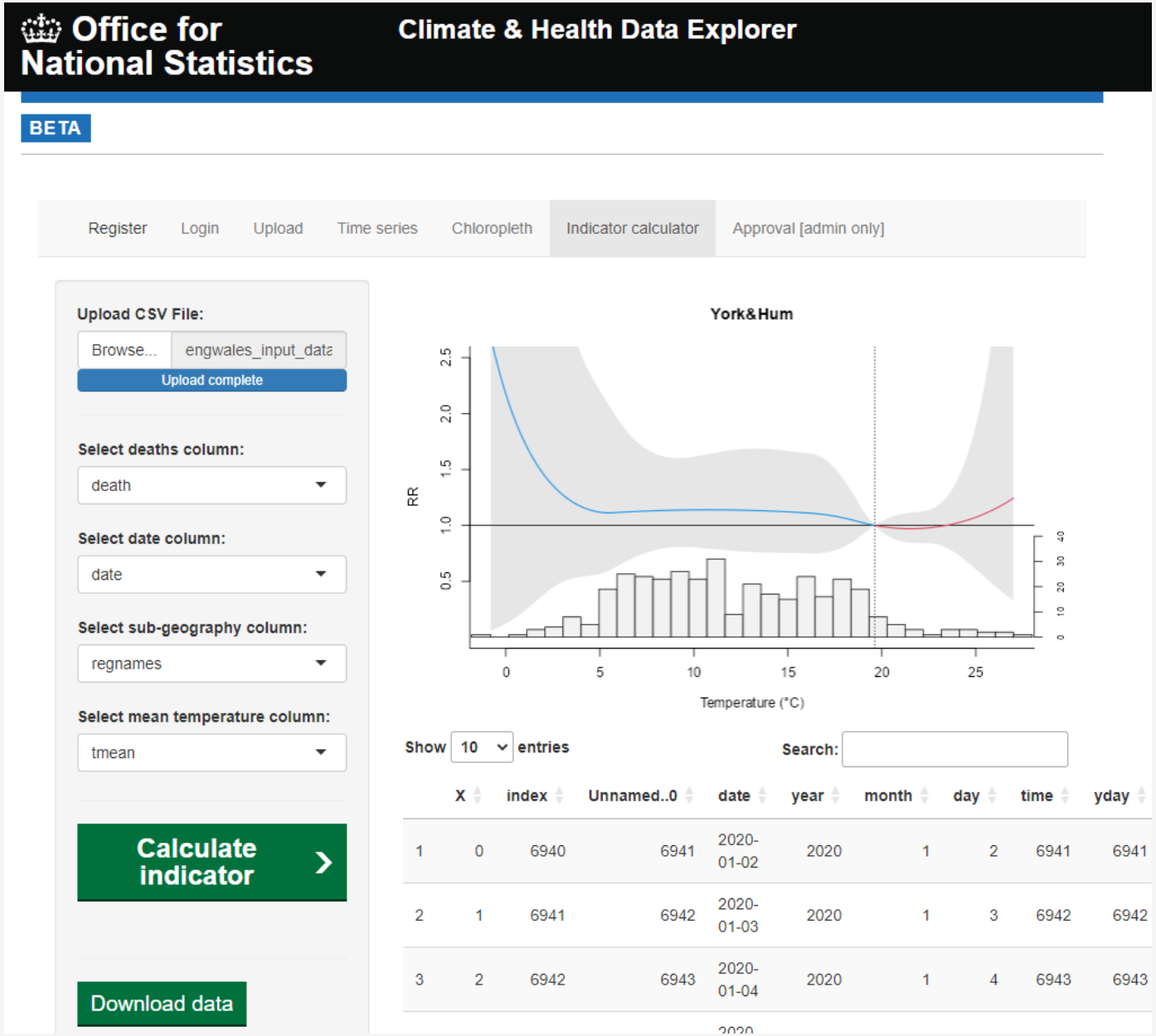


Online Platform

Enables access and sharing of the framework and data sources

Integration of Heat Indicator on Platform

- Deployment of framework (indicator)
- Sharing the methodology (metadata)
- Upload datasets (data template)
- Analyse datasets
- Sharing results and data
- Calculate indicator
- Download data
- Visualize results/plots/maps
- Tool development (R/python packages)



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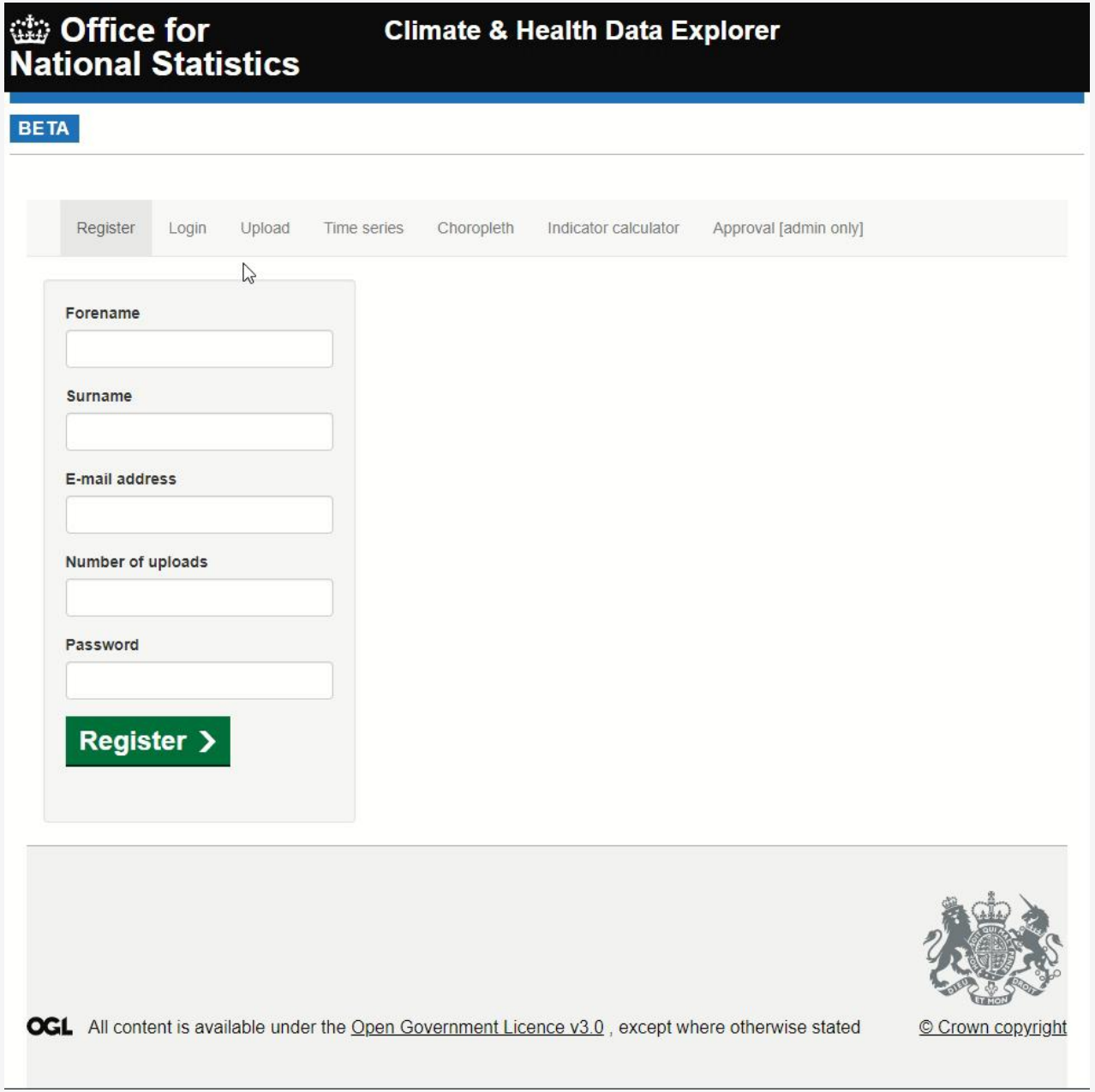
Integration of Heat Indicator on Platform

- User access/registration/login
- Uploading datasets (mortality)
- Selection of indicator (heat)
- Analysing datasets (by different socio-demographic groups)
- Results by different geographical level
- Calculate indicator (heat)
- Download data (RR table)
- Visualize datasets/plots/results



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How statistics Informing climate change adaptation policies?

Target users

Global providers of official statistics

- Direct users are primarily aimed at **analysts** responsible for **producing official statistics** on climate change and health for their country/region

Policy makers for climate action

- Indirect but end users of the official statistics are policy makers; these statistics should support and evidence prioritisation of action against climate change

Wider users?

- It may also be used by a non-profit organisation, other non-government organisation with an interest in producing climate-health analysis where not readily available

Adapt existing climate and/or health **indicators and definitions** where applicable

Priority – the health impact is a widely experienced problem where policy action is needed

Relevance – clear causal pathway from climate effect to health impact. Wider climate change is out of scope

Way forward and how to engage with our work?

Stakeholder engagement

User Feedback on Statistical framework and Global knowledge platform

Engagement with Expert Advisory Group

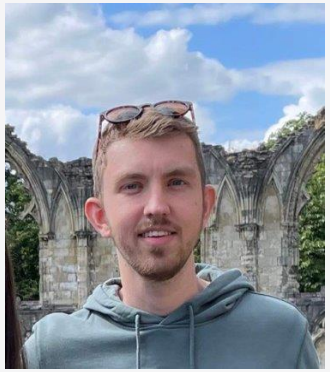
Thanks to the team, partners and funders

Contact us at: climate.health@ons.gov.uk











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