Lyme Disease Forecasting Contest Kick-Off

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31st March 2025

Outline

Introduction from SPHERE-PPL Team

Contest, Timeline & Communication

Getting Started

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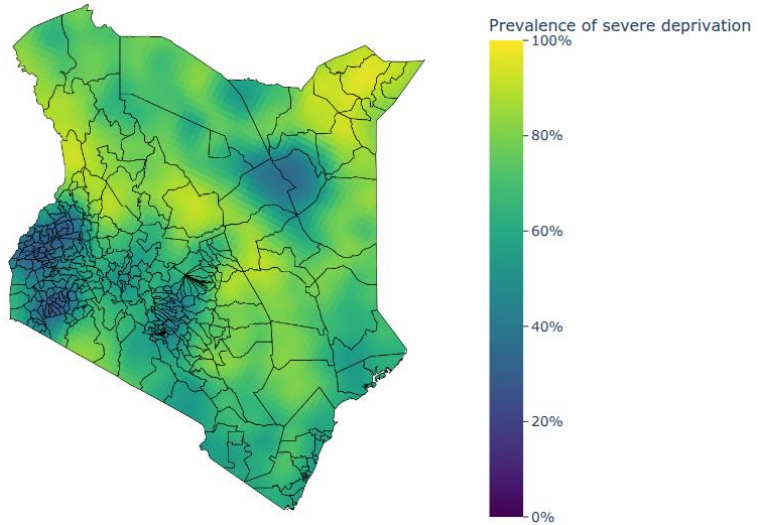
What is SPHERE-PPL doing?

- Contests
- Training
- Networking
- Research

StanCon 2024

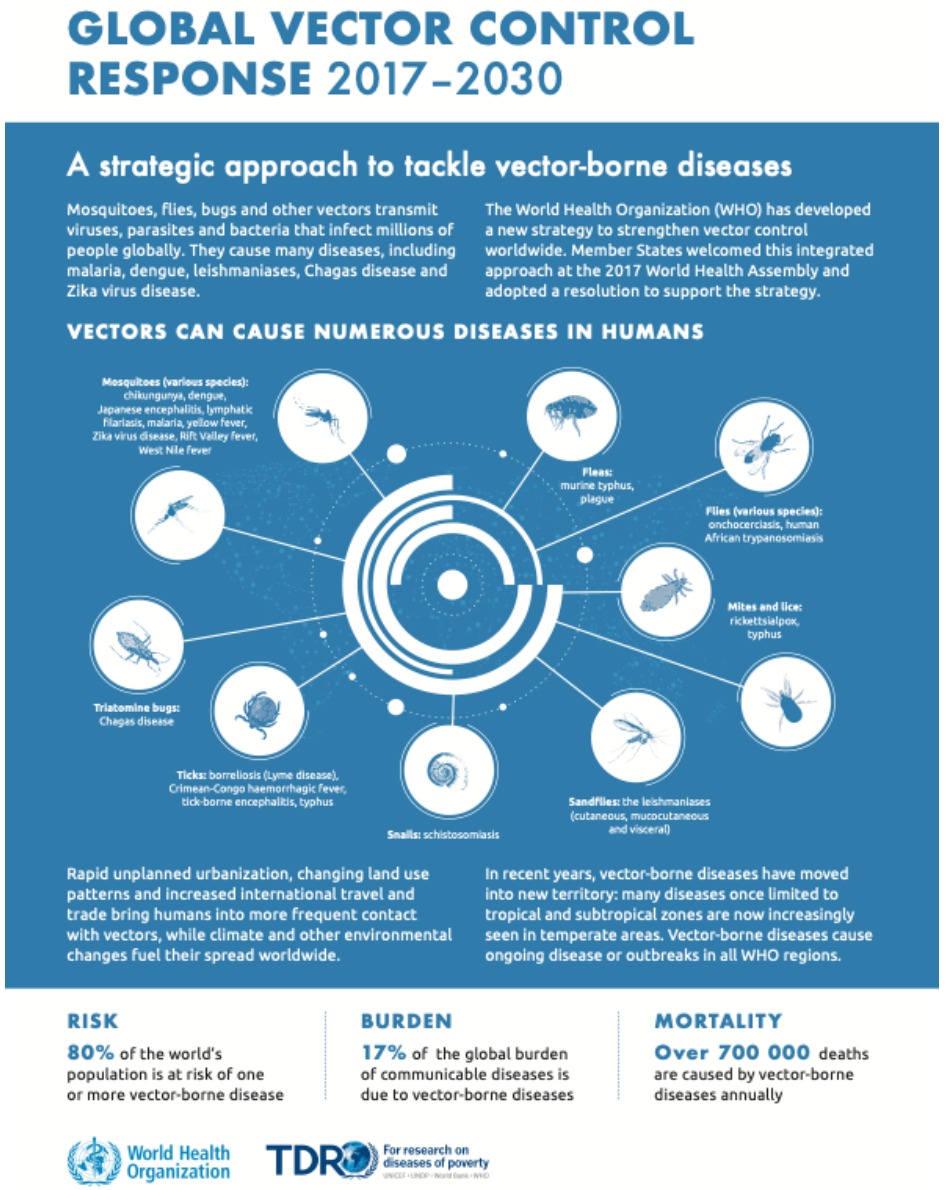
Conference on Stan programming and Bayesian Modeling

Oxford University, UK. September 2024



Vector-Borne Diseases

- A vector-borne disease is an illness transmitted to humans or animals by living organisms, known as vectors, like mosquitoes, ticks, and fleas, that carry pathogens (bacteria, viruses, or parasites).
- VBDs are prevalent across the globe with 80% of world's population at risk of one or more vectors.



Data taken from WHO & NHS

VBD Hub

- The *One Health Vector-Borne Diseases Hub* is a research hub for data sharing, exploration, and collaboration on vector-borne diseases both in the UK and globally.
- https://vbdhub.org/

VBD Hub

Partners

IMPERIAL

UNIVERSITY OF LIVERPOOL

LONDON SCHOOL of HYGIENE &TROPICAL MEDICINE

THE Pirbright INSTITUTE

UK Centre for Ecology & Hydrology

UKRI Biotechnology and Biological Sciences Research Council

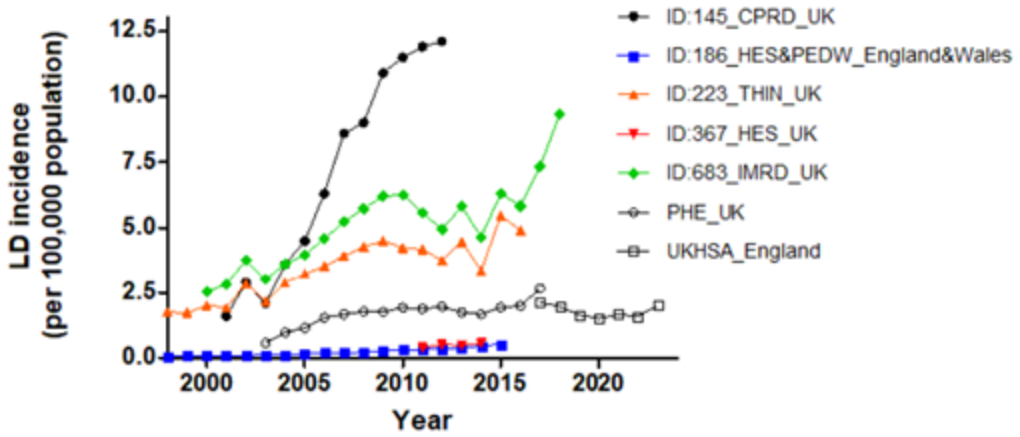
Department for Environment Food & Rural Affairs

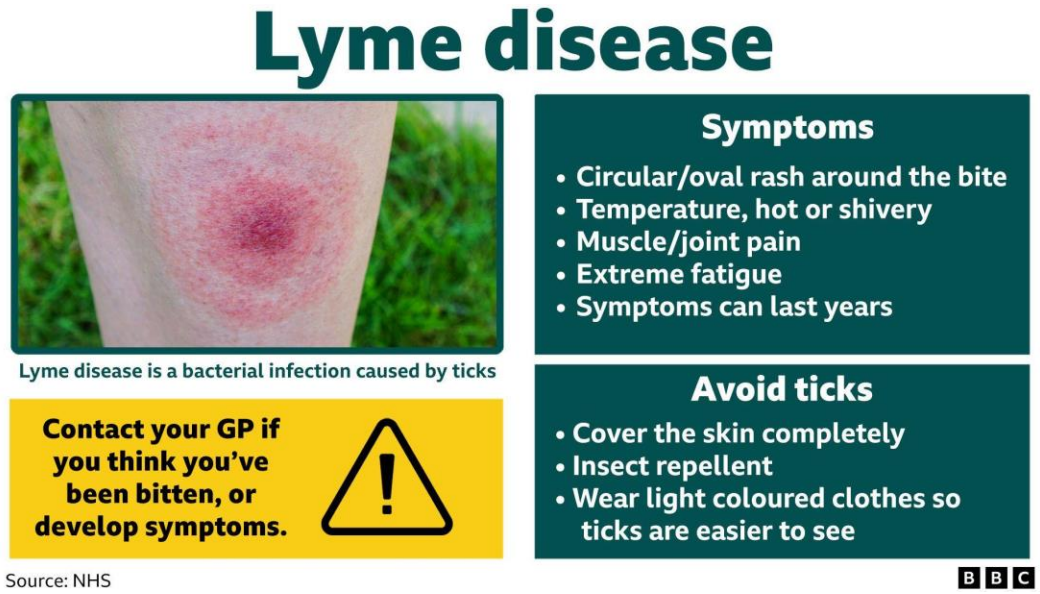
UK Health Security Agency

arctech

Lyme Disease

- Lyme Disease is the most prevalent VBD in the UK, USA & most of Western Europe
- The Bacteria that causes the disease, *Borrelia burgdorferi,* is transmitted to humans through the bite of the black-legged tick
- In the UK, it is the only endemic VBD and incidence rates have been rising steadily, tracked through routine surveillance





Data taken from WHO & NHS

Contest Outputs

***For this contest, we are looking to forecast Lyme Disease Cases at a range of geographical scales for 2023 & 2024 AND* a narrative report describing how you got the results!**

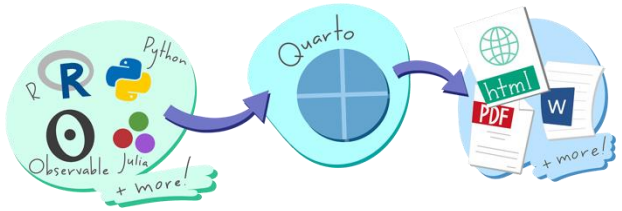
There are 3 columns to be filled for the forecast:

- Incidence (Mean)
- Incidence (Lower 95th Confidence Interval)
- Incidence (Upper 95th Confidence Interval)

Incidence rates should be given as cases per 100,000 population.

Contest Rules

- Any coding languages are allowed but all analyses must be reproducible by the panel.
- All entries must be loaded into a public Github repo.
- All entries must follow the submission formats outlined below.
- All entries must include a max 1000 word report to accompany the forecast analyses. This can be as a separate PDF/hmtl or incorporated into a quarto/jupyter notebook.



Contest Winners

For this contest, there are 2 prize categories:

- Most Accurate Estimates (as measured by RSME)
- Most Novel Report (e.g. storytelling, figures, insights)

The winners will be selected by the SPHERE-PPL Team and will be invited to present their forecasts at the next Annual Meeting, with travel supported by the project (within funding limits).

Contest Timeline

Monday 31st March	• Contest Kick-Off Meeting & Contest Opens
Throughout April & May	• Drop-in sessions for contest advice & guidance (run by SPHERE-PPL Team)
Friday 30th May	• Contest Closes
Throughout June	• Entries will be aggregated into a single output report and winners will be chosen.

Communication

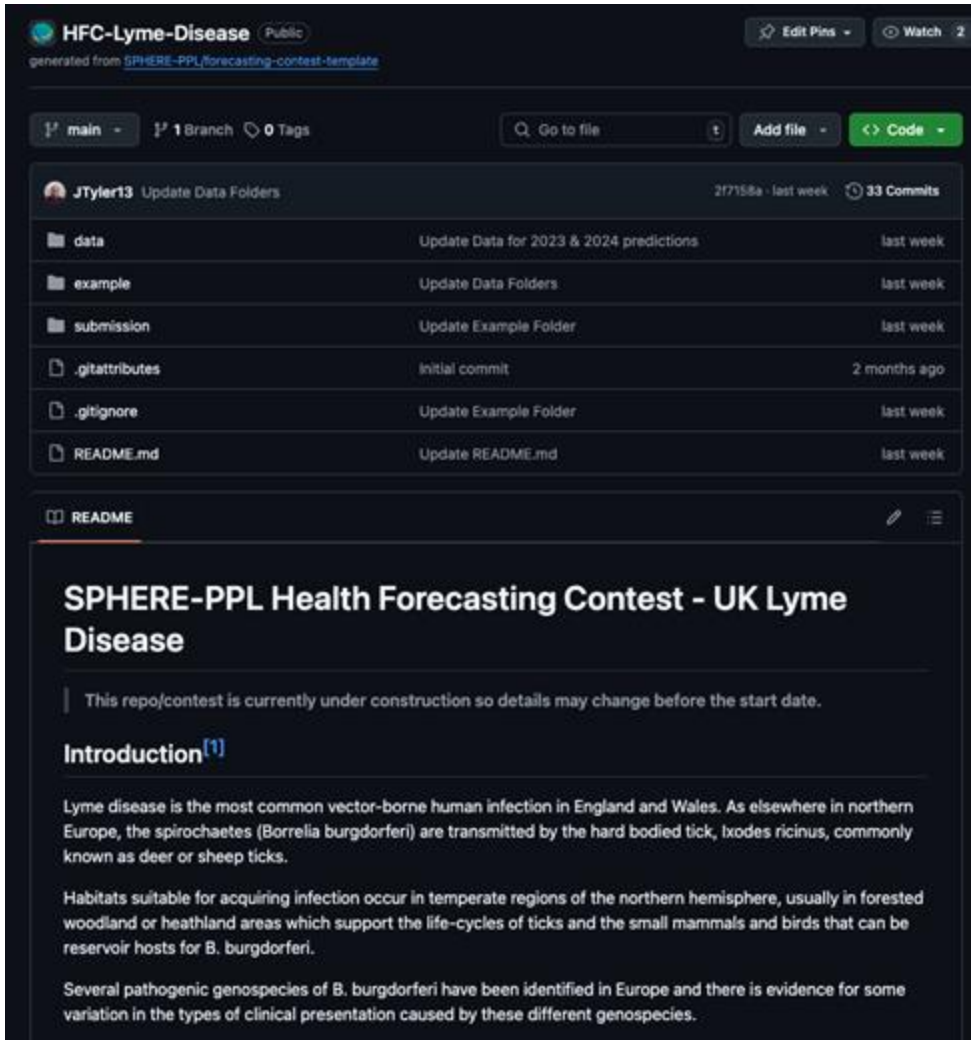
- We have a SPHERE-PPL Zulip group (akin to Teams or Slack) where we will be available to answer questions and interact with the community.
- Please also use it for communicating within your own teams!
- Join Here!

Getting Started

Main Link: [Lyme Disease Forecasting Contest]

Resources

- [Overview & Quick-Start Videos]
- [Example Contest – Mpox]



Thanks For Joining!

Get more information at our website: www.sphere-ppl.org

Email us at: info@sphere-ppl.org