DELVE Initiative

https://rs-delve.github.io/

Yee Whye Teh

Overview

DELVE: Data Evaluation and Learning for Viral Epidemics is a **multi-disciplinary** group, convened by the Royal Society, to support a **data-driven** approach to learning from the different approaches countries are taking to managing the pandemic. This effort has been discussed with and welcomed by Government, who have arranged for it to provide input through SAGE, its scientific advisory group for emergencies.

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DELVE, which stands for data evaluation and learning for viral epidemics, is a multi=disciplinary and data-driven research group convened by the royal society to help provide scientific evidence for the UK government’s response to the current pandemic.

Structure and Process

- Highly multidisciplinary, open and collaborative approach
  - Immunologists, virologists, public health, economists, behavioural scientists, statisticians, data scientists, ML engineers
- SciOps: Fast action science
  - Don’t reinvent the wheel.
  - Supply chain of ideas.
- Avatar model:
  - Steering Committee (chaired by Venki Ramakrishnan)
    ⇔ Working Group (chaired by Nigel Field)
    ⇔ Action Team (lead by Neil Lawrence and Yee Whye Teh)


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DELVE has a three layer structure, with a steering committee consisting of high profile academics, a working group of senior academics who advice and work with action team members, who do the ground work. Further, there is an avatar model where each steering and working group member has close connections with one or more action team member, and vice versa. This avatar model enables efficient communication and trusting relationships across DELVE. This is important in supporting the highly multidisciplinary, collaborative and fast-paced approach we take to science.

Works So Far

- Face Masks for the General Public
- Test, Trace, Isolate
  - Software: TTI-Explorer Simulation Software
- Hospital and Health Care Acquisition of COVID-19 and its Control
- Balancing the Risks of Pupils Returning to Schools
  - Blog: School is the Best Place for Children
- Economic Aspects of the COVID-19 Crisis in the UK

- Data/software: DELVE Global COVID-19 Dataset


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DELVE has produced a number of reports over the last few months, which we think have helped influence the government's response. These are: face coverings, test, trace and isolate, hospital and care home transmissions, schools, and just last week one on economic aspects of the crisis.

Given the data-driven nature of DELVE, we have also compiled a rich dataset on the state of and international responses to the pandemic, and in our reports we have endeavoured to locate and analyse data to answer the pertinent scientific questions.

However, sometimes we are unsuccessful at this, and we are now compiling a report on data readiness on where we ran into problems sourcing appropriate data, with the hope that this can instigate better preparation, both for what might happen next in this pandemic as well as for when the UK faces new emergencies.

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Data Readiness in an Emergency

Ulrich Paquet

Royal Society DELVE Initiative

Yee Whye Teh

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Spatial Variations in COVID-19 Transmission Rates in UK

https://bit.ly/3aFT44X

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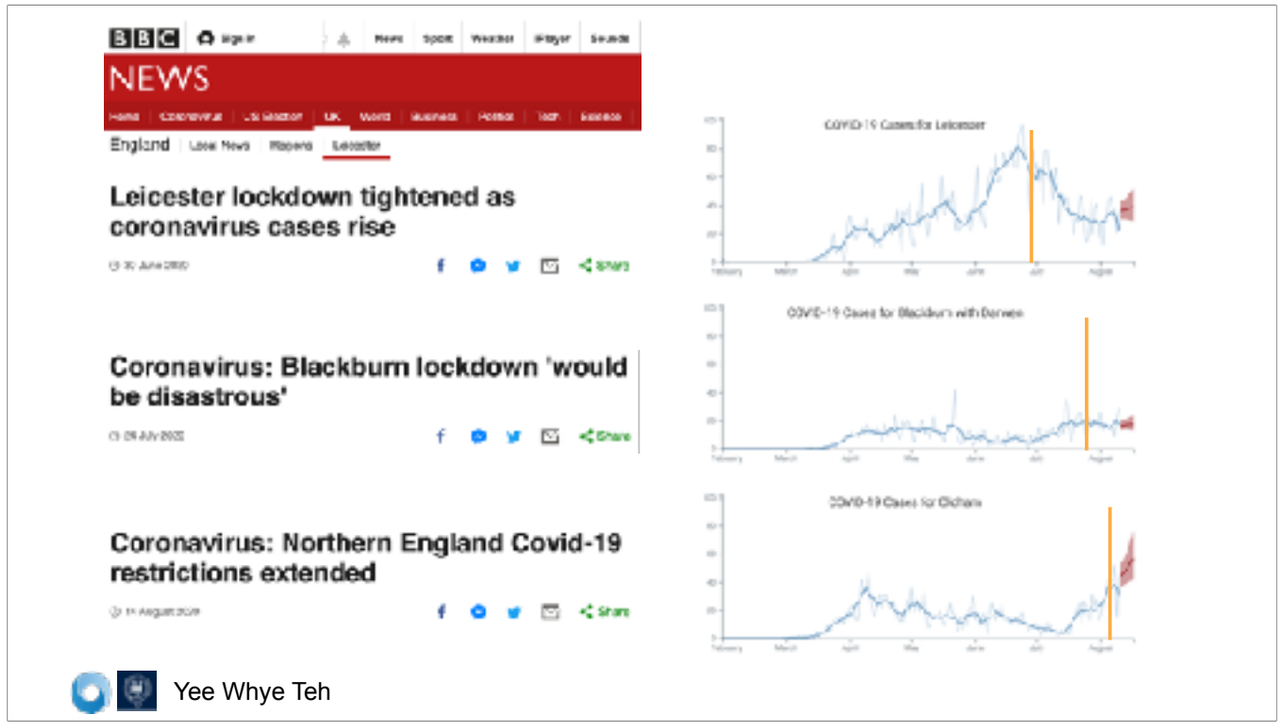
Royal Society DELVE Initiative


BBC
NEWS
England
Leicester lockdown tightened as coronavirus cases rise
Coronavirus: Blackburn lockdown 'would be disastrous'
Coronavirus: Northern England Covid-19 restrictions extended

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Indicators for monitoring local outbreaks

- PHE and NHS Test and Trace data – for example the **number and rate of increase of positive cases** and the number of outbreaks in an area
- syndromic surveillance – for example increase in NHS111 calls regarding COVID-19 like symptoms
- NHS activity – for example hospital admissions for COVID-19
- other indicators – for example mortality data


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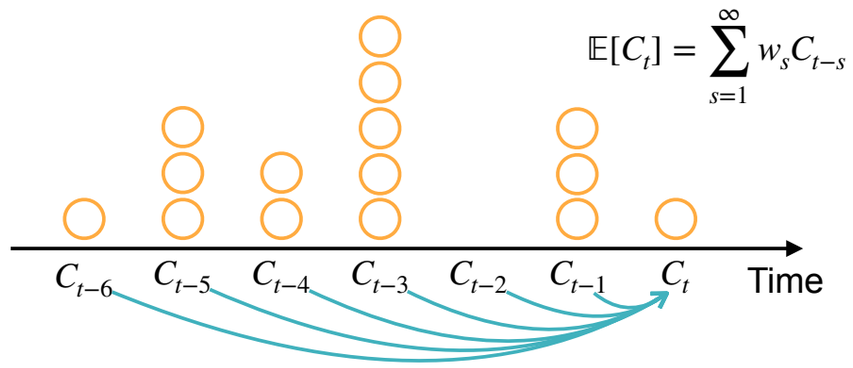
[GOV.UK: COVID-19 contain framework: a guide for local decision-makers]

early indicators: resource planning, closer monitoring, difficulties of robustly estimating rates of increase.

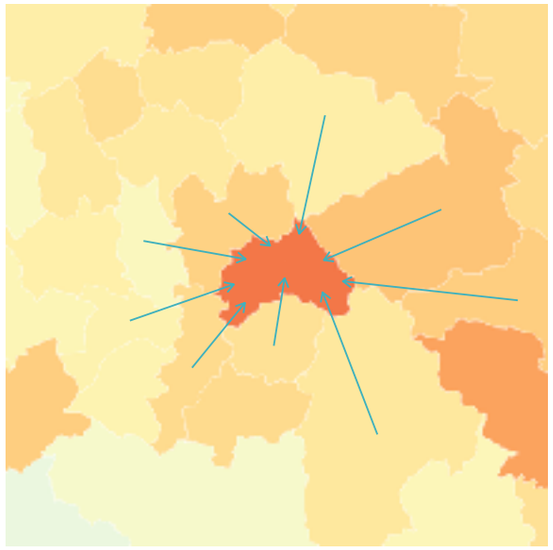
Estimating local R_t's

- Renewal equation



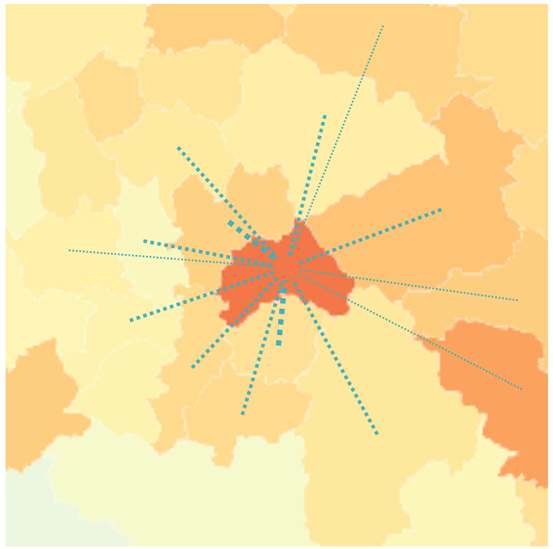
Estimating local R_t's

- Cross-infections



Estimating local R_t's

- Spatial correlations



Results

- Accessible at: https://bit.ly/3aFT44X.
- Work in progress. Not to be distributed.

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