Related programmes and teams
Health and medical sciences
Research Engineering

Estimating positive COVID-19 test counts

In September 2020, the Turing began a **partnership** with the Royal Statistical Society (RSS) to provide expertise to the UK government's Joint Biosecurity Centre (JBC). The JBC is part of NHS Test and Trace within the Department of Health and Social Care, and it provides scientific analysis to help decision makers respond to the spread of COVID-19, especially local outbreaks. The Turing-RSS Lab feeds into JBC's work by developing statistical and machine learning techniques to solve key, policy-relevant problems.

One of these problems relates to counting the number of positive COVID-19 tests in local authorities – crucial information for monitoring the virus's spread. It can take up to five days for PCR test results to be processed and reported, so there is a time lag in this data. A **statistical model** developed by a lab team led by Chris

Holmes, the Turing's Programme Director for Health and Medical Sciences, overcomes this lag by using the incomplete test data to estimate (or 'nowcast') the total positive COVID-19 test count, so that authorities can respond without having to wait for all the data to come in. The model has now been shared with JBC to support policy- and decision-making.

So far, the lab has recruited over 20 people in research, leadership and operational roles, from groups at Imperial College London, King's College London, MRC Harwell, University of Oxford, the RSS and the Turing. Other ongoing research at the lab includes combining data from multiple testing sources to estimate COVID-19 prevalence at a local level; and assessing the effectiveness of non-pharmaceutical interventions such as lockdowns and mask-wearing.

"The research and expertise provided by the Turing-RSS Lab has supported the creation of rapid evidence bases, enabling JBC to provide insights and recommendations in the fight against COVID-19. The lab has designed models and helped build a community which have significantly improved our ability to respond to the pandemic."

Johanna Hutchinson
Director of Data and Data Science
Joint Biosecurity Centre

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