

# INTERVIEW WITH DR ALISON HALE

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## WHAT IS YOUR BACKGROUND?

I started my working life training as an electronic engineer in industry eventually becoming an IT senior systems analyst specialising in business based Informatics. After which, at the first opportunity I had in my life, I entered higher education to undertake a degree and then PhD in theoretical physics. Over the last six years I have been enjoying the challenges of working at the intersection of statistics, epidemiology and health informatics in CHICAS at Lancaster University.

## WHAT IS CHICAS AND WHAT DOES IT DO?

CHICAS “The Centre for Health Informatics, Computing, and Statistics” is based in the Lancaster Medical School. It consists of a group of staff, research associates, and postgraduate students whose research focuses on statistical and epidemiological methods and their implementation in open-source software. Our wide-ranging research interests include spatio-temporal and longitudinal methods, infectious disease modelling, statistical genetics and designing computationally efficient methods for high-dimensional data.

## WHY WORK WITH SAVSNET DATA?



This data lends itself to disease surveillance since it is continually updated in real-time as new data accrue from veterinary surgeries. This opens opportunities for near-real-time outbreak detection which is the focus of our research: “A Real-time spatio-temporal syndromic surveillance system with application to small companion animals”, published in Scientific Reports (nature research) and available [here](#). Fernando Sánchez-Vizcaíno\* (Bristol Veterinary School, University of Bristol) and myself are joint first authors: our work involved the coming together of colleagues with very different backgrounds.

This research and paper is a really good example of interdisciplinary work from which we all learnt a great deal about communicating and working with colleagues from very different disciplines.

\*<http://www.bris.ac.uk/vetscience/people/fernando-sanchez-vizcaino-buendia/index.html>

## WHY DOES HEALTHCARE DATA, SUCH AS SAVSNET DATA, NEED COMPLICATED MATHS?

To detect an outbreak of disease, e.g. gastrointestinal disease, we need to predict the probability of observing an unwell dog (or cat) with respect to the underlying population of all dogs (or cats) at risk, despite only partially observing this underlying population. At certain times and geographic locations, veterinary surgeries, there will be a higher probability of an animal becoming unwell due to variations in the underlying population caused by well understood, *known*, phenomena (e.g. a higher than average concentration of elderly purebred dogs). However the true pattern of probability is also continuously influenced in numerous ways by *unknown* phenomena which we do not observe. Sophisticated mathematical techniques are required to reconcile the balance between that which is known and unknown, this reconciliation allows our disease surveillance system to predict the probability of disease outbreaks.