# Sam Abbott

*Bristol Medical School: Population Health Sciences, University of Bristol*

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*Dynamic modeller and data scientist focussing on infectious disease dynamics, epidemiology, and control. I have a strong interest in reproducibility and tool development, having developed multiple widely used packages and dashboards. My work lies at the interface between dynamic modelling, statistical modelling and data science - incorporating elements from software development to enhance robustness and longevity.*

## Education

### University of Bristol
Bristol

PhD in Epidemiology
*October 2015–September 2019*

- Modelling BCG vaccination policy in the UK: What is the effect of changing policy?
- Read here: samabbott.co.uk/thesis/

### University of Glasgow
Glasgow

Research Placement
*June 2015–September 2015*

- Distinction
- The multi-species ecology of antimicrobial resistance in tanzanian human and livestock populations: Using Bayesian methods to infer genetic resistance patterns from phenotypic data.

### University of York
York

Msc Advanced Mathematical Biology
*2014–2015*

- Distinction
- Group project: Modelling superspreading and seasonlity in Influenza, Distinction. An analysis of the resonant effects produced by the introduction of population heterogenity and seasonal variation to an SIRS model.

### University of Durham
Durham

MMath Mathematics
*2010–2014*

- 2:1

## Experience

### Funding Circle
London

Data Scientist
*November 2017–January 2019*

- Predictive modelling, inference, data visualisation,dashboarding and tool development
- Remote and 1 day a week from November 2017 to September 2018
- Full time from October 2018 to January 2019

## Skills

### Analytical

Dynamic modelling, statistical modelling, data science, reproducible research

### Programming

R (advanced), C/C++, STAN, JAGS, LIBBI, Python, Matlab

### Packages

shiny, tidyverse, data.table, Rcpp, h2o, brms, etc.

### Tools

Git, Docker, Travis, AWS

# Training

**University of Bristol**                                                                                           *Bristol*
SHORT COURSES                                                                                                      *2016–2019*
- Basic Epidemiology, Multilevel Modelling, Data Linkage, Analysis of repeated measures, Bayesian statistics with WINBUGS, Multiple Imputation Methods to deal with Missing Data, Methods for Mediation and Interaction Analysis, and Advanced Survival Analysis and Prognostic Modelling

**DataCamp**                                                                                                         *Online*
DATA SCIENCE CAREER TRACK                                                                                              *2017*
- Covering the full range of data science skills from data reading cleaning through to predictive modelling and inference.

**Wellcome Trust**                                                                                                   *Hinxton*
MATHEMATICAL MODELLING FOR INFECTIOUS DISEASE DYNAMICS                                                                 *2016*
- Two week residential course

# Teaching

**Bristol Infectious Disease Dynamics: University of Bristol**                                        *bristolmathmodellers.github.io/biddmodellingcourse/*
INFECTIOUS DISEASE MODELLING PRACTICALS                                                                            *2018, 2019*
- Responsible for developing and teaching two 1 hour practicals on model development and dynamics as part of an introductory modelling course.

# Service

**Outreach**

- Blog - with over 2.5k unique hits each year - looking at infectious disease epidemiology and dynamics

**Organisations**

- Co-organiser of BristolR

**Manuscript Reviews**

- Journal of Open Source Software (2)

# Publications

## First author

**S Abbott, H Christensen, MK Lalor, D Zenner, C Campbell, ME Ramsay, …**                                            *Vaccine*
EXPLORING THE EFFECTS OF BCG VACCINATION IN PATIENTS DIAGNOSED WITH TUBERCULOSIS: OBSERVATIONAL STUDY USING          *2019*
THE ENHANCED TUBERCULOSIS SURVEILLANCE SYSTEM

**S Abbott**                                                                                        *Journal of Open Source Software*
GETTBINR: AN R PACKAGE FOR ACCESSING AND SUMMARISING THE WORLD HEALTH ORGANISATION TUBERCULOSIS DATA                 *2019*

## Non-first author

**J Stone, H Fraser, AG Lim, JG Walker, Z Ward, L MacGregor, A Trickey, …**                             *The Lancet infectious diseases*
INCARCERATION HISTORY AND RISK OF HIV AND HEPATITIS C VIRUS ACQUISITION AMONG PEOPLE WHO INJECT DRUGS: A             *2018*
SYSTEMATIC REVIEW AND META-ANALYSIS

## Preprints

**S Abbott, H Christensen, NJ Welton, E Brooks-Pollock**                                                             *BioRxiv*
ESTIMATING THE EFFECT OF THE 2005 CHANGE IN BCG POLICY IN ENGLAND: A RETROSPECTIVE COHORT STUDY                      *2019*

**S Abbott, H Christensen, E Brooks-Pollock** *BioRxiv*

REASSESSING THE EVIDENCE FOR UNIVERSAL SCHOOL-AGE BACILLUS CALMETTE GUERIN (BCG) VACCINATION IN ENGLAND AND *2019*
WALES

*This list is updated programmatically each week. See my Google Scholar for DOIs and citation details.*

## Selected Software

### ℝ Packages

**idmodelr** *samabbott.co.uk/idmodelr*

INFECTIOUS DISEASE MODEL LIBRARY AND UTILITIES *2019*
- Author and maintainer
- Released to CRAN with 1k+ downloads

**EstZoonoticTB** *samabbott.co.uk/EstZoonoticTB*

AN R PACKAGE FOR EXPLORING, VISUALISING AND ESTIMATING THE GLOBAL ZOONOTIC TUBERCULOSIS BURDEN *2019*
- Author and maintainer

**getTBinR** *samabbott.co.uk/getTBinR*

ACCESS AND SUMMARISE WORLD HEALTH ORGANISATION TUBERCULOSIS DATA *2018*
- Author and maintainer
- Released to CRAN with 11k+ downloads

**prettypublisher** *samabbott.co.uk/prettypublisher*

AN R PACKAGE THAT AIMS TO IMPROVE YOUR WORKFLOW BY ALLOWING AN EASIER TRANSITION FROM LITERATE CODE TO A
PAPER DRAFT READY FOR JOURNAL SUBMISSION *2017*
- Author and maintainer

### Interactive tools

**Explore infectious disease models** *github.com/seabbs/exploreidmodels*

DEVELOPED TO BE USED WITHIN A MODELLING SHORT COURSE AT THE UNIVERSITY OF BRISTOL. THIS DASHBOARD ALLOWS THE *2019*
USER TO SIMULATE AND COMPARE A VARIETY OF COMPARTMENTAL INFECTIOUS DISEASE MODELS.

**Explore global tuberculosis** *getTBinR::run_tb_dashboard()*

BUILT INTO GETTBINR THIS DASHBOARD ALLOWS NON-R USERS TO EXPLORE WHO TB DATA USING ALL OF THE PACKAGE *2018*
FUNCTIONALITY.

**Introduction to Tuberculosis models** *github.com/seabbs/intro_to_tb_models*

DEVELOPED TO ALLOW SIMPLE TB MODELS TO BE EXPLORED IN AN INTERACTIVE SESSION. INSPIRED BY PRACTICALS FROM THE *2017*
INTRODUCTION TO TB COURSE, RUN BY TB MAC AT THE 2017 UNION CONFERENCE.

**The pebble game** *github.com/seabbs/thepebblegame*

DEVELOPED AS A LEARNING AID TO HELP A GENERAL AUDIENCE UNDERSTAND THE IMPACT OF VACCINATION ON INFECTIOUS
DISEASE DYNAMICS. USED AT GREEN MAN 2016 AS PART OF A WEEK OF OUTREACH WORK AND SUBSEQUENTLY DEVELOPED *2016*
FURTHER.

*See my GitHub for a complete overview of my software both released and in development.*

## Presentations

**BristolR** *Bristol*

(MY) ESSENTIAL R RESOURCES *2019*
- Link: https://www.samabbott.co.uk/talk/myessentialr-bristolr_19_04_20/

### UK Clinical Vaccine Network Conference

*Oxford*

*2019*

What do we really know about BCG?

- Link: https://www.samabbott.co.uk/talk/uk-vac-network-2019/

### R/Medicine

*Boston*

*2019*

getTBinR: an R package for accessing and summarising World Health Organization Tuberculosis data

- Link: https://www.samabbott.co.uk/talk/gettbinr-14-09-19/

### Research and Applied Epidemiology Scientific Conference

*Warwick*

Estimating the effect of the 2005 UK BCG vaccination policy change: A retrospective cohort study using the Enhanced Tuberculosis Surveillance system, 2000-2015

*2018*

- Link: https://www.samabbott.co.uk/talk/phe-applied-epi-2018/

### Research and Applied Epidemiology Scientific Conference

*Warwick*

Beneficial effects of BCG vaccination in outcomes for patients with active TB: observational study using the Enhanced Tuberculosis surveillance system 2000-2014

*2017*

- Received best PhD student abstract.
- Link: https://www.samabbott.co.uk/talk/phe-applied-epi-2017/

### 48th Union World Conference on Lung Health

*Mexico*

Beneficial effects of BCG vaccination in outcomes for patients diagnosed with TB: observational study using the Enhanced Tuberculosis surveillance system 2009-2015

*2017*

- Link: Link: https://www.samabbott.co.uk/talk/union-2017/

### Research and Applied Epidemiology Scientific Conference

*Warwick*

*2016*

Assessing the Evidence for Universal Bacillus Calmette-Guèrin (BCG) Vaccination in England

- Received best abstract from an early career researcher.
- Link: https://www.samabbott.co.uk/talk/phe-applied_epi-2016/