

NHS-R Community Conference 2019

Day 1: Monday 4 November 2019: 09:15 – 17:00

08:00	Arrival and Registration
09:15	Welcome and introduction
09:30	Plenary sessions <ul style="list-style-type: none"> • Steph Locke – Why R? • Sebastian Zeki – EndomineR • Nic Crane - Dashboards for Pioneering Genomic Medicine in R • Tom Lawton - Hospital Modelling using R
11:00	Coffee Break
11:30	Lightning talks #1 or Workshops 1-6 *
13:30	Lunch
14:30	Lightning talks #2 or Workshops 1-6 *
16:30	Coffee break and networking
17:00-18:00	Steering Group Meeting (Exec Box 3)
18:30	Optional Self-funded Networking dinner at Tipu Sultan Restaurant Birmingham http://www.tipu-sultan.com/

Speakers

Mohammed A Mohammed - Principal Consultant (Strategy Unit), Professor of Healthcare, Quality & Effectiveness (University of Bradford) and Director of NHS-R Community
Martin Bardsley - Senior Fellow, The Health Foundation
Steph Locke - Founder of LockeData
Sebastian Zeki - Consultant gastroenterologist, Guy's and St Thomas' NHS Foundation Trust
Nic Crane - Data Scientist, Elucidata
Tom Lawton - Consultant Critical Care, Head of Clinical AI, Bradford Institute of Health Research

Lightning Talks

Monday 4 Nov 2019

A series of lightning talks. 15 minutes talk. 5-minute Q&A during which time the next speaker's laptop will be set up to ensure we minimise delays between speakers.

Lightning talk #1	Lightning talk #2
<p>Nic Crane - Data Scientist, Elucidata Developing Shiny Apps: Tip, Tricks, and Best Practices</p>	<p>Dominic Rowney - Principal Information Analyst, NHS NECS Process Mapping with bupaR</p>
<p>Matthew Bass – Informatics Officer, Healthcare Evaluation Data, University Hospitals Birmingham NHS Trust Using NHS API with R</p>	<p>Duncan Cooper – Programme Analyst, NHS West Yorkshire and Harrogate Health and Care Partnership Age Standardisation of HES Data</p>
<p>Genesis Almanzar – Clinical Practice Group Analyst, Royal Free Hospital NHS Trust Pathway Explorer: Visualizing Patient Activity using BupaR and Shiny</p>	<p>Thomas Jemmett – Senior Healthcare Analyst, The Strategy Unit Connecting to SQL databases</p>
<p>Kathryn Dreyer – Senior Analytics Manager, The Health Foundation From SAS to R: a journey through the tidyverse</p>	<p>Neil Pettinger – Information Training Consultant, Kurtosis R in 80 days</p>
<p>Ben Di-Mambro – Consultant Perinatal Psychiatrist, Nottinghamshire Healthcare NHS Trust Clinical Analysis Reporting Dashboard (HealthCARD)</p>	<p>Ronan Machin - Associate Consultant Analyst Using Machine Learning to predict patient choice in a service reconfiguration</p>
<p>Caroline Kovacs – PhD Researcher, University of Portsmouth The use of NEWS and the care of Surgical Patients</p>	<p>Fiona Grimm - Senior Data Analyst, The Health Foundation Using R to explore outpatient trajectories from linked healthcare data</p>

The full list of speakers is available at: nhsrcommunity.com

For any questions, please contact: nhs.community@nhs.net

Workshops

Monday 4 Nov 2019

***Workshop places are limited and must be pre-booked**

<p style="text-align: center;">Workshop 1. R for novices</p> <p>Ozayr Mohammed, Trainee Analyst Strategy Unit Andrew McCann, Lead Data Scientist MLCSU</p> <p>Get up to speed with R in this hands on 2 hour workshop aimed at those new to R. Assumes no prior experience with R. However, pre-installation of key software is essential. You will learn about the Tidy R philosophy and how to import data, wrangle data and produce and export graphs.</p> <p>Level: Novice</p>	<p style="text-align: center;">Workshop 2. R for Excel users</p> <p>Sean Manzi – Research Fellow, University of Exeter</p> <p>A benefit of using R is that it allows the user to create generic scripts to automatic routinely conducted analyses. The focus of this workshop will be on the script development process and how you move from an Excel based task to a single use R script to a generic R script that automates a task. Based on the delegates’ experience, the 'real' development process will be described, and examples provided of the types of task that are likely candidates for automation.</p> <p>Level: Novice</p>
<p style="text-align: center;">Workshop 3. Simulation modelling of patient flow using routinely collected data, with r-simmer</p> <p>Tom Lawton - Consultant Critical Care, Head of Clinical AI, Bradford Institute of Health Research</p> <p>In this workshop we will explore R-simmer and use routinely collected data (SUS or ICNARC) to model patient flows through an Intensive Care Unit. Delegates will learn the principles of this data-driven modelling technique, how to apply it for the modelling of patient flows anywhere in a hospital (e.g. A&E, outpatients, wards, or even the whole hospital), how to construct these models using R, and how to use the Monte-Carlo method to develop useful insights.</p> <p>Level: Advanced</p>	<p style="text-align: center;">Workshop 4. Natural Language Processing (NLP) with R</p> <p>Steph Locke - Founder of Locke Data</p> <p>Working with text enables to uncover new data and insight in our datasets. We can identify topics and trends in notes, better recommend relevant content, and more. In this workshop, we’ll explore how to process text data and how to perform the basics of NLP.</p> <p>Pre-requisites</p> <ul style="list-style-type: none"> • Basic R knowledge is required, comfortable with the tidyverse is helpful. <p>Level: Intermediate</p>

Workshop 5. Explainable Machine Learning

Hannah Frick – Data Scientist Mango Solutions

In this tutorial, we are going to show the pitfalls of trusting models based on their accuracy alone. Then, we will introduce two model-agnostic frameworks for explainable ML: LIME (Local Interpretable Model-agnostic Interpretations) and DALEX (Descriptive Machine Learning Explanations). We will show how to apply these methods to standard classification and regression problems and how this may change how much we trust original model predictions

Level: Advanced

Workshop 6. Introduction to ggplot2

Rhian Davies - Data Scientist, Jumping Rivers

One reason to learn R is that it can be used to produce publication quality graphics. In this tutorial we'll introduce you to the fantastic ggplot2 package and help you create many different types of plots. We'll explain "geoms" and "aesthetics" and give you a flavour of the different ways you can adapt the look of your plots. This workshop will be very hands-on and no previous knowledge of ggplot2 is necessary.

Level: Novice

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Day 2: Tuesday 5 November 2019: 09:00-17:00

08:00-09:00	Technical Advisory Group Meeting (Exec Box 3)
08:00	Registration
09:15	Welcome and introduction
09:30	Plenary sessions: <ul style="list-style-type: none"> • David Whiting – JSNA • Richard Wood & Ben Murch - Introducing PathSimR • Gabriella Rustici – Addressing the digital skills shortage • Liz Matthews - Building an Analytic Community • Colin Gillespie – Hackathons in R
11:00	Coffee Break
11:30	Lightning talks #3 or Workshops 7-13 *
13.30	Lunch
14:15	Lightning talks #4 or Workshops 7-13 *
16:15	Coffee Break
16:30	Panel discussion & Closing Remarks
17:00	Close

David Whiting – Consultant in Public Health, Medway Council	Gabriella Rustici - Associate Director of Training, HDR UK and Head of Bioinformatics Training at the University of Cambridge
Richard Wood - Head of Modelling and Analytics, NHS Bristol, North Somerset and South Gloucestershire CCG	Liz Matthews – Head of Community and Education, Mango Solutions
Ben Murch - Principal Modelling Analyst, NHS Bristol, North Somerset and South Gloucestershire CCG	Colin Gillespie - Senior Statistics lecturer (Newcastle University), co-founder of Jumping Rivers

Lightning talks

Day 2 - Tuesday 5 November 2019

A series of lightning talks. 15 minutes talk. 5 minute Q&A during which time the next speaker's laptops will be set up to ensure we reduce delays between speakers.

Lightning talk #3	Lightning talk #4
<p>Iryna Schlackow – Senior Researcher, University of Oxford</p> <p>Health policy model with R</p>	<p>Gary Hutson - Head of Solutions and AI, Draper and Dash Ltd</p> <p>Using Supervised ML to augment dashboarding</p>
<p>Samantha Bagulay– Data Scientist, The Department of Business, Energy and Industrial Strategy</p> <p>Using R as a civil servant – applications of the leaflet package</p>	<p>Erik Bülow – Statistician and PhD student, University of Gothenburg and Swedish Hip Arthroplasty Register.</p> <p>Experiences from a real-world prediction-modelling project</p>
<p>Zoe Turner– Senior Information Analyst at Nottinghamshire Healthcare NHS Foundation Trust</p> <p>Using R in Mortality Surveillance within a mental and general health secondary care provider</p>	<p>Stacey Croft– Senior Healthcare Analyst, The Strategy Unit</p> <p>Setting a corporate style for charts</p>
<p>Lori Edwards Suarez – Junior Data Analyst Nottinghamshire Healthcare NHS Trust</p> <p>Using R to support Front End Staff</p>	<p>Andrew Evans– Senior Officer. Public Health Knowledge Evidence and Governance</p> <p>R and APIs: new ways of working in local public health intelligence</p>
<p>Andrew McCann – Lead Data Scientist, BI, Midlands and Lancashire Commissioning Support Unit</p> <p>Experience of using R to develop a forecasting methodology for daily A&E attendances</p>	<p>Richard Issitt – Clinical Perfusionist, Clinical Lead for the Digital Research</p> <p>Ben Margetts – Data scientist, the Great Ormond Street Hospital Digital Research Environment, (GOSH)</p> <p>Clinicians, big data, & digital research: War stories from GOSH's Digital Research Environment</p>
<p>Victor Yu – Healthcare Analyst, The Strategy Unit</p> <p>Developing a Diabetes Indicator Document through RMarkdown</p>	
<p>Sean Manzi – Research Fellow, University of Exeter</p> <p>Using GIT for code sharing</p>	<p>Lynsey Patterson - Head of Health Protection Surveillance, Public Health Agency (NI)</p> <p>Working smarter: using R to modernise infectious disease surveillance processes</p>

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Workshops

Tuesday 5 November 2019

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<p>Workshop 7. Automation with R: creating the infrastructure</p> <p>David Whiting - Consultant in Public Health, Medway Council</p> <p>In this two-hour session you will produce tailored health and wellbeing reports for 326 districts. This workshop will show you how to automate the mass production of reports, for example in Word format. The emphasis will be more on developing the infrastructure needed to do this rather than on formatting.</p> <p>Level: Intermediate</p>	<p>Workshop 8. A worked introduction to Population Segmentation and PHM analytics</p> <p>Adrian Pratt - Principal Modelling Analyst, NHS Bristol, North Somerset and South Gloucestershire CCG</p> <p>Richard Wood - Head of Modelling and Analytics, NHS Bristol, North Somerset and South Gloucestershire CCG</p> <p>The workshop will introduce delegates to one of the cornerstones of PHM – population segmentation. Much attention is currently being given to segmentation, both nationally and in local systems. This is due to its ability to cut through large volumes of complex data in order to provide useful insights into how health needs are distributed among a discrete number of meaningful patient groups, or segments.</p> <p>Level: Intermediate</p>
<p>Workshop 9. Introduction to functional programming</p> <p>Thomas Jemmett – Senior Healthcare Analyst, The Strategy Unit</p> <p>Andrew Jones - Healthcare Analyst, The Strategy Unit</p> <p>This workshop is to introduce you to Functional Programming in R. We will cover how to build your first function in R and show how writing functions can improve your code by breaking problems up into reusable chunks. We will then move onto the purrr package and show how complex tasks can be tackled neatly by using the map family of functions. Finally, we will cover the concept of higher-order functions. Attendees should be familiar with some of the tidyverse packages, particularly dplyr and ggplot, and should be comfortable with the pipe (%>%) operator</p> <p>Level: Advanced</p>	<p>Workshop 10. Introduction to Data Wrangling</p> <p>Emma Vestesson – Data Analyst, The Health Foundation</p> <p>In this workshop you will learn how to get your messy data into the state you need, using mainly dplyr and tidyr. We will briefly cover the standard dplyr functions (filter, select, mutate, summarise) to then move on to some of the more advanced versions (e.g. select if) to help you get to the next level of data wrangling. You will also learn how to join two data sets together and how to reshape data.</p> <p>Level: Intermediate</p>

Workshop 11. Regression modelling

Chris Mainey - Intelligence Analyst,
Healthcare Evaluation Data (HED) team,
University Hospitals Birmingham NHS
Foundation Trust

This session will focus on how to fit regression models in R, the most common form of statistical modelling. We will examine the essential theory underpinning these models, then fit linear models with a single predictor, then multiple predictors and look at how to interpret them. We will also look at how to include categorical variables in models and what ‘interaction’ terms are. We will then extend these principles to different types of response, including binary data and count data, by using Generalized Linear Models (GLM). We will fit a logistic regression for binary outcomes and look at how our interpretation differs to linear models. We will consider how we compare model performance and chose a ‘better’ model. A final exercise will give a new dataset and encourage attendees to fit an appropriate model and work out how to improve it.

Level: Intermediate/Advanced

Workshop 12. Introduction to Shiny

Chris Beeley – Senior Analyst,
Nottinghamshire Healthcare NHS Trust

This workshop will introduce Shiny to novices. It will cover concepts in Shiny such as code style and reactivity and attendees will learn by building several Shiny applications with data that will be provided on the day. The workshop will conclude with a talk on some advanced features of Shiny to demonstrate techniques and applications which beginners may wish to consider as they improve their skills.

Level: Intermediate

Workshop 13. Introduction to R-Markdown

Matthew Francis - Principal Public Health Intelligence Analyst, Public Health England

In this introductory session to R-Markdown you will get to grips with automating routine reports in Word format, including table of contents, headers, working with templates, importing and manipulating data, formatting tables and importing pictures and images.

Level: Novice