Live online Zoom course with on-demand video

Data Exploration, Regression, GLM & GAM with an introduction to R

Provided by: **Highland Statistics Ltd**

This is a live online course

Teaching times: 14:00 - 20:00 UK time

This (live) online course consists of 5 modules representing a total of approximately 40 hours of work. Each module consists of live teaching, followed by exercises using real data sets. All the material is also available as video files. All video files are on-demand and can be watched online, as often as you want, at any time of the day, within a 12-month period. A discussion board allows for daily interaction between instructors and participants.

You are invited to apply the statistical techniques discussed during the course on your own data and if you encounter any problems, you can ask questions on the Discussion Board. The course includes a 1-hour face-to-face video chat with the instructors.

Course content

We begin with an introduction to R and provide a protocol for data exploration to avoid common statistical problems. We will discuss how to detect outliers, deal with collinearity and transformations.

An important statistical tool is multiple linear regression. Various basic linear regression topics will be explained from a biological point of view. We will discuss potential problems and show how generalised linear models (GLM) can be used to analyse count data, presence-absence data and proportional data. Sometimes, parametric models (linear regression, GLM) do not quite fit the data and in such cases generalised additive models (GAM; a smoothing technique) can be used.

Date & Times

Dates & times:

- 1 - 5 March 2027
- 14.00-20.00 UK time (09.00-15:00 EST)

Price: £450

50% reduction for participants based in developing countries. Use the following coupon at checkout: course50

Instructors: Dr. Alain Zuur
Dr. Elena Ieno

Authors of 10 books and providers of over 300 courses

Included: 1 hour free face-to-face video chat about your data

KEYWORDS

Introduction to R. Outliers. Transformations. Collinearity (correlation between covariates). Multiple linear regression. Model selection. Visualising results. Poisson GLM. Overdispersion. Negative binomial GLM. Binary and proportional data. ggplot2. Logistic regression. Tweedie, Gamma, beta and ordered beta GLMs.



COURSE CONTENT

Day 1:

- General introduction.
- Introduction to R.
- Theory presentation on data exploration (outliers, collinearity, relationships, interactions, dependence, etc.).
- One exercise.

Day 2 & day 3:

- Theory presentation on linear regression.
  - Different strategies for model selection.
  - Interactions.
  - Dealing with categorical covariates.
  - Visualising covariate effects.
- Two exercises.

Day 3 and day 4:

- Theory presentation on Poisson, negative binomial, Bernoulli and binomial distributions.
- Theory presentation on GLM.
  - Poisson GLM.
  - Generalised Poisson GLM.
  - Negative binomial GLM.
  - Bernoulli GLM.
  - How to deal with overdispersion and underdispersion.
  - Cross-validation.
- Three exercises.
- Short theory presentations on binomial GLM, gamma GLM, Tweedie GLM, beta GLM and ordered beta GLM. These models can be used for the analysis of proportional and continuous data (with or without zeros).

Day 5:

- Theory presentation on GAM.
  - Two exercises using Gaussian GAM and Poisson and negative binomial GAMs.
  - Time allowing: Exercises for binomial, gamma, Tweedie and beta GLMs or GAMs.
  - What to present in a paper.

FREE 1-HOUR FACE-TO-FACE MEETING

The course includes a 1-hour face-to-face meeting with one or both instructors. The meeting needs to take place within 12 months after the last live zoom meeting. You can discuss your own data, but we strongly advise that the statistical topics are within the content of the course. The 1-hour needs to be consumed in one session, and will take place at a mutually convenient time.

COURSE MATERIAL:

- PDF files of all presentations are provided

COURSE TIMES:

- 14:00-20:00 (UK time) including a 45 minutes lunch break and two 20-minute coffee/tea breaks.

COURSE FEE: £450

- Credit card payments are charged in GBP currency.
- VAT charge:
  - Non-EU participants (including Norway) are not subject to UK VAT.
  - UK participants are charged 20% VAT.
  - We do not have to charge VAT to EU participants who provide their institutional VAT number.
  - EU participants who do not provide a VAT number will be charged VAT at their national rate.
  - Canadian participants are subject to GST/HST tax.

CANCELLATION POLICY:

What if you are not able to participate? Once participants are given access to course exercises with R solution codes, PDF files of certain book chapters, PDF files of PowerPoint presentations and video solution files, all course fees are non-refundable. However, we will offer you the option to attend a future course or you can authorise a colleague to attend this course.

PREREQUISITE KNOWLEDGE:

Basic statistics (e.g. mean, variance, normality). No R knowledge is required. You will learn R 'on the fly'. This is a non-technical course.

GENERAL

- Please ensure that you have system administration rights to install R and R packages on your computer.
- Instructions on what to install will be provided before the start of the course.
- Course participants will be given access to the course website with all the videos, data sets, R solution code and course material one week before the start of the course.
- This is an online course. We will use Zoom. You will receive a link for the Zoom meeting and a password to enter the meeting.

REGISTRATION

https://www.highstat.com/

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Payment via credit card or bank transfer