Hybrid (onsite and online) workshop - Málaga, Spain

Multivariate Analysis - Integrating Classical Techniques with multivariate GLMM -

Provided by: Highland Statistics Ltd
Hosted by: Instituto Español de Oceanografía (IEO), Consejo Superior de Investigaciones Científicas (CSIC)

This workshop offers a journey through classical multivariate analysis techniques, progressing into advanced, recently developed tools for multivariate generalised linear models (GLM) and generalised linear mixed models (GLMM).

We begin with classical multivariate techniques such as principal component analysis (PCA) and redundancy analysis, laying a solid foundation. From there, we transition into generalised linear latent variable models (GLLVM), a powerful approach for analysing multiple response variables simultaneously. GLLVMs account for dependencies among response variables and between observations, providing a flexible framework for complex data.

The workshop also covers extensions of GLLVMs, including reduced rank regression (constrained latent variables), concurrent ordination and models that incorporate spatial or temporal dependency structures.

On Friday, participants are invited to apply the methods learned throughout the workshop to their own data. This practical session provides a unique opportunity to receive personalised feedback and guidance from the instructors, ensuring that participants leave with tailored insights and a deeper understanding of how to implement these techniques in their own work.

This is an applied and non-technical workshop that focuses on the practical implementation in R.

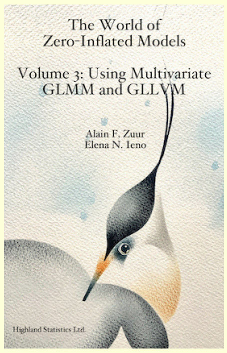
Venue: Centro Oceanográfico de Málaga. Explanada de San Andrés (Muelle 9). 29002 Puerto de Málaga - Málaga, Spain

Dates: 3-7 March 2025

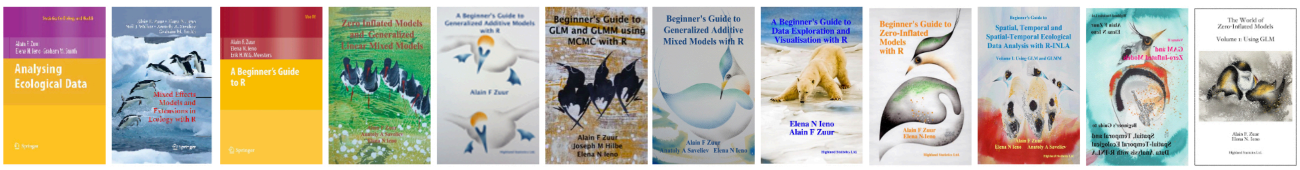
Price: £450

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

Instructors: Dr. Alain Zuur and Dr. Elena Ieno.



1 hour face-to-face
The workshop includes a 1-hour face-to-face video chat with the instructors (to be used after the workshop).



COURSE CONTENT

Preparation material (with on-demand video):
- Exercise on linear regression.
- Exercise on Poisson / negative binomial GLM.
- Exercise on Poisson / negative binomial GLMM.
- Matrix notation.
- What is a variogram.
- DHARMa for model validation.

Monday:
- General introduction.
- Theory presentation on principal component analysis (PCA) and redundancy analysis (RDA)
- Exercise on PCA and RDA.
- Theory presentation on generalised linear latent variable models (GLLVM).

Tuesday:
- Catching up.
- Two exercises on GLLVM using Poisson and negative binomial models for count data.

Wednesday:
- Theory presentation on constrained GLLVM (reduced rank regression and concurrent ordination).
- Two exercises on constrained GLLVM.

Thursday:
- We will apply exercises using GLLVM with various distributions, including Tweedie, Gamma, Bernoulli, Gaussian, and Beta. While we may not cover all these distributions during the workshop, solution files will be provided.

Friday:
- Adding spatial and temporal dependency structures to GLLVM.
- Applying the methods to your own data and receiving constructive feedback from the instructors.

We reserve the right to change the exercises. Pdf files of all theory material will be provided. All exercises consist of data sets and annotated R scripts. Access to the course website is for 12 months. The material covered from Monday to Friday does not contain on-demand video.

For terms and conditions, see:
https://www.highstat.com/index.php/component/hikashop/checkout/termsandconditions/step-3/pos-6/tmpl-component

A discussion board, accessible for 12 months, facilitates interaction on course content between instructors and participants after the workshop.

GENERAL INFORMATION

FEE: £450

Credit card payments are charged in GBP currency.

VAT Charge:

- UK participants are charged a 20% VAT.
- Non-EU participants (including Norway and Switzerland) are not subject to VAT.
- We do not 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.
- The fee does not contain coffee, tea, lunch or accommodation.
- Access to the course website is 12 months.

TIMES:

- Monday - Thursday: 09.00am to 16.00pm including a 1 hour lunch break and a 20 minutes break both morning and afternoon.
- Friday: 09.00 am - 14.00.

FREE 1-HOUR FACE-TO-FACE MEETING

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

CANCELLATION POLICY:

Once participants are given access to exercises with R solution codes, pdf files of certain book chapters, and pdf files of presentations, all fees are non-refundable. However, if you are unable to attend, we may be able to offer you a slot in a future course.

GENERAL

- Please ensure that you have system administration rights to install R, and R packages on your computer.
- Instructions what to install is on the course website.

Pre-required knowledge

Participants should be familiar with data exploration, linear regression and basic GLM and GLMM (i.e. Poisson and negative binomial GLM) in R. The course website contain revision/preparation material with on-demand videos covering these topics.

REGISTRATION

http://highstat.com/index.php/courses
highstat@highstat.com

Dr. Alain F. Zuur
Highland Statistics Ltd.
9 St Clair Wynd,
AB41 6DZ Newburgh,
UK