π.pmod **Biomedical Image Quantification**

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PMOD Statistics Course (PST)

Thursday, September 27, 2018, Zurich, Switzerland
www.pmod.com / Training

Overview

The PMOD Statistics Course (PST) is a 1-day course that focuses on using PMOD for the meaningful statistical analysis of study data, particularly in the presence of multiple regional outcome values. The course is based on the comprehensive statistical framework which is being developed by Prof. Karl Herholz, and its implementation into PMOD via the R interface (www.r-project.org). The participants will learn the major statistical concepts relevant for their research, and will be taught how to leverage the statistical power available in the current PMOD version, in order to obtain sound results when comparing groups.

The participants are required to bring their own notebooks. They will receive a USB flash key with the latest PMOD version as well as training data sets. As a courtesy, the key can be taken home and will work for another two months. This will give the participants the opportunity to complete the teaching cases if needed, and to try the PMOD tools on their own data. Unlike PMOD which can simply be run from the key, the R software requires a local installation which will be organized prior to the course.

Target Audience and Course Trainers

The target audience comprises all the scientists who use PMOD for the analysis of their study data. To get optimal benefit from attending, sufficient familiarity with PMOD will be required, particularly with the viewing and volume of interest functionality. Participants new to PMOD can acquire such expertise by attending the 2-day PMOD Basic Application Course, and/or by requesting a free, 2-month trial license via the PMOD website and downloading the PMOD Basic Workbook, and by practicing with the example data provided.

The course will be taught by PMOD staff and by Prof. Karl Herholz, University of Manchester, UK, who is a renowned expert and consultant in the field of neuroimaging, with particular interest in dementia and brain tumors. His statistical expertise was sharpened as the coordinator of multiple international multicenter studies and by the development of automated image analysis procedures, such as the one employed in PMOD's PALZ module.

Contents

Main Topics

− ***Experimental Planning and Statistical Methods.*** In this course part, Prof. Herholz will give an overview on study design and statistical concepts. It will address specifically the opportunities and pitfalls related to imaging and simultaneous acquisition of quantitative values from multiple regions. Two main solutions for the critical issue of multiple comparisons will be presented: repeated measures analysis of variance (rm-ANOVA) and linear mixed effects (LME) models. Their benefits and limitations will be discussed and later demonstrated in the practical part.

− ***Data Preparation.*** This practical part will illustrate the aggregation of regional results across a study population into a form suitable for PMOD's R statistics scripts. In addition to PMOD-derived results, external measurements such as scores can be imported for use as covariates.

− ***Statistical Analysis.*** The theoretical concepts will be explored in the statistical environment of the PMOD R-console. Simple data exploration using descriptive statistics and graphical plots is followed by the use of sophisticated scripts. They are applied to simulated data containing well-defined effects discovered in real-life publications. The scenarios include the analysis of regional data, the comparison of groups and the interaction with regional effects. The participants will learn how to run the appropriate analysis scripts, and how to interpret the resulting tables and plots.

− **Statistical Seminar.** Substantial time will be allocated to a seminar-style discussion of practical statistical questions. The participants will have the unique opportunity to summarize their own (past or planned) experimental studies and get advice regarding their statistical analysis.

Note that we reserve the right for minor changes of the course content without notification.

Work on the Computer, Course Workbook, and Documentation

A participant's notebook should comprise at least 8 GB RAM, and a 64-bit operating system is needed. The display of the notebook should have a resolution of at least 800 pixels in height to support adequate program layouts.

The participants will conduct a number of guided exercises on their notebooks, using the supplied USB flash key. At the outset of the course, the participants will be handed out a course workbook that contains all the exercises presented, together with step-by-step solutions. The course presentations, workbooks and the PMOD documentation will all be available on the supplied USB flash key.

Organization

Course Schedule

    Thursday, September 27   09:00 - 17:00

Course Registration and Rates

Registration can be done online, and will be handled on a first-come, first-served basis for a maximal number of 20 participants. The course fee amounts to:

− Regular: EUR 540.- *(Early-Bird, until August 26, 2018)*, EUR 590.- (Standard, afterwards)
− Student: EUR 432.- *(Early-Bird, until August 26, 2018)*, EUR 472.- (Standard, afterwards)

The fee covers the training lessons and documentation, the USB flash key, lunch as well as all refreshments during the breaks. After registration, the participants will receive by e-mail a confirmation message with access information and payment directions. Note that the course fee must be paid **within 10 days** after registration (online payment). Thereafter, we reserve the right to offer the place to persons waiting for a vacancy.

The student fee (20% off the regular fee) is applicable to participants from academia who are currently enrolled in a doctoral or other graduate degree program. As a student participant, please perform the standard registration procedure without payment. Then, send your application for the student fee to info@pmod.com. Once accepted, you are invited to proceed with the online payment.

Note that new PMOD license holders are granted a 50% discount on the regular rates.

Course Location

The course will be held at Hotel Continental, Zurich, Switzerland (Stampfenbachstrasse 60, CH-8006 Zurich). The hotel is conveniently located in downtown Zurich, just a 10-minute walk off the main station.

Accommodation

Accommodation is not included in the course fee and must be booked individually. A list of selected hotels near the course location is available on the PMOD website.

Cancellation Policy

The course will be cancelled, if one month prior to the course, not enough enrolments have been done. In that case, the registered participants will be notified and will receive a full refund. If a registered participant has to cancel attendance, he or she will get a refund (fee minus bank expenses) provided that the seat can be filled by another person.

Complementary PMOD Courses

This course is part of a series of PMOD courses all taking place during the same week in Zurich, Switzerland. Further information can be found on the respective course flyers (available on the PMOD website).

Registration for the complementary courses is being handled separately from registration for this course, yet volume discounts do apply on multiple course registrations (see consolidated price list published on the flyer "PMOD Courses in September 2018", available on the PMOD website).