Key Information

Module code: ISSU0055
Taught during: Session Two: Monday 22 July - Friday 9 August 2019
Module workload: 45 teaching hours plus approximately 100 study hours
Module leader: Dr Lucio Vinicius
Department: Department of Anthropology, Faculty of Social & Historical Sciences
Credit: 15 UCL credits, 7.5 ECTS, 4 US Level: Level 1, first year undergraduate
Pre-requisites: Standard entry requirements
Assessment: In-class quizzes (25%), Final examination (75%)

Module Overview

We are exposed to statistical data on a daily basis in the form of opinion polls, economic forecasts, reports on the effect of diet and lifestyle on life expectancy and disease risk, debates over the evidence for climate change, among others. This module introduces statistics and the free software R/RStudio to students with no previous knowledge of mathematics beyond high school level. The module also assesses the uses, misuses and limitations of statistical methods. Topics range from basic descriptive statistics to more advanced topics including multivariate analysis, logistic regression, and model optimisation. As additional skills, students are introduced to professional-standard plotting resources, basic programming functions in R, and the user-friendly RStudio interface.

Week One
- Introduction to statistics and the RStudio interface
- Descriptive statistics, probability distributions and confidence intervals
- Hypothesis testing: t-tests and their non-parametric alternatives

Week Two
- ANOVA
- Chi-square and other proportion tests
- Power analysis and sample size calculation
- Linear and multiple regression

Week Three
- Multivariate analysis: PCA
- Logistic regression, interactions and model optimisation

Please note that this module description is indicative and may be subject to change.
Module Aims
The aim of the module is to provide a general introduction to statistics targeting students with no mathematical background beyond high-school level. The module delivers a package of statistical techniques ranging from basic hypothesis testing to more sophisticated procedures. Upon completion of the module, students will be able to independently select and run appropriate statistical tests, create professional-level graphs and presentations, and critically evaluate statistical information in technical reports and the general press. Students will acquire enough statistical knowledge to qualify them for a research degree or a professional position requiring quantitative analytical skills.

Teaching Methods
The module integrates lectures, practicals and quizzes in each session. Students learn the free software R and its user-friendly RStudio interface. The module is supplemented by a dedicated Moodle webpage with lecture files, coursework and message board.

Learning Outcomes
Upon successful completion of this module, students will:

- Be able to run statistical analyses ranging from simple descriptive statistics to logistic regression models
- Have acquired in-depth knowledge of R software and its RStudio interface
- Be able to evaluate the meaning, uses and limitations of statistical techniques
- Have produced publication-standard statistical plots
- Exhibit basic knowledge of R programming functions

Assessment Methods
- Group presentation (25%)
- Final examination (75%)

Module Leader
Dr Lucio Vinicius joined UCL Anthropology in 2012, having been previously an Affiliated Lecturer and Research Fellow at Cambridge University (2002-11) and a Research Fellow at the Max Planck Institute (2011-12). He has published articles in Science, Nature Human Behaviour, PNAS among others, and a book by Cambridge University Press. Dr Vinicius was awarded a Teaching Excellence Departmental Award at Cambridge University (2008) and a Provost’s Individual Teaching Award at UCL (2015) for his reformulation of statistics teaching at UCL Anthropology.

Key Texts