Statistical Methods in Veterinary Epidemiology

Overview

The aim of this course is to introduce common statistical methods used in veterinary epidemiology to enable students to conduct multivariable analysis and statistical modelling of epidemiological data.

Subject areas: introduction to measures of effect; analysis of data from cohort studies and case-control studies; likelihood, multivariable analysis and statistical modelling; simple logistic model, logistic regression, Poisson regression and Cox regression.

Welcome to the course

Statistical Methods in Veterinary Epidemiology is a core course in the Veterinary Epidemiology and Public Health programme and may also be studied as a 240-hour individual module.

The course is designed to provide you with the key statistical knowledge, understanding and skills you will need to analyse and interpret data from common forms of epidemiological studies that are conducted in veterinary science. The approach aims to enable you to gain an understanding of the concepts used in statistical analyses and modelling and will help you to choose and apply techniques appropriate for parameter estimation and hypothesis testing in selected situations.

Pre-requisite
You should be familiar with the basic concepts of statistics and epidemiology before undertaking this course:

- MSc/Pg Diploma: Students are expected to have studied the Epidemiology and Animal Health Economics module prior to undertaking Statistical Methods in Veterinary Epidemiology.
- 240-hour individual module: Students undertaking Statistical Methods in Veterinary Epidemiology as a stand-alone course should be familiar with **basic** statistical concepts covered in the textbook by **Petrie and Watson: Statistics for Veterinary and Animal Science** (this excludes multivariable regression analysis, which will be covered in this module).

What will you learn from this course?

By the end of this course you should be able to:
- describe the basic statistical measures and concepts underlying the analysis of epidemiological data
- use a comprehensive set of statistical methods suitable for a wide range of epidemiological situations
- select appropriate statistical techniques for the analysis of data from epidemiological studies
- identify specific issues relevant to case–control and cohort studies
- perform basic statistical modelling techniques
- investigate confounding and interaction in epidemiological data using both

stratified analyses and statistical modelling methods
- interpret the results of statistical procedures and draw appropriate conclusions.

Although this course has been designed to avoid unnecessary mathematical detail, a sound understanding of the methods does require the use of some mathematical formulae; however, you are not expected to memorise complicated formulae. No knowledge of calculus will be required although an aptitude for 'numbers' and quantitative data analysis is essential.

When you have completed the course you should possess a good understanding of, and comprehensive skills in, statistical analyses and modelling techniques at a level required to work as an epidemiologist.

Course structure

The course consists of three modules comprising 12 computer-assisted learning (CAL) sessions and a Workbook containing seven practical computer sessions using the statistical package R. You are advised to work through the CAL sessions and their associated Workbook sessions in the sequence in which they appear in the three modules

Study time

The notional study time for this course is 240-300 hours, although it may take more or less time depending on your familiarity with the material and your computer competence. As a general guide it should take you about 120-150 hours to complete the study sessions (CAL sessions and practical sessions in R); you should spend about 40-60 hours on background and essential reading, about 20-30 hours on the tutor-marked assignments, and the remainder of the time on revising for the examination.

Assessment

Your work for this course will be assessed by means of an unseen written examination paper*. In addition, you are required to complete and submit at least one tutor-marked assignment (TMA) for assessment. If you submit more than one – and you may submit up to two – your best TMA mark will be used in the calculation of your final mark. Full information on how to approach and submit TMAs is provided in the Programme Handbook and in the assignments themselves. You should bear in mind that your TMA will count for 20% of your final mark for the course.

Computing requirements

- Statistical methods in Veterinary Epidemiology is delivered online via the RVC's Virtual Learning Environment.
- There may be compatibility issues with Windows Vista and the 'R' software used. Please view the 'R' software FAQs for further information.
- Please contact the Course Administrator if you have any queries.

*Since 2020, exams have been held online. Instructions will be communicated prior to the start of the exams session.