Bayesian Analyses Using SAS®

Kód kurzu: STBA42

The course focuses on Bayesian analyses using the PHREG, GENMOD, and MCMC procedures. The examples include logistic regression, Cox proportional hazards model, general linear mixed model, zero-inflated Poisson model, and data containing missing values. A Bayesian analysis of a crossover design and a meta-analysis are also shown.

Pro koho je kurz určen

Biostatisticians, epidemiologists, and social scientists who are interested in the Bayesian analysis approach

Co vás naučíme

- Explain the concepts of Bayesian analysis
- Illustrate Bayesian analyses in PROC GENMOD, PROC PHREG, and PROC MCMC
- Incorporate prior distributions in a Bayesian analysis
- Illustrate a Bayesian analysis approach to a meta-analysis

Požadované vstupní znalosti

Before attending this course, you should:

- Be able to create SAS data sets and manipulate data. You can gain this experience from the SAS Programming 2: Data Manipulation Techniques course
- Have completed a statistics course such as the Statistics 1: Introduction to ANOVA, Regression, and Logistic Regression or Statistics 2: ANOVA and Regression course

Osnova kurzu

Introduction to Bayesian Analysis

- Introduce the basic concepts of Bayesian analysis
- Compute the diagnostic plots and diagnostic statistics for model assessment
- Discuss the advantages and disadvantages of Bayesian analysis
- Illustrate a Bayesian analysis in PROC GENMOD and PROC PHREG

Fitting Models with the MCMC Procedure

- Show the essential statements in PROC MCMC
- Show the supported distributions in PROC MCMC
- Fit a logistic regression model in PROC MCMC
- Fit a general linear mixed model in PROC MCMC
- Fit a zero-inflated Poisson model in PROC MCMC
- Incorporate missing values in PROC MCMC

Bayesian Approaches to Clinical Trials

- Use prior distributions in a Bayesian analysis
- Illustrate a Bayesian approach to clinical trials using PROC MCMC
- Illustrate the Bayesian approach to meta-analysis

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