# 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.

## Pre koho je kurz určený

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

#### Čo 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 vstupné 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

Kodaňská 1441/46 101 00 Praha 10 Tel.: +420 234 064 900-3 info@gopas.cz

#### GOPAS Brno

Nové sady 996/25 602 00 Brno Tel.: +420 542 422 111 info@gopas.cz

## GOPAS Bratislava

Dr. Vladimíra Clementisa 10 Bratislava, 821 02 Tel.: +421 248 282 701-2 info@gopas.sk



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