

Generalized Linear Model

Objectives

At the end of the course, the students should be able to understand the principles, to apply the methods, and to correctly interpret the results of a data analysis based on a Generalized Linear Model.

Contents

1. An outline of Generalized Linear Models (GLM)
2. Review of the elementary likelihood theory
3. Logistic, Poisson, Negative binomial, Gamma regression models
4. Loglinear models for counts
5. Models for categorical outcomes
6. Proportional odds model for ordinal outcomes
7. The theory of generalized linear models
8. Related models: the Box-Cox transformation model, the generalized log-gamma model

Evaluation

According to the curriculum 2010-2011 :

- CC : two 2-hour equally weighted written within-semester tests.
- Reexamination session (September) : 2h written test

Textbooks

- McCullagh, P, Nelder, JA, Generalized Linear Models, 2nd edition, Chapman & Hall, 1989
- Chambers, JM & Hastie, TJ, Statistical Models in S, Wadsworth & Brooks/Cole, 1992
- Agresti, A, An Introduction to Categorical Data Analysis, Wiley, 1996

Characteristics

- 3 ECTS credits
- Compulsory course for master in statistics
- Spring semester
- Prerequisite : Basics of Statistics, Linear Regression Models

Teaching team

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Exercises

Applications using the software R