

Generalized Linear Models

Introduction and Overview

Prof. Dr. Andreas Groll & ???

Summer term 2023

Organizational stuff

Suitable modules: BS 14/15; MS 6/7; MD E1 (Methods); ME 7

Lecture

- ▶ inverted classroom with online videos
- ▶ Q&A session on Wednesday, 12-14 pm (planned in physical presence), lecture room: CT/ZE 01

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Excercise

- ▶ yet to be announced

???

Organizational stuff

Website

<https://moodle.tu-dortmund.de/course/view.php?id=38968>

Enrollment key: GLM23SoSe

Exams

- ▶ 1st date: 12.07.23, 12:00-14:00, room CT/ZE 01
- ▶ 2nd date: 12.09.23, 10:00-12:00, room ???

Goals of this course

Get familiar with advanced regression techniques

- ▶ Generalized regression models to analyse panel data
- ▶ Categorical regression
- ▶ Variable selection via penalization
- ▶ How to deal with longitudinal data

Learning objective: Acquire competences ...

... to choose, compare and interpret suitable models for a given data situation.

Content

- ▶ Based on the course from Annika Hoyer (and colleagues, LMU Munich)
 - ▶ No complete manuscript, but:
- ⇒ video lecture: a mixture out of slides & hand-written parts; Q&A sessions

Literature

- ▶ Fahrmeir, Kneib, Lang (2009): Regression – Modelle, Methoden und Anwendungen. Springer-Verlag (2. Auflage) (noch besser: Neue, englische Version von 2013)
- ▶ Fahrmeir, Tutz (2013): Multivariate statistical modelling based on generalized linear models. Springer Science & Business Media
- ▶ Tutz (2011): Regression for categorical data. Cambridge University Press

Course overview

1. Basic concepts of regression

Course overview

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2. Binary regression

Course overview

1. Basic concepts of regression
2. Binary regression
3. Generalized linear models

Course overview

1. Basic concepts of regression
2. Binary regression
3. Generalized linear models
4. Multi-categorical regression

Course overview

1. Basic concepts of regression
2. Binary regression
3. Generalized linear models
4. Multi-categorical regression
5. Semi- and non-parametric regression

Course overview

1. Basic concepts of regression
2. Binary regression
3. Generalized linear models
4. Multi-categorical regression
5. Semi- and non-parametric regression
6. Multivariate/ extended regression models