Seminar:
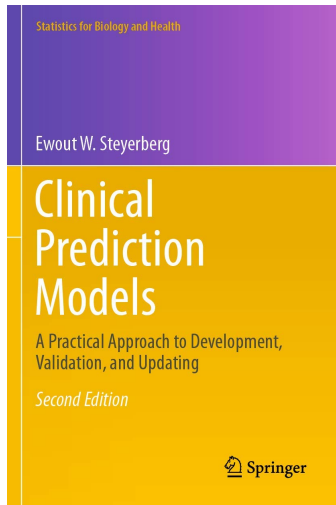# Clinical Prediction Models

Dr. Franziska Kappenberg

TU Dortmund, Fakultät Statistik
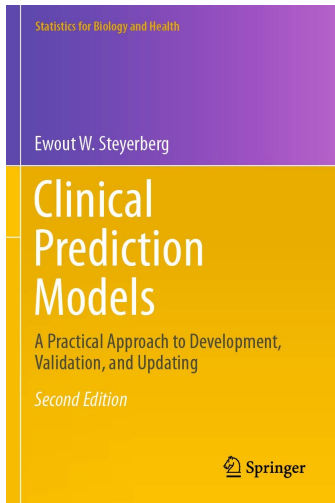
Summer term 2024

Clinical Prediction Models

Statistics for Biology and Health

Ewout W. Steyerberg

Clinical Prediction Models

A Practical Approach to Development, Validation, and Updating

Second Edition

🕮 Springer

- ▶ Three aspects for clinical prediction models: Development, validation, updating
- ▶ Sensible strategy for all aspects is relevant to provide up-to-date prognostic models that can reliably support medical data
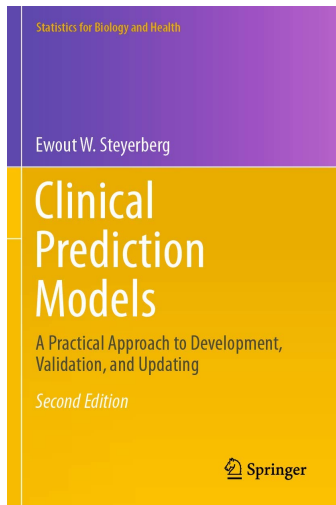
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The book aims to contribute to better understanding of relevant issues in development and application of prediction models in the medical field. Targeted issues include:

- ▶ Sometimes easy possibility to improve predictive modelling (e.g., avoid dichotomization)
- ▶ Small samples due to underpowered studies, complete case analyses, wrong omission of predictors...
- ▶ Exaggeration of claims
- ▶ Poor generalizability

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Possible topics:

- ▶ Applications of pred. models
- ▶ Study design
- ▶ Statistical methods for prediction
- ▶ Overfitting and optimism
- ▶ Missing values
- ▶ Coding of categorical and continuous predictors
- ▶ Assumptions in regression models
- ▶ Modern estimation methods
- ▶ Evaluation of performance
- ▶ Clinical usefulness
- ▶ Validation
- ▶ Updating of models

Organizatorial

Seminar for Bachelor and Master (Statistics and Data Science)
completely in English
Course limit: 14 participants

Presentation
↪ Based on a chapter of the book and additional research in published scientific articles
↪ Bachelor: ∼30 minutes, Master: ∼45 minutes

Written Report
↪ Written explanation of the motivation and the main method

Active participation in the discussion
↪ Questions and feedback for the other presentations

Organizatorial

- Weekly session in the semester, date:
  Tuesdays, 14.15-15.45 in room **M/E 27**
- Registration via the new online tool (starting soon, will be announced)
- Preliminary discussion and topic presentation and assignment: Monday, March 11th, 14.00-15.00
- Sharing of material and information via Moodle