



## Ringseminar

# „Methoden der Epidemiologie, Biometrie und Versorgungsforschung“

## Einladung

Sehr geehrte Kolleginnen und Kollegen,

hiermit möchten wir Sie ganz herzlich einladen zu unserem Ringseminar, das sich der Vorstellung und Diskussion statistischer Methoden und Prinzipien in verschiedenen Bereichen der medizinischen Forschung widmet.

Am **17. November 2025** wird **Prof. Dr. Sarah Friedrich-Welz** (Lehrstuhl für Mathematical Statistics and Artificial Intelligence in Medicine, Universität Augsburg) sprechen über

## (Generative) AI in Medicine: Where Does Statistics Come into Play?

Das Ringseminar findet statt von 16.00 – 17.30 Uhr in M24/H10. Alle Interessierten sind herzlich willkommen, eine Anmeldung ist nicht erforderlich.

### Abstract:

Artificial intelligence, including generative models, is transforming medicine through applications in diagnostics, treatment planning, and research. However, the success of these technologies relies not only on advances in machine learning but also on robust statistical foundations. From study design and data quality assessment to the differentiation between correlation and causation, statistics ensures the reliability and interpretability of AI-driven decisions in clinical practice. One key aspect is the evaluation and comparison of AI methods – and the data used for this. While supervised learning typically relies on benchmarking datasets, statistical approaches usually focus on simulation studies. Each approach has its strengths and limitations: benchmarking ensures comparability but may lack generalizability, whereas simulations allow controlled experimentation but may not fully capture real-world complexity. A related aspect is the growing field of synthetic data. It comes with the promise of preserving privacy and expanding the size of training samples in scenarios where obtaining real data is costly, challenging, or infeasible. However, ensuring that it faithfully represents real-world distributions is not straightforward.

In this talk, we will discuss the role statistics plays in AI, particularly focusing on the role of the data basis for training and comparison of models. We will review the advantages and disadvantages of benchmarking vs. simulation studies and touch upon properties, promises and challenges of synthetic data.

Mit freundlichen Grüßen

Prof. Dr. med. Dietrich Rothenbacher & Prof. Dr. Benjamin Mayer  
Institut für Epidemiologie und Medizinische Biometrie

Prof. Dr. Jan Beyersmann  
Institut für Statistik