Lukas **Burk**

PHD STUDENT | BIOSTATISTICS & MACHINE LEARNING

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Education

M. Sc. in Medical Biometry / Biostatistics
University of Bremen

Bremen, Germany
2021

- Thesis – A Comparison of Deep Learning Models for Energy Expenditure Prediction in Preschoolers

B. A. in Public Health
University of Bremen

Bremen, Germany
2018

- Thesis – Detection of Concomitant Use of Medications in GePaRD

Work Experience

PhD Student / Research Fellow
Leibniz Institute for Prevention Research and Epidemiology - BIPS / Chair of Statistical Learning and Data Science, LMU Munich

Bremen and Munich, Germany

Since 2021

Internship – Biometry
Leibniz Institute for Prevention Research and Epidemiology - BIPS

Bremen, Germany
2019

- Creation of a handout on the topic of count data and modeling approaches
- Descriptive tables for validation purposes in the context of an ongoing study

Student Assistant
Competence Center for Clinical Trials (KKSB)

Bremen, Germany
2019

- Support during the analysis of study data
- Descriptive tables
- Exploratory linear regression modeling

Internship – Biometry, Epidemiology
Leibniz Institute for Prevention Research and Epidemiology - BIPS

Bremen, Germany
2016 - 2017

- Creation of an R / Shiny application for interactive data validation
- Data management and descriptive statistics

Teaching

Teaching assistant – Programming with Statistical Software (R)
LMU Munich

Munich, Germany
2022 - 2023

- Programming course aimed at students in statistics, data science, machine learning
- Preparation and assessment of programming exercises

Teaching Assistant – Quantitative Methods
University of Bremen

Bremen, Germany
2014 - 2018

- Tutorials for first year undergraduates in psychology
- Basics of descriptive and inferential statistics
- Application of these contents using R & RStudio
- Yearly course "Introduction to R"

Workshops

Introduction to R *Bremen, Germany*
BIPS / RKI CARe Program *2025*

- Developed and held short course in cooperation with RKI CARe program
- Materials available on GitHub

Introduction to Machine Learning *Bremen, Germany*
BIPS, held by Marvin N. Wright *2021, 2023, 2025*

- Assisted with course as part of UBRA DataTrain program
- Course materials available on GitHub

Publications

Preprints

- J. Piller, L. Orsini, S. Wiegrebe, J. Zobolas, **L. Burk**, S. H. Langbein, P. Studener, M. Goeswein, A. Bender, "Reduction Techniques for Survival Analysis." arXiv, 2025. doi: 2508.05715

- **L. Burk**, J. Zobolas, B. Bischl, A. Bender, M. N. Wright, and R. Sonabend, "A Large-Scale Neutral Comparison Study of Survival Models on Low-Dimensional Data." arXiv, 2024. doi: 10.48550/arXiv.2406.04098

- R. Sonabend, J. Zobolas, P. Kopper, **L. Burk**, and A. Bender, "Examining properness in the external validation of survival models with squared and logarithmic losses." arXiv, 2024. doi: 10.48550/arXiv.2212.05260

- R. Sonabend, F. Pfisterer, A. Mishler, M. Schauer, **L. Burk**, S. Mukherjee, and S. Vollmer, "Flexible Group Fairness Metrics for Survival Analysis." arXiv, 2022. doi: 10.48550/arXiv.2206.03256

Journal Articles

- S. Fischer, J. Zobolas, R. Sonabend, et al., "mlr3extralearners: Expanding the mlr3 Ecosystem with Community-Driven Learner Integration." JOSS, vol. 10, no. 115, 2025. doi: 10.21105/joss.08331

- **L. Burk**, A. Bender, and M. N. Wright, "High-Dimensional Variable Selection With Competing Events Using Cooperative Penalized Regression." Biometrical Journal, vol. 67, no. 1, 2025. doi: 10.1002/bimj.70036

- H. J. Coyle-Asbil, **L. Burk** et al., "Energy expenditure prediction in preschool children: a machine learning approach using accelerometry and external validation." Physiol. Meas., vol. 45, no. 9, 2024. doi: 10.1088/1361-6579/ad7ad2

- M. Heckmann and **L. Burk**, "Gridsampler – A Simulation Tool to Determine the Required Sample Size for Repertory Grid Studies." JORS, vol. 5, no. 1, 2017. doi: 10.5334/jors.150

Conference Papers

- K. Blesch, N. Koenen, J. Kapar, P. Golchian, **L. Burk**, M. Loecher, M. N. Wright, "Conditional Feature Importance with Generative Modeling Using Adversarial Random Forests." AAAI, vol. 39, no. 15, 2025. doi: 10.1609/aaai.v39i15.33712

Contributions to Books

- G. Casalicchio and **L. Burk**, "Evaluation and Benchmarking." in *Applied Machine Learning Using mlr3 in R*, CRC Press, 2024. doi: 10.1201/9781003402848. Online.

- M. N. Wright, **L. Burk**, P. Golchian, J. Kapar, N. Koenen, and S. H. Langbein, "Machine Learning in Epidemiology." in *Handbook of Epidemiology*, Springer, 2024. doi: 10.1007/978-1-4614-6625-3_81-1