Statistical methods for frailty models: studies on old-age mortality and recurrent events
Böhnstedt, M.

List of publications

M. Böhnstedt and J. Gampe (2019). Detecting mortality deceleration: Likelihood inference and model selection in the gamma-Gompertz model. *Statistics and Probability Letters* 150, 68–73. doi: 10.1016/j.spl.2019.02.013.

M. Böhnstedt, H. Putter, A. Dańko, M. J. Dańko, and J. Gampe (2021). Joint modeling of interval counts of recurrent events and death. *Biometrical Journal* 63, 323–340. doi: 10.1002/bimj.201900367.

M. Böhnstedt, J. Gampe, and H. Putter (2021). Information measures and design issues in the study of mortality deceleration: findings for the gamma-Gompertz model. *Lifetime Data Analysis* 27, 333–356. doi: 10.1007/s10985-021-09518-4.

M. Böhnstedt, H. Putter, N. Ouellette, G. Claeskens, and J. Gampe. Shifting attention to old age: Detecting mortality deceleration using focused model selection. *Manuscript submitted for publication*.

M. Böhnstedt, J. Gampe, M. A. A. Caljouw, and H. Putter. Incorporating delayed entry into the joint frailty model for recurrent events and a terminal event. *Manuscript submitted for publication*.

Acknowledgements

I would like to give a word of thanks to everyone who, one way or another, contributed to the completion of this thesis.

First of all, I would like to express my gratitude to my supervisors Prof. dr. Hein Putter and Dr. Jutta Gampe for giving me the opportunity to embark on my PhD studies and for providing valuable guidance throughout. It was great to work with the two of you and learn from such brilliant researchers.

Several people were involved in the research that resulted in this thesis. I would like to thank Nadine Ouellette, Gerda Claeskens, Maciej Dańko, Aleksandra Dańko, Monique Caljouw, and Paul Eilers for the pleasant collaborations and their helpful comments and contributions.

During my visits to the Leiden University Medical Center, I met a number of people who were all very welcoming and always happy to help, which I very much appreciated.

I also want to express my thanks to the many colleagues at the Max Planck Institute for Demographic Research – scientific and non-scientific staff – who created such a positive work environment. To all the former and current fellow PhD students, I was happy to share this experience with you, and I always enjoyed the friendly and supportive atmosphere in our group.

Heartfelt thanks go to my friends, especially to Angela Carollo and László Németh, for all – work-related or other – conversations, pieces of advice, and encouragements.

Last but not least, I am deeply grateful to my family, in particular to my mum, for the continuing love and support.

Curriculum vitae

Marie Böhnstedt was born on 2nd August 1990 in Stralsund, Germany. She completed her secondary studies at Hansa-Gymnasium Stralsund in 2009.

Afterwards, she started her studies at the University of Rostock, Germany, where she obtained a bachelor's degree in Mathematics with a minor in Economics in 2012. She continued her studies as MSc student with a major in Mathematics and a minor in Economics and Demography. In 2014, she graduated with a MSc in Business Mathematics from the University of Rostock. For the work on her MSc thesis entitled "Statistical Assessment of Mortality Deceleration", she joined the Max Planck Institute for Demographic Research (MPIDR) in Rostock.

From 2014 to 2017, she was employed as research scientist in the Laboratory of Statistical Demography at the MPIDR, before taking up a PhD position at the same institute. In 2018, she enrolled as PhD student in the department of Biomedical Data Sciences at the Leiden University Medical Center under the supervision of Prof. dr. Hein Putter. She conducted her PhD research at the MPIDR, where she was supervised by Dr. Jutta Gampe. Her work, which resulted in this thesis, focused on the development of statistical methodology for specific frailty models for time-to-event data in demographic and biomedical applications. She presented her research at different statistical conferences.