Timo Schmid

CONTACT INFORMATION

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RESEARCH INTERESTS

Computational statistics, poverty mapping, small area estimation, spatial and spatio-temporal statistics, survey statistics, statistical modelling.

EDUCATION

University of Trier, Trier, Germany

Ph.D., Statistics, January, 2012

- Dissertation topic: *Spatial robust small area estimation applied on business data*
- Advisors:
  Prof. Dr. Ralf Münnich (University of Trier, Germany)
  Prof. Dr. Ray Chambers (University of Wollongong, Australia)
- Mark: Summa cum laude

Eberhard Karls Universität Tübingen, Tübingen, Germany

M.Sc. (Diploma), Mathematics, January, 2008

- Master topic: *Numerical range of power-bounded operators*
- Advisor: Prof. Dr. Rainer Nagel (Eberhard Karls Universität, Tübingen, Germany)
- Mark: 1.0

HONORS AND AWARDS

Ph.D. scholarship of the Foundation of German Economy (Stiftung der Deutschen Wirtschaft).
Eberhard Karls Universität Tübingen: Honors in Mathematics.

ACADEMIC EXPERIENCE

Freie Universität Berlin, Berlin, Germany

Assistant Professor **October, 2012 - present**
Postdoctoral Research Fellow **April, 2012 - September, 2012**

- Head of the statistical consultancy *fu:stat* of the Freie Universität Berlin.
- Ongoing research in statistical modelling, spatial and survey statistics.
- Research/consulting projects.
- Teaching in graduate and undergraduate classes.

University of Trier, Trier, Germany

Doctoral Research Fellow **April, 2010 - April, 2012**

- Research for FP7-SSH-2009-6-BLUE-ETS: BLUE-Enterprise and Trade Statistics.
- Teaching experience included service as co-instructor.

SELECTED PUBLICATIONS

1. *Longitudinal analysis of the strengths and difficulties questionnaire scores of the millennium cohort study children in England using quantile and M-quantile multilevel models*, with E. Flouri, E. Midouhas, N. Salvati and N. Tzavidis, **Journal of the Royal Statistical Society: Series A** (Statistics in Social Sciences), 2016, 179 (2), 427 – 452.
2. *Outlier robust small area estimation under spatial correlation*, with R. Chambers, R. Münnich and N. Tzavidis, **Scandinavian Journal of Statistics**, 2016, 43 (3), 806 – 826.

3. *Estimating the density of ethnic minorities and aged people in Berlin: Multivariate kernel density estimation applied to sensitive geo-referenced administrative data protected via measurement error*, with M. Gross, U. Rendtel, S. Schmon and N. Tzavidis, **Journal of the Royal Statistical Society: Series A** (Statistics in Social Sciences), 2016, DOI: 10.1111/rssa.12179, forthcoming.
4. *Modelling the distribution of health related quality of life of advanced melanoma patients in a longitudinal multi-center clinical trial*, with R. Borgoni, P. Del Bianco, N. Salvati and N. Tzavidis, **Statistical Methods in Medical Research**, 2016, forthcoming.
5. *Simulation tools for small area estimation: Introducing the R-Package saeSim*, with S. Warnholz, **Austrian Journal of Statistics**, 2016, 45, 55 – 69.
6. *Spatial robust small area estimation*, with R. Münnich, **Statistical Papers**, 2014, 55, 653 – 670.

Papers in preparation

1. *Robust small area estimation under spatial non-stationarity*, with C. Baldermann and N. Salvati, Working paper, 2016, submitted.
2. *Constructing socio-demographic indicators for National Statistical Institutes using mobile phone data: Estimating literacy rates in Senegal*, with F. Bruckschen, N. Salvati and T. Zbiranski, Working paper, 2016, submitted.
3. *From start to finish: A framework for the production of small area official statistics*, with A. Luna, N. Rojas, N. Tzavidis and L.-C. Zhang, Working paper, 2016, submitted.
4. *A unit-level quantile nested error regression model for domain prediction of indicators with continuous and discrete outcomes*, with N. Salvati, N. Tzavidis and B. Weidenhammer, Working paper, 2016.
5. *Transformations of small area estimation methods for poverty mapping*, with N. Rojas, S. Pannier and N. Tzavidis, Working paper, 2016.
6. *A unified approach to bias correction for finite population prediction and small area estimation*, with R. Chambers, H. Chandra, N. Salvati and N. Tzavidis, Working paper, 2016.

Selected Conference Presentations

1. *Applications of Mixed Models Methodology for Small Area Estimation in Mexico*, with N. Rojas and N. Tzavidis, **Invited session**, Statistische Woche 2015, Hamburg.
2. *A Unit-level Quantile Nested Error Regression Model for Domain Prediction with Continuous and Discrete Outcomes*, with N. Salvati, N. Tzavidis and B. Weidenhammer, **Invited session**, ISI 2015, Rio de Janeiro, Brazil.
3. *Applications of Mixed Models Methodology for Small Area Estimation in Mexico*, with N. Tzavidis, **Invited session**, ISI 2015, Rio de Janeiro, Brazil.
4. *Estimating the Density of Ethnic Minorities and Aged People in Berlin: Bayesian Measurement Error Multivariate Kernel Density Estimation Applied to Sensitive Administrative Data*, with M. Gross, U. Rendtel, S. Schmon and N. Tzavidis, **Invited talk**, InGRID Workshop - Local statistics for decisionmaking on well-being and vulnerability, June 2015, Livorno, Italy.
5. *Bias-corrected outlier robust small domain predictors under spatial correlation*, with R. Chambers, R. Münnich and N. Tzavidis, **Invited session**, ERCIM2014, Pisa, Italy.
6. *New developments in SAE of complex deprivation indicators*, with N. Salvati, N. Tzavidis and B. Weidenhammer, **Invited session**, ERCIM2014, Pisa, Italy.
7. *Small-Area-Modelle unter Einbeziehung rumlicher Informationen*, with C. Baldermann, **Invited session**, Statistische Woche 2014, Hannover, Germany.
8. *Korrektur von Rundungsfehlern durch Anonymisierungstechniken in bivariater Kerndichteschtzung*, with M. Gross, U. Rendtel and S. Schmon, Statistische Woche 2014, Hannover, Germany.
9. *On the use of a data-driven tuning constant in M-Quantile regression*, with N. Salvati and N. Tzavidis, Statistische Woche 2014, Hannover, Germany.

10. *A robust unit-level model for small area estimation allowing for spatial non-stationarity*, with C. Baldermann and N. Salvati, SAE 2014, Poznan, Poland.
11. *Domain prediction for counts using microsimulation via quantiles*, with N. Salvati, N. Tzavidis and B. Weidenhammer, **Invited session**, SAE 2014, Poznan, Poland.
12. *Bias correction of robust small area estimators under spatial correlation*, with R. Chambers, R. Münnich and N. Tzavidis, **Invited session**, LinStat2014, Linköping, Sweden.
13. *On the use of a data-driven tuning constant in M-Quantile regression*, with N. Salvati and N. Tzavidis, **Invited talk**, Southampton Research Seminar, 2014, Southampton, UK.
14. *Full bias-correction of spatial robust small area estimators in the context of business data*, Statistische Woche 2013, Berlin, Germany.
15. *Spatial quantile regression using the asymmetric Laplace distribution with applications to small area estimation*, with M. Geraci, N. Tzavidis and B. Weidenhammer, Statistische Woche 2013, Berlin, Germany.
16. *Full-bias correction of spatial robust small area estimators*, SAE 2013, Bangkok, Thailand.
17. *Spatial robust small area methods in the context of Italian business data*, with R. Münnich, **Invited session**, ITACOSM 2013, Milano, Italy.
18. *A robust random effect block bootstrap for spatially clustered data*, with R. Chambers and P. Mokhtarian, DAGStat 2013, Freiburg, Germany.
19. *Spatial robust small area estimation applied on business data*, Goulburn 17, 2011, Goulburn, Australia.
20. *Spatial robust small area estimation applied on business data*, with R. Münnich and T. Zimmermann, EESW 2011, Neuchatel, Switzerland.
21. *Analysis of business data using spatial robust small area estimators*, with R. Münnich, DStatG 2011, Leipzig, Germany.
22. *Spatial robust small area estimation applied on business data*, with R. Münnich, SAE 2011, Trier, Germany.
23. *Parametric bootstrap MSE estimation for the spatial robust EBLUP*, with R. Münnich, ITACOSM 2011, Pisa, Italy.
24. *Spatial small area estimation to enhance quality and create new knowledge out of business data*, with R. Münnich, NTTS 2011, Brussels, Belgium.
25. *Spatial robust small area estimation*, with R. Münnich, ERCIM 2010, London, UK.

Grants and Statistical Consulting

Economic and Social Research Council
Co-investigator and computing specialist **January, 2016 - December, 2018**
The project focuses on developing innovations in small area estimation methodologies.
Principal investigator: Nikos Tzavidis (University of Southampton)
Volume: £ 815,000
Further information

DFG - German Research Foundation
Principal investigator **April, 2016 - April, 2018**
The main objective of the project is to develop an adequate methodology for high quality estimates for the Household Finance and Consumption Survey (HFCS) for the German Central Bank.
Volume: € 162,970

MIUR-DAAD Joint Mobility Program
Principal investigator **May, 2016 - April, 2018**
The aim of the project is to investigate multidimensional poverty by using small area estimation.
Volume: € 40,000

Bill and Melinda Gates Foundation
Principal investigator **June, 2015 - December, 2016**
The main objective is to construct socio-demographic indicators based on mobile phone data from Senegal.
Volume: € 40,000

Welsh Government
Co-Principal investigator **June, 2016 - December, 2016**
The primary objective is to investigate discontinuities in the National Survey.
Principal investigator: Paul Smith (University of Southampton)
Volume: £ 25,000

Berlin Senate for Urban Development
Principal investigator **January, 2016 - April, 2016**
The aim of the project is to estimate on spatially disaggregated level where students live in Berlin.
Volume: € 11,000

Center for Research Strategy (E-Club), Freie Universität Berlin
Co-Principal investigator **July, 2015 - March, 2016**
The main objective is to develop a novel statistical method to analyze large functional magnetic resonance imaging datasets.
Principal investigator: Dirk Ostwald (Freie Universität Berlin)
Volume: € 13,800

National Statistical Institute Mexico
Co-Principal investigator **January, 2015 - December, 2015**
The aim of the project is to produce small area estimates of income related indicators for municipalities in Mexico.
Principal investigator: Nikos Tzavidis (University of Southampton)
Volume: £ 15,000

Statistical consulting unit *fu:stat* of the Freie Universität Berlin
Head of consulting unit **October, 2012 - present**
Statistical consulting for companies, statistical courses and support for students.
Volume: € 100,000 (per year)

Bill and Melinda Gates Foundation (under review)
Principal investigator **November, 2016 - March, 2017**
The main objective is to extend the results from Senegal to the Cote d'Ivoire.
Volume: € 28,000

Teaching and Supervision

Lectures:

- Poverty mapping, Master level, 30 students, Winter term 2016/17.
- Statistics II, Bachelor level, 250 students, Winter term 2015/16, Evaluation: 1.20.
- Statistics I, Bachelor level, 500 students, Summer term 2015, **Best teaching award** of the department, Evaluation: 1.36.
- Small Area Estimation, Master level, 25 students, Summer term 2015.
- Statistical Modelling, Bachelor level, 80 students, Winter term 2014/15, Evaluation: 1.18.

- Statistical Modelling, Bachelor level, 85 students, Winter term 2013/14, Evaluation: 1.20.
- Mathematical Statistics, Master level, 30 students, Summer term 2013, Evaluation: 1.31.
- Statistics II, Bachelor level, 250 students, Winter term 2012/13, **Best teaching award** of the department, Evaluation: 1.19.

Seminars:
- Statistical Consulting, Master level, Winter term 2014/15.
- Computational Statistics, Master level, Summer term 2014.
- Statistical Consulting, Master level, Winter term 2013/14.
- Spatial Statistics, Master level, Summer term 2013.

Supervision of Ph.D. candidates:
- Claudia Baldermann, *A robust unit-level model for small area estimation under spatial correlation.*
- Ann-Kristin Kreutzmann, *Combining small area estimation and multiple imputation.*
- Marcus Gross, *Measurement error models applied to survey statistics.*
- Sören Pannier, *Small area estimation based on alternative data sources.*
- Natalia Rojas, *Multidimensional poverty estimation using generalised linear mixed models.*
- Sebastian Warnholz, *Robust Fay-Herriot models and extensions.*
- Beate Weidenhammer, *Spatial quantile regression using the asymmetric Laplace distribution with applications to small area estimation.*

External examiner:
- Steve Donbavand, *Mapping poverty: the application and evaluation of model-based approaches to poverty level estimation within small areas*, 2015, University of Southampton, UK.
- Innocent Ngaruye, *Small area estimation for multivariate repeated measure data*, 2014, Linköping University, Sweden.

Professional Experience

A.T. Kearney, Munich, Germany

Consultant **April, 2008 - March, 2010**

Implementation of several consulting projects, including modelling of affluent clients for an international bank, benchmarking of costs for mobile operators, and advice on analysis of airline economics data.

Roland Berger Strategy Consultants, Munich, Germany

Summer researcher **August, 2006 - October, 2006**

Carried out a consulting project for a German telecommunication company

Computer Skills

- Languages and packages: R, C++, LaTeX, SAS, JMP, STATA and SPSS.
- R packages: saeSim.
- Algorithms: Extensive experience programming/evaluating of simulations; parallel computing.
- Operating Systems: Unix/Linux, Windows.

Professional Service

Journal reviewer: Among other, Annals of Applied Statistics, Computational Statistics and Data Analysis, European Journal of Operational Research, International Statistical Review, Journal of the Royal Statistical Society Series A and Series C, Journal of Official Statistics, Journal of Multivariate Analysis, Mathematical Population Studies, Scandinavian Journal of Statistics, Statistical Papers, Statistics in Transition, Survey Research Methods.

Memberships: German Statistical Society (DStatG), International Association of Survey Statisticians (IASS), International Statistical Institute (ISI), Royal Statistical Society (RSS).

Boards: Board Member of the German Statistical Society (DStatG), IASS Council Member (2015-2019), ISI Young Statisticians Committee.

OFFER OF PROFESSORSHIP

University of Manchester, Manchester, UK
Associate Professor **May, 2016**
Offer of a permanent Associate Professorship in social statistics at the University of Manchester.