Karl Oskar Ekvall

Assistant Professor in Statistics and Data Science
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Employment

University of Florida

Assistant Professor 2022/08 - present

Karolinska Institutet

Assistant Professor 2021/11 - 2022/08

Postdoctoral Researcher 2020/06 - 2021/11

TU Wien

Postdoctoral Researcher 2019/03 - 2020/05

Education

University of Minnesota – Twin Cities

Ph.D. Statistics 2019

M.S. Statistics 2017

University of Gothenburg

M.Sc. Finance 2012

B.Sc. Economics 2011

Publications

THEORY AND METHODS

Zhang, Ekvall, and Molstad, 2025, "Fast and reliable confidence intervals for a variance component". *Biometrika* (In press).

Molstad, Ekvall, and Suder, 2024, "Direct covariance matrix estimation with compositional data". *Electronic Journal of Statistics* 18(1): 1702–1748

Ekvall and Bottai, 2023, "Concave likelihood-based regression with finite-support response variables". *Biometrics* 79(3): 2286–2297.

Ekvall and Bottai, 2022, "Confidence regions near singular information and boundary points with applications to mixed models". *Annals of Statistics* 50(3): 1806–1832.

Ekvall, 2022, "Targeted principal components regression". *Journal of Multivariate Analysis* 190: 104995.

Ekvall and Molstad, 2022, "Mixed-type multivariate response regression with covariance estimation". *Statistics in Medicine* 41(15): 2768–2785.

Ekvall and Jones, 2021, "Convergence analysis of a collapsed Gibbs sampler for Bayesian vector autoregressions." *Electronic Journal of Statistics* 15(1): 691–721.

Ekvall and Jones, 2020, "Consistent maximum likelihood estimation using subsets with applications to multivariate mixed models." *Annals of Statistics* 48(2): 932–952.

Ekvall and Jones, 2019, "Markov chain Monte Carlo." *Wiley StatsRef*.

COLLABORATIVE AND APPLIED

Gustin, Ekvall, Barman, Jacobsson, Sandin, Sandberg, Wold, Vahter, and Kippler, 2023, "Mediation by thyroid hormone in the relationships between gestational exposure to methylmercury and birth size." *Exposure and Health*.

Teaching

University of Florida

Introduction to Probability, approx. 135h	2022 - 2025
Introduction to Statistics Theory, approx. 90h	2022 - 2024
Multivariate Statistical Analysis, approx. 45h	2024

Karolinska Institutet

Undergraduate biostatistics in bachelor's program in biomedicine, approx. 150h	2020 - 2021
Interprofessional learning day, 3h	2021

University of Minnesota – Twin Cities

Introduction for new teaching assistants, approx. 12h	2018 - 2019
Theory of statistics for advanced undergraduate students, approx. 84h	2017 - 2018
Statistical computing for undergraduate students, approx 84h	2018
Introductory statistics for undergraduate students*, approx. 252h	2014 - 2016

*as teaching assistant

Presentations

"Confidence regions when the parameter is near the boundary". CMStatistics, London, U.K.	2024
"Inference on some (nearly-)singular covariance matrices". CMStatistics, London, U.K.	2022
"Inference on variance parameters near or at the boundary of the parameter set". University of Minnesota, School of Statistics, anniversary. Minneapolis, MN, USA.	2022
"Reliable inference on small scale and variance parameters in mixed models". MEB biostatistics seminar. Stockholm, Sweden.	2021
"Confidence intervals for small scale parameters". IMM research day. Stockholm, Sweden	2020
"Consistent maximum likelihood estimation in mixed models using subsets". Joint Statistical Meetings. Philadelphia, PA, U.S.	2020
"Convergence analysis of a collapsed Gibbs sampler for Bayesian vector autoregressions". CMStatistics. London, U.K.	2019

"Consistent maximum likelihood estimation in mixed models using subsets". 2019
University of Vienna seminar. Vienna, Austria

"Convergence analysis of a collapsed Gibbs sampler for Bayesian vector autoregressions". 2019
TU Wien colloquium. Vienna, Austria

"A multivariate linear model with separable correlation". 2017
International Chinese Statistical Association, applied statistics symposium. Chicago, IL, U.S.

Consulting

University of Minnesota, School of Statistics consulting clinic, approx. 70h 2017

U.S. Geological Survey, estimating monotonic trends in multivariate time series, 339 h 2016

Software

`lmmstest` R package for implementing a modified score test for scale parameters in linear mixed models. https://github.com/koekvall/lmmstest

`mmrr` R package for estimating mixed-type multivariate response regressions. https://github.com/koekvall/mmrr

`tpcr` R package for estimating targeted principal components regressions. https://github.com/koekvall/tpcr

Service

EDITORIAL BOARD

Associate Editor for Statistics and Probability Letters 2024–

REVIEWER

Annals of Statistics, Biometrika, Annals of Applied Statistics, Journal of Internal Medicine, Statistical Methods in Medical Research, Statistics in Medicine, National Science Foundation, Electronic Journal of Statistics, Journal of Computational and Graphical Statistics, Computational Statistics and Data Analysis, Annales de l'Institut Henri Poincaré

INTERNAL

Faculty Search Committee 2024–2025

Department Executive Committee 2024–2025

Awards

Miscellaneous

The American–Scandinavian foundation fellowship 2016

Fulbright foreign student program 2014

Tom Hedelius foundation scholarship 2014

Sixten Gemzéus foundation scholarship 2014

Malmsten award for best thesis in M.Sc. in Finance program 2014

University of Minnesota – Twin Cities

Graduate research partnership program fellowship	2017
Lynn Y.S. Lin fellowship for statistical consulting	2016
School of Statistics first year scholarship	2014

Student supervision

Matias Shedden, Ph.D. in Statistics, University of Florida.	2024-
Yiqiao Zhang, Ph.D. in Statistics, University of Florida.	2022-
Jonatan Risberg (M.Sc. in applied mathematics). Six week summer research project.	2021