Karl Oskar Ekvall

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Employment

University of Florida

Assistant Professor 2022 -

Karolinska Institutet

Assistant Professor 2021 - 2022

Postdoctoral Researcher (Similar to U.S. Assistant Professor) 2020 - 2021

TU Wien

Postdoctoral Researcher 2019 - 2020

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

Ekvall and Bottai, 2025+, "Uniform inference in linear mixed models". Major revision at *Biometrika*.

Zhang, Ekvall, and Molstad, 2025, "Fast and reliable confidence intervals for a variance component". *Biometrika* 112(2): asaf010.

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* 16: 357–368.

Teaching

University of Florida

Applied Multivariate Statistics	2024 -
Statistical Learning	2024 -
Introduction to Probability	2022 - 2025
Introduction to Statistics Theory	2022 - 2024

Karolinska Institutet

Undergraduate biostatistics in bachelor's program in biomedicine	2020 - 2021
Interprofessional learning day	2021

University of Minnesota – Twin Cities

Introduction for new teaching assistants	2018 - 2019
Theory of statistics for advanced undergraduate students	2017 - 2018
Statistical computing for undergraduate students	2018
Introductory statistics for undergraduate students*	2014 - 2016

*as teaching assistant

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

Student supervision

Matias Shedden, Ph.D. in Statistics, University of Florida. 2024 -

Yiqiao Zhang, Ph.D. in Statistics, University of Florida. *(Now at Microsoft)* 2022 - 2025

Jonatan Risberg (M.Sc. in applied mathematics). Summer research project. 2021

Presentations

"Uniform inference near boundary and singular information points". 2025
Department of Epidemiology and Biostatistics, Karolinska Institutet, Stockholm, Sweden.

"Reliable inference in mixed models". 2025
Department of Mathematics, Stockholm University, Stockholm, Sweden.

"Confidence regions when the parameter is near the boundary". 2024
CMStatistics, London, U.K.

"Inference on some (nearly-)singular covariance matrices". 2022
CMStatistics, London, U.K.

"Inference on variance parameters near or at the boundary of the parameter set". 2022
University of Minnesota, School of Statistics, anniversary. Minneapolis, MN, USA.

"Reliable inference on small scale and variance parameters in mixed models". 2021
MEB biostatistics seminar. Stockholm, Sweden.

"Confidence intervals for small scale parameters". IMM research day. Stockholm, Sweden 2020

"Consistent maximum likelihood estimation in mixed models using subsets". 2020
Joint Statistical Meetings. Philadelphia, PA, U.S.

"Convergence analysis of a collapsed Gibbs sampler for Bayesian vector autoregressions". 2019
CMStatistics. London, U.K.

"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.

Grants and awards

AS PRINCIPAL INVESTIGATOR

Pending

NSF: Modern theory and methods for likelihood-based inference in non-standard settings. 2025 - 2028

AS STUDENT

Graduate research partnership program fellowship 2017

The American–Scandinavian foundation fellowship 2016

Lynn Y.S. Lin fellowship for statistical consulting 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
School of Statistics first year scholarship	2014

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