

Karl Oskar Ekvall

Assistant Professor in Statistics and Data Science

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Employment

University of Florida

Assistant Professor 2022–

Karolinska Institutet

Assistant Professor / Postdoctoral Researcher 2020–2022

TU Wien

Postdoctoral Researcher 2019–2020

Education

University of Minnesota – Twin Cities

Ph.D. in Statistics 2019

M.S. in Statistics 2017

University of Gothenburg

M.Sc. in Finance 2012

B.Sc. in Economics 2011

Publications

IN PREPARATION

M. Shedden and K.O. Ekvall. “Uniformly correct inference near the boundary for Wald and likelihood ratio statistics”.

X. Wang, A.J. Molstad, and K.O. Ekvall. “Transfer learning for large covariance matrices”.

O.G.H. Hössjer, K.O. Ekvall, M. Bottai, and J.M.P. Albin. “Asymptotics of likelihood ratio tests of boundary points with unidentifiable nuisance parameters”.

K.O. Ekvall. “Scalable and reliable inference for mixed models with nuisance parameters”.

K.O. Ekvall. “Likelihood-based inference and computing with separable correlation matrices”.

H. Karim, K.O. Ekvall, et al. “External validation of PIHCA and GO-FAR 2 scores for predicting favorable outcomes following in-hospital cardiac arrest”.

THEORY AND METHODS

Y. Zhang, K.O. Ekvall, and A.J. Molstad. “Universal inference for variance components”. Under review at *Stat*

K.O. Ekvall and M. Bottai, 2025+, “Uniform inference in linear mixed models”. *Biometrika* (In press)

Y. Zhang, K.O. Ekvall, and A.J. Molstad, 2025, “Fast and reliable confidence intervals for a variance component”. *Biometrika* 112(2): asaf010

A.J. Molstad, K.O. Ekvall, and P.M. Suder, 2024, “Direct covariance matrix estimation with compositional data”. *Electronic Journal of Statistics* 18(1): 1702–1748

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

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

K.O. Ekvall, 2022, “Targeted principal components regression”. *Journal of Multivariate Analysis* 190: 104995

K.O. Ekvall and A.J. Molstad, 2022, “Mixed-type multivariate response regression with covariance estimation”. *Statistics in Medicine* 41(15): 2768–2785

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

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

K.O. Ekvall and G.L. Jones, 2019, “Markov chain Monte Carlo.” *Wiley StatsRef*

COLLABORATIVE AND APPLIED

K. Gustin, K.O. Ekvall, et al., 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 (undergraduate and graduate level) 2024–

Statistical Learning (undergraduate and graduate level) 2024–

Introduction to Probability (undergraduate level) 2022–2025

Introduction to Statistics Theory (undergraduate level) 2022–2024

Karolinska Institutet

Biostatistics (undergraduate level) 2020–2021

Interprofessional Learning Day (graduate and professional level) 2021

University of Minnesota – Twin Cities

Introduction for new teaching assistants (graduate level) 2018–2019

Theory of Statistics (undergraduate level) 2017–2018

Introduction to Statistical Computing (undergraduate level) 2018

Introduction to Statistical Analysis (as TA, undergraduate level) 2014–2016

Student supervision

AS ADVISOR OR CO-ADVISOR

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, KTH (Summer research project at KI)	2021

AS COMMITTEE MEMBER

M.K. Kim (Ph.D. in Statistics), K.M. Gelis Cadena (Ph.D. in Statistics), S. Li (Ph.D. in Food Science)

Service

EDITORIAL BOARD

Associate Editor for Statistics and Probability Letters	2024–
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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

Presentations

“Uniform inference near the boundary, with mixed models examples”. EcoSta 2025, Waseda University, Tokyo, Japan	2025
“Uniform inference near boundary and singular information points”. Department of Mathematics, Stockholm University, Stockholm, Sweden	2025
“Reliable inference in mixed models”. Department of Epidemiology and Biostatistics, Karolinska Institutet, Stockholm, Sweden	2025
“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, U.S.	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”. University of Vienna seminar. Vienna, Austria	2019
“Convergence analysis of a collapsed Gibbs sampler for Bayesian vector autoregressions”. TU Wien colloquium. Vienna, Austria	2019
“A multivariate linear model with separable correlation”. International Chinese Statistical Association, applied statistics symposium. Chicago, IL, U.S.	2017

Grants and awards

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, ~70h	2017
U.S. Geological Survey, estimating monotonic trends in multivariate time series, 339h	2016

Software

`lmmstest` R package for a modified score test in linear mixed models. <https://github.com/koekvall/lmmstest>
`mmrr` R package for mixed-type multivariate response regressions. <https://github.com/koekvall/mmrr>
`tpcr` R package for targeted principal components regressions. <https://github.com/koekvall/tpcr>