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

THEORY AND METHODS

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

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)	2024–
Statistical Learning (undergraduate and graduate)	2024–
Introduction to Probability (undergraduate)	2022–2025
Introduction to Statistics Theory (undergraduate)	2022–2024

Karolinska Institutet

Biostatistics (undergraduate)	2020–2021
Interprofessional Learning Day (graduate and professional)	2021

University of Minnesota – Twin Cities

Introduction for new teaching assistants (graduate)	2018–2019
Theory of Statistics (undergraduate)	2017–2018
Statistical Computing (undergraduate)	2018
Introductory Statistics (as TA)	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 at KTH (Summer research project)	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–

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 boundary and singular information points". 2025
Department of Mathematics, Stockholm University, Stockholm, Sweden

"Reliable inference in mixed models". 2025
Department of Epidemiology and Biostatistics, Karolinska Institutet, 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, U.S.

"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, ~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