

Kory D. Johnson

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Academic Positions

- 2021.5 - present **TU Wien**
Applied Statistics Research Unit (ASTAT)
Universitätsassistent (Assistant Professor, non-tenure track)
- 2020.9 - 2021.4 **Vienna University of Economics and Business**
Institute for Statistics and Mathematics
Postdoctoral Research Fellow
- 2019.9 - 2020.9 **Vienna University of Economics and Business**
Institute for Statistics and Mathematics
Universitätsassistent (Assistant Professor, non-tenure track)
- 2016.9 - 2019.9 **The University of Vienna**
Department of Statistics and Operations Research
Universitätsassistent (Assistant Professor, non-tenure track)

Education

- 2011 - 2016 **The Wharton School, University of Pennsylvania**
M.A. Statistics; Ph.D., Statistics
Dissertation Title: *Discrete Methods in Statistics: Feature Selection and Fairness-Aware Data Mining*
Advisers: Professors Robert Stine and Dean Foster
Degree Conferred: May 16, 2016
- 2007 - 2011 **The Wharton School, University of Pennsylvania**
B.S. in Economics summa cum laude; Statistics, minor in Mathematics
The College of Arts and Sciences, University of Pennsylvania
B.A. summa cum laude with Distinction in Economics and Philosophy

Research Interests

- Epidemiology: effective reproduction number, positivity rate, agent-based modeling, Bayesian hierarchical modeling
- Machine learning: prediction intervals, conformal inference, fairness-aware data mining, transfer learning
- Statistics: sequential testing, assumptions of model selection, inference after model selection, multiple comparisons

Publications

Jitka Polechová, Kory D. Johnson, Pavel Payne, Alex Crozier, Mathias Beiglböck, Pavel Plevka, and Eva Schernhammer. Sars-cov-2 rapid antigen tests provide benefits for epidemic control - observations from austrian schools. *Journal of Clinical Epidemiology*, 145:14–19, May 2022. ISSN 0895-4356. doi: 10.1016/j.jclinepi.2022.01.002. URL <https://doi.org/10.1016/j.jclinepi.2022.01.002>.

K. D. Johnson, R. A. Stine, and D. P. Foster. Impartial predictive modeling and the use of proxy variables. *ArXiv e-prints*, 2022. URL <https://arxiv.org/abs/1608.00528>. Forthcoming in Springer’s Lecture Notes in Computer Science.

Kory D. Johnson, Mathias Beiglböck, Manuel Eder, Annemarie Grass, Joachim Hermisson, Gudmund Pammer, Jitka Polechová, Daniel Toneian, and Benjamin Wöfl. Disease momentum: Estimating the reproduction number in the presence of superspreading. *Infectious Disease Modelling*, 6:706–728, 2021. ISSN 2468-0427. doi: 10.1016/j.idm.2021.03.006. URL <https://www.sciencedirect.com/science/article/pii/S2468042721000270>.

Danijel Kivaranovic, Kory D. Johnson, and Hannes Leeb. Adaptive, distribution-free prediction intervals for deep networks. In *The 23rd International Conference on Artificial Intelligence and Statistics, AISTATS 2020, 26-28 August 2020, Online [Palermo, Sicily, Italy]*, pages 4346–4356, 2020. URL <http://proceedings.mlr.press/v108/kivaranovic20a.html>.

Lawrence D. Brown and Kory D. Johnson. Comment. *Journal of the American Statistical Association*, 111(514):614–617, 2016. URL <http://dx.doi.org/10.1080/01621459.2016.1182788>.

Under Revision

Kory D. Johnson, Annemarie Grass, Daniel Toneian, Mathias Beiglböck, and Jitka Polechová. Robust models of sars-cov-2 heterogeneity and control, 2021. Under revision at PLOS Global Public Health.

Preprints

Kory D. Johnson, Robert A. Stine, and Dean P. Foster. Fitting high-dimensional interaction models with error control. *ArXiv e-prints*, art. arXiv:1510.06322, a. URL <https://arxiv.org/abs/1510.06322>.

K. D. Johnson, R. A. Stine, and D. P. Foster. Submodularity in statistics: Comparing the success of model selection methods. *ArXiv e-prints*, b. URL <http://arxiv.org/abs/1510.06301>.

K. D. Johnson, D. Lin, L. H. Ungar, D. P. Foster, and R. A. Stine. A risk ratio comparison of l_0 and l_1 penalized regression. *ArXiv e-prints*, c. URL <http://arxiv.org/abs/1510.06319>.

In Preparation

Kory D. Johnson and Tobias Fissler. Optimality of conformal prediction intervals.

Kory D. Johnson and Darjus Hosszejni. State-space models for estimating the time-varying effective reproduction number.

Pavol Harar, Dennis Elbrächter, Monika Dörfler, and Kory D. Johnson. Redistributor: Transforming empirical data distributions for anomaly detection and fairness-aware data mining.

Christian Url and Kory D. Johnson. Asymmetric, distribution-free predictive intervals for quantile forests.

Software

Kory D. Johnson. *lmimpartial: Impartial Estimates Using Linear Regression*, 2020. URL <https://github.com/korydjohnson/lmimpartial>. R package version 1.0.0.

Kory D. Johnson and Robert A. Stine. *rai: Revisiting-Alpha-Investing for Polynomial Regression*, 2019. URL <https://github.com/korydjohnson/rai>. R package version 1.0.0.

Selected Presentations

Robust Models of SARS-CoV-2 Heterogeneity and Control, November 2021. Universität Wien Arbeitsgemeinschaft Biomathematik. Vienna, Austria.

Adaptive, Distribution-Free Prediction Intervals for Deep Neural Networks, December 2019. University of Vienna Deep Learning Seminar. Vienna, Austria.

Revisiting Alpha-Investing: mFDR Control in Polynomial Regression, December 2018. Computational and Methodological Statistics 2018. Pisa, Italy.

Comment: Exact Post-selection Inference for Sequential Regression Procedures, November 2018. Larry Brown Memorial Workshop, Young Researcher Session. Philadelphia, USA.

Stopping Stepwise Regression with the Sequential Rejection Principle, September 2018. Royal Statistical Society 2018 International Conference. Cardiff, Wales.

Sequential Testing for Inference During Model Selection, July 2018. Workshop on Model Selection, Regularization, and Inference. Vienna, Austria.

Controlling FWER in Stepwise Regression Using Multiple Comparisons, December 2017. Computational and Methodological Statistics 2018. London, England.

Valid Stepwise Regression Using Sequential Testing, July 2017. Joint Statistical Meetings. Baltimore, USA.

Sequential Testing for Inference During Model Selection, March 2017. University of Vienna Department of Statistics and Operations Research.

Submodularity in Statistics, August 2015. Joint Statistical Meeting. Seattle, USA.

Collaborators

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| Previous | Lawrence D. Brown (University of Pennsylvania); Dean P. Foster (Amazon.com); Robert A. Stine (Amazon.com); Danijel Kivaranovic (DEXT.AI); Hannes Leeb (University of Vienna) |
| Current | Jitka Polechová (University of Vienna); Mathias Beiglböck (University of Vienna); Annemarie Grass (University of Vienna); Tobias Fissler (Vienna University of Economics and Business); Darjus Hosszejni (Vienna University of Economics and Business); Pavol Harar (University of Vienna); Monika Dörfler (University of Vienna); Dennis Elbrächter (ETH Zürich) |

Teaching Experience

Instructor: Lecturer

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| Winter 2021 | Statistics and Probability Theory (for informatics students) |
| Winter 2020 | Applied Econometrics |
| Summer 2020 | Financial Mathematics |
| Summer 2020 | Statistik (in German) |
| Winter 2018 | Statistical Programming: Introduction to R |
| Summer 2018 | Large-Scale Inference (master's level) |
| Winter 2017 | Data Science Case Studies in R (master's level) |
| Summer 2017 | Nonparametric Inference (master's level) |
| Summer 2015 | Introductory Business Statistics |

Instructor: Exercise Course

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| Winter 2021 | Statistics and Probability Theory (for informatics students) |
| Summer 2021 | Introduction to Statistics (for mathematics students) |
| Summer 2020 | Quantitative Methods II |
| Summer 2017 | Statistical Inference |
| Winter 2016 | Linear Models |
| Spring 2015 | Introductory Statistics |
| Spring 2012 | Introductory Statistics |

Teaching Assistant

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| Spring 2016 | Modern Regression for Social, Behavioral, and Biological Sciences |
| Fall 2015 | Introductory Business Statistics II |
| Fall 2014 | Introductory Business Statistics I |
| Spring 2014 | Applied Econometrics II |
| Fall 2013 | Intermediate Statistics |
| Spring 2013 | Introductory Business Statistics I |
| Fall 2012 | Applied Econometrics I |
| Fall 2011 | Introductory Business Statistics II |

Master's Theses

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| January, 2020 | Christian Url; <i>Distribution-Free Predictive Intervals for Quantile Forests</i> |
| April, 2019 | Mathias Wörndl; <i>Knockoffs</i> |

Other Experience

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| 2020.5 - 2020.12 | <i>Statistical Consultant</i> , Shelterluv. San Francisco, CA. |
| 2019.3 - 2019.3 | <i>Visiting Researcher</i> , Amazon. New York, NY. |
| 2009.7 - 2009.8 | <i>Marketing Intern</i> , Citibank Singapore. Singapore, SG. |
| 2008.9 - 2009.5 | <i>Consultant</i> , Wharton Small Business Development Center. Philadelphia, PA. |

Technical Skills

- Extensive experience in L^AT_EX, R (tidyverse, ggplot2, etc), and Python (PyTorch, pandas, sklearn).
- Experience in Matlab, SQL, C#, VBA, and Microsoft Office.
- German Language (B2).

Hobbies

Rock climbing, splitboarding, and mountaineering.