

# Karl Gregory

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## Education

- 2014 Ph.D., Statistics, Texas A&M University  
Advisors: Raymond Carroll, Soumendra Lahiri
- 2011 M.S., Statistics, Texas A&M University
- 2009 B.S., Statistics and Economics, Central Michigan University

## Professional experience

- 2016– Assistant Professor, Department of Statistics, University of South Carolina
- 2014–2016 Postdoctoral Researcher, Research Training Group 1953, University of Mannheim/Heidelberg
- 2014 Teaching Assistant, Department of Statistics, Texas A&M University (Summer)
- 2013–2014 Research Assistant, Department of Statistics, Texas A&M University (Fall, Spring)
- 2013 Biostatistics Intern, Sanofi-Pasteur (Summer)
- 2012–2013 Instructor of Record, Department of Statistics, Texas A&M University (Fall, Spring)
- 2012 Doctoral Research Intern, MD Anderson Cancer Center (Summer)
- 2012 Teaching Assistant, Department of Statistics, Texas A&M University (Spring)
- 2012 Research Assistant, Department of Statistics, Texas A&M University (Fall)
- 2011 Technical Teaching Assistant, Department of Statistics, Texas A&M University (Summer)
- 2010–2011 Consulting Project Supervisor, Department of Statistics, Texas A&M University (Fall, Spring)
- 2009–2010 Technical Teaching Assistant, Department of Statistics, Texas A&M University
- 2008–2009 Undergraduate Research Fellow (NSF), Central Michigan University

## Refereed publications

1. Cao, X., Gregory, K., Wang, D. (2022). Inference for sparse linear regression based on the leave-one-covariate-out solution path. *Communications in Statistics–Theory and Methods*, In press.
2. Gregory, K., Mammen, E., Wahl, M. (2021). Statistical inference in sparse high-dimensional additive models. *Annals of Statistics* 49(3), 1514–1536.
3. Mohammadi, E., Gregory, K.B., Thelwall, M., Barahmand, N. (2020). Which health and biomedical topics generate the most Facebook interest and the strongest citation relationships? *Information Processing and Management* 57(3), 102230.
4. Das, D., Gregory, K., Lahiri, S.N. (2019). Perturbation bootstrap in adaptive lasso. *Annals of Statistics* 47(4), 2080–2116.
5. Gregory, K.B., Wang, D., McMahan, C.S. (2019). Adaptive elastic net for group testing. *Biometrics* 75(1), 13–23.
6. Gregory, K.B., Lahiri, S.N., Nordman, D.J. (2018). A smooth block bootstrap for quantile regression with time series. *Annals of Statistics* 46(3), 1138–1166.

7. Gregory, K.B., Lahiri, S.N., and Nordman, D.J. (2015). A smooth block bootstrap for statistical functionals and time series. *Journal of Time Series Analysis* 36, 442–461.
8. Gregory, K.B., Carroll, R.J., Baladandayuthapani, V., and Lahiri, S.N. (2015). A two-sample test for equality of means in high dimension. *Journal of the American Statistical Association* 110, 837–849.
9. Gregory, K.B., Momin, A.A., Coombes, K.R., and Baladandayuthapani, V. (2014). Latent feature decompositions for integrative analysis of multi-platform genomic data. *IEEE/ACM Trans. Comput. Biology Bioinform* 11, 984–994.

## Submitted papers

- Do, T.Q., Gregory, K.B. (2022+). Model selection for mixture of experts using group fused lasso. *Revision submitted.*
- Gregory, K., McMahan, C (2022+). Combining data sets for sparse semiparametric additive modeling. *Submitted.*

## Doctoral and Master’s students

- Tuan Quac Do, PhD (2020). *Group fused lasso for mixture of experts model, faster algorithms for group fused lasso.* Data Scientist, Google.
- Xiangyang Cao, PhD (2020). *Inference in high-dimensional regression via leave-one-covariate-out analysis of solution path of penalized estimators.* Data Scientist, Facebook.
- Jianhuai Hu, Masters (2020). *Affects of standardization of binary covariates in penalized high-dimensional regression.*

## Grants funded

- University of South Carolina ASPIRE-I, Track 1 grant (Jul 1, 2018 - Sep 30, 2019). A nonparametric bifurcation point estimator for bifurcated response data. \$13,652. Role: PI.

## Other grant proposals

- National Institutes of Health (2021). Clustering toward structured means with applications to high-dimensional genetic data. \$138,472. Not funded. Role: One of two PIs.
- National Science Foundation (2020). Bootstrap for the sparse additive model. \$90,848. Not funded. Role: PI.
- National Science Foundation (2020). A path-based test of significance in high-dimensional linear regression (revision). \$167,417. Not funded. Role: PI.
- National Science Foundation (2019). A path-based test of significance in high-dimensional linear regression. \$152,132. Not funded. Role: PI.
- University of South Carolina ASPIRE-I, Track 1 grant (2017). Inference in high-dimensional regression models with the bootstrap. \$13,507. Not funded. Role: PI.

## Invited talks

- Solution path based variable selection. Virtual talk at *CMStatistics 2021*, London, UK, Dec 18–20, 2021.
- Penalized regression methods for group testing data. At the *AMS Fall Southeastern Sectional Meeting*. Virtual, Oct 10–11, 2020.

A smooth block bootstrap for quantile regression in time series. At the *Colloque CIREQ Montréal d'économetrie*, Montréal, Canada, May 10–11, 2019. Poster presentation.

Optimal estimation of sparse high-dimensional additive models. At the *2018 South Carolina Statistics Consortium*, Clemson, SC, Oct 13, 2018

Adaptive elastic net for group testing. At the *2018 IISA International Conference on Statistics*, Gainesville, FL, May 17–20, 2018

Inference in high-dimensional linear models with the bootstrap. At *CMStatistics 2016*, Seville, Spain, Dec 9–11, 2016

Smooth block bootstrap methods for dependent data. At Clemson University, Clemson, SC, Oct 20, 2016

Optimal estimation of sparse high-dimensional additive models. At Technische Universität Braunschweig, Braunschweig, Germany, Jul 7, 2016

Optimal inference in the sparse additive model. At *ISNPS III*, Avignon, France, Jun 11–16, 2016

A smooth block bootstrap for quantile regression. At the *Workshop on Recent Developments for Statistics in Complex Dependent Data*, Loccum, Germany, Aug 27–30, 2015

Pointwise inference in the high-dimensional additive model. At the *Workshop on Nonparametric and High-Dimensional Statistics*, Heidelberg, Germany, Jul 20, 2015

Pointwise inference in the high-dimensional additive model. At the *European Meeting of Statisticians*, Amsterdam, Netherlands, Jul 6–10, 2015

A smooth block bootstrap for statistical functionals and time series. At the *Frontiers of High Dimensional Statistics, Optimization, and Econometrics*, HSE, Moscow, Russia, Feb 26–27, 2015

False discovery rate control for serially dependent test statistics. At *CMStatistics 2014*, Pisa, Italy, Dec 6–8, 2014

A smooth block bootstrap for statistical functionals and time series. As part of the *Research Seminar in Mathematical Econometrics, Stochastics and Finance*, Mannheim, Germany, Nov 18, 2014

## Refereeing

Have peer-reviewed 42 papers for: Access IEEE (1), Journal of the American Statistical Association (4), Annals of Applied Statistics (1), Annals of Statistics (6), Journal of Applied Statistics (1), Bernoulli (3), Bioinformatics (1), Biometrics (1), Biometrika (2), Computational Statistics and Data Science (1), Journal of Econometrics (1), Econometrics and Statistics (1), Electronic Journal of Statistics (1), Annals of the Institute of Statistical Mathematics (1), Journal of Multivariate Analysis (1), Journal of Nonparametric Statistics (1), Quality Engineering (1), Review of Economics and Statistics (1), Journal of Statistical Computation and Simulation (1), Journal of Statistical Planning and Inference (2), Statistica Sinica (3), Statistics (1), Statistics and Its Interface (1), Statistics in Medicine (2), TEST (2), Journal of Time Series Analysis (1).

## Professional service

Associate editor for *The American Statistician*. July 2020–present.

Panel member, NSF DMS. 2018

Lawrence D. Brown Ph.D. Student Award committee for the Institute of Mathematical Sciences. 2020.

Treasurer for the South Carolina chapter of the American Statistical Association. 2022–present.

## Graduate courses taught

Mathematical Statistics II (STAT 713) [Sp2022]

Mathematical Statistics I (STAT 712) [Fa2021]

Nonparametric Inference (STAT 824) [Sp2021]

Time Series Analysis (STAT 720) [Sp2019]

## Undergraduate courses taught

Probability (STAT/MATH 511) [Fa2017, Fa2019, Su2020]

Mathematical Statistics (STAT 512) [Sp2018, Sp2020, Su2021]

Theory of Statistical Inference (STAT 513) [Fa2018, Fa2019, Fa2020]

Statistical Methods I (STAT 515) [Fa2016, Sp2017, Sp2019, Fa2020, fa2021]

Statistical Methods (STAT 302), Texas A&M University [Sp2013]

Introduction to Biometry (STAT 301), Texas A&M University [Fa2012]

## Honors, awards, & fellowships

Michael H. Kutner Outstanding Poster Award, Southern Regional Council on Statistics, 2017

ASA Nonparametric Statistics Section Student Paper Award for “A Two-Sample Test for Equality of Means in High Dimension”, 2013

Anant M. Kshirsagar Endowed Fellowship in Statistics, Dept. of Statistics, Texas A&M University, 2012

Graduate Merit Fellowship from Texas A&M University, 2009

Richtmeyer-Foust Outstanding Senior in Mathematics Award, Central Michigan University, 2009

Third Place in Culture of Enterprise International Student Essay Contest for “Maintaining Community and Character in the Age of Globalization”, 2008

Habib A. Zuberi Endowed Scholarship for Economics, Central Michigan University, 2008

Jozefaciuk and Rutkowski Endowed Scholarship for Mathematics, Central Michigan University, 2008

NSF Long-Term Undergraduate Research Endeavor Fellowship, Central Michigan University, 2008

## Other talks

Penalized semiparametric additive modeling for group testing data. At *ENAR 2020 Spring Meeting*, virtual, Mar 22–25, 2020

A smooth block bootstrap for quantile regression in time series. At the *Joint Statistical Meetings*, Denver, CO, Jul 27–Aug 1, 2019

A two-sample test for equality of means in high dimension. At the *Joint Statistical Meetings*, Montréal, Canada, Aug 3–8, 2013

Latent feature decompositions for integrative analysis of diverse high-throughput genomic data. At the *IEEE International Workshop on Genomic Signal Processing and Statistics*, Washington, D.C., Dec 2–4, 2012

Poster presentation: Mexico, the United States, and classical trade theory. At the *Joint Mathematics Meetings* Washington, D.C., Jan 5–8, 2009

## Other publications

Gregory, K.B., Coombes, K.R., Momin, A.A., Girard, L., Byers, L.A., Lin, S., Peyton, M., Heymach, J.L., Minna, J.D., and Baladandayuthapani, V. (2012). Latent feature decompositions for integrative analysis of diverse high-throughput genomic data. In *Proceedings 2012 IEEE International Workshop on Genomic Signal Processing and Statistics, GENSiPS 2012, Washington, DC, USA, December 2–4, 2012*, 130–134

## Other workshops attended

*International workshop “Structured Nonparametric Modeling” on the occasion of Enno Mammen’s 60’th birthday.* Berlin, Germany, June 4–6, 2015

*SAMSI Industrial Mathematical and Statistical Modeling Workshop.* North Carolina State University, Raleigh, NC, July 7–15, 2011

*Mises University.* Ludwig von Mises Institute, Auburn, AL, Jul 29–Aug 4, 2007