Joshua D. Habiger

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Degrees

August, 2010	Ph.D., Statistics, University of South Carolina
May, 2006	M.S., Statistics, Kansas State University
May, 2004	B.S., Mathematics, Kansas State University
May, 2004	Minor, Statistics, Kansas State University

Experience

2021 - present	**Professor**, Department of Statistics, Oklahoma State University
2016 - 2021	**Associate Professor**, Department of Statistics, Oklahoma State University
2016 - 2017	**Associate Professor**, Department of Biostatistics, Kansas University Medical Center
2010 - 2016	**Assistant Professor**, Department of Statistics, Oklahoma State University

Major Areas of Current Research Interest

False Discovery Rates; Categorical Data; Replicable Research

Refereed Publications

Fornah, A., Anderson, M. and **Habiger, J.** (2021). The Relationship Between Rhizobacteria Auxin Production and Wheat Biomass is Negative. *Soil Science Plant Analysis, 52(9), 985-997*

McCann, M. and **Habiger, J.** (2020). The Detection of Nonnegligible Directional Effects with Associated Measures of Statistical Significance. *The American Statistician, 74(3), 213-217.*

Habiger, J. (2019). Discussion of “Covariate-Assisted Ranking and Screening for Large-scale Two-sample Inference by Cai, Sun and Wang.” *Journal of the Royal Statistical Society Series B,* 81(2), 226-227.

Gupte, R. Christina, S., Keselman, P. **Habiger, J.**, Brooks, W. Harris, J. (2019). Evaluation of Taurine Neuroprotection in Aged Rats with Traumatic Brain Injury 13(2), 461-471. *Brain Imaging and Behavior.*

Habiger, J. and Watts, D.[1](2018). A Multiple Testing Protocol for Exploratory Data Analysis and the Local Misclassification Rate. *Communications in Statistics*, 27(**15**), 3588-3604.

Liang, Y. **Habiger, J.**, and Min, X. (2017). The Influence of Misspecified Covariance on False Discovery Control when Using Posterior Probabilities. *Statistical Theory and Related Fields*, 1(**2**), 205 - 215.

Habiger, J. (2017). Adaptive False Discovery Rate Control for Heterogeneous Data. *Statistica Sinica*, 27(**4**), 1731 - 1756.

Habiger, J., Watts, D.[1] and Anderson, M. (2017). Multiple Testing with Heterogeneous Multinomial Distributions. *Biometrics*, 73(**2**), 562-570.

Habiger, J. (2015). Multiple Test Functions and Adjusted p-Values for Test Statistics with Discrete Distributions. *Journal of Statistical Planning and Inference*, 167(**Dec.**), 1-13.

Peña, E., **Habiger, J.** and Wu, W. (2015). Classes of Multiple Decision Functions Strongly Controlling FWER and FDR. *Metrika*, 78(**5**), 563-595.

Habiger, J. and Adekepdjou, A. (2014). Optimal Rejection Curves for Finite False Discovery Rate Control. *Statistics and Probability Letters*, 94, 21-28.

Habiger, J. and Peña, E. (2014). Compound p-Values for Multiple Testing Procedures. *Journal of Multivariate Analysis*, 126(**2**), 153-166.

Robbins, M., Ghosh, S. and **Habiger, J.** (2013). Imputation in High Dimensional Economic Data: An Introduction and Comparison of Methods as Applied to the Agricultural Resource Management Survey. *Journal of the American Statistical Association*, 108(**501**), 81-95.

Habiger, J., McCann, M. and Tebbs, J. (2013). On Optimal Confidence Sets for Parameters in Discrete Distributions. *Statistics and Probability Letters*, 83(**1**), 297-303.

[1]PhD student

Anderson M. and **Habiger J.** (2012). Characterization and Identification of Productivity Associated Rhizobacteria in Wheat. *Applied and Environmental Microbiology*, 78(**12**), 4434-4446.

Habiger, J. (2012). A Method for Modifying Multiple Testing Procedures. *Journal of Statistical Planning and Inference*, 142(**7**), 2227-2231.

Habiger, J. and Peña, E. (2011). Randomised p-Values and Nonparametric Procedures in Multiple Testing. *Journal of Nonparametric Statistics*, 23(**3**), 583-604.

Peña, E., **Habiger, J.** and Wu, W. (2011). Power-enhanced Multiple Decision Functions Controlling Family-wise Error and False Discovery Rates. *Annals of Statistics*, 39(**1**), 556-583.

Cui, X., Jin, Y., Hofseth, A., Peña, E., **Habiger, J.**, Chumanevich, A., Nagarakatti, M., Nagarakatti, P., Singh, U. and Hofseth, H. (2010). Mechanistic Insight Into the Ability of American Ginseng to Suppress Colon Cancer Associated with Colitis. *Carcinogenesis*, 31(**10**), 1734-1741.

Cui, X., Jin, Y., Hofseth, A., Peña, E., **Habiger, J.**, Chumanevich, A., Nagarakatti, M., Nagarakatti, P., Singh, U., and Hofseth, H. (2010). Resveratrol Suppresses Colitis and Colon Cancer Associated with Colitis. *Cancer Prevention Research*, 3(**1**), 549-559.

Lauter, N., Mosco, M., **Habiger, J.**, and Moose, S. (2008). Quantitative Genetic Dissection of Shoot Architecture in Maize: Towards a Functional Genomics Approach. *The Plant Genome*, 1(**2**), 99-110.

Invited Presentations

Multiple Testing with Heterogeneous Multinomial Distributions. International Chinese Statistical Association Canada Chapter Symposium, 2017.

Exact Interval Estimation and Hypothesis Testing for Discrete Data. Innovations in Design, Analysis, and Dissemination Annual Symposium, ASA Kansas-Western Missouri Chapter of the ASA, 2017.

Heterogeneity in Next Generation Sequencing Data: A Finite Mixture Model Approach. Second Annual Midwest Bioinformatics Conference, 2017

High Dimensional Multiple Testing: What if My Data are Dependent, Discrete, or Heterogeneous? Kansas State University, Department of Statistics, 2017.

On the Multiplicity Effect: Current Solutions and Open Problems, University of Kansas Medical Center, Department of Biostatistics, 2017.

Multiple Testing with Heterogeneous Multinomial Distributions, University of Kansas Medical Center, Department of Biostatistics, 2016.

Towards More "Significant" Discoveries in High Dimensional Data Analysis. Iowa State University, Department of Statistics, 2016.

Weighted Adaptive Multiple Decision Functions for False Discovery Rate Control. Oklahoma State University, Department of Statistics, 2013 and SRCOS, Galveston, TX, 2014.

Optimal Confidence Sets with Flexible Optimality Criterion in Discrete Data Analysis. Oklahoma State University, Department of Statistics, 2012.

Randomized p-Values and Nonparametric Procedures in Multiple Testing. Eighth Annual Graybill Conference on Modern Nonparametric Statistics, Colorado State University, 2011.

R: A Practical and Powerful Statistical Software Package. Oklahoma State University, Department of Computer Science, 2010.

p-Values in Multiple Testing. Oklahoma State University, Department of Statistics; Kansas State University, Department of Statistics; University of Clemson, Department of Mathematical Sciences; University of Kentucky, Department of Statistics; University of Miami Ohio, Department of Statistics; University of Michigan, Department of Biostatistics, 2010.

A Generalized BH Procedure. University of South Carolina, Department of Statistics, 2008.

Other Research Presentations

The Statistical Methods for Limit of Detection. Presented at the NIMMFAB annual meeting, 2020.

Determining Limit of Detection of High Throughput Sequencing Diagnostics with MiFi. Poster presented by Wang[1] at Plant Health 2020 online and co-authored with Espindola, Cardwell, Dang, Vidalakis, Roy.

Metagenome Sequence Calculator for Effective Pathogen Detection. Poster presented by Espindola at Plant Health 2019, Cleveland, Oh and coauthored with Cardwell.

Multiple Hypothesis Testing with Minimally Discrete P-Values. Joint Statistical Meetings, Denver, Co., 2019.

High Dimensional Multiple Testing of Dependent, Discrete and Heterogeneous Data. Joint Statistical Meetings, Boston, MA., 2014.

Statistical Challenges in High Dimensional Multiple Testing as Motivated by the Characterization of the Productivity Associated Microbiome in Wheat. Applied Statistics in Agriculture Conference, Kansas State University, 2014.

Productivity Associated Microbiome of Wheat. MCBIOS XI: Annual Bioinformatics and Computational Biology Conference, Oklahoma State University, 2014 (with Michael Anderson).

On Nonrandomized, Randomized, and Fuzzy p-values in Multiple Hypothesis Testing: A Unified Approach. Joint Statistical Meetings, Montreal, Canada, 2013.

On Optimal Confidence Sets for Parameters in Discrete Distributions. Joint Statistical Meetings, San Diego, CA, 2012.

Statistical Methods for Identifying Root Bacteria Associated with Shoot Biomass Productivity. Oklahoma State University, Department of Plant and Soil Sciences, 2012 (with Michael Anderson).

Compound p-Values for Multiple Testing Procedures. Joint Statistical Meetings, Miami Beach, FL, 2011.

An Assessment of Imputation Methods for the USDA's Area Resource Management Survey. Joint Statistical Meetings, Vancouver, Canada, 2010.

Randomized p-Values in Multiple Testing. Joint Statistical Meetings, Washington D.C., 2009.

Robust p-Values for Multiple Testing Procedures. Southern Regional Council on Statistics, Jekyll Island, GA, 2009.

Nonparametric Randomized p-Values in Microarray Analysis. Applied Statistics in Agriculture Conference, Kansas State University, 2009.

Optimal Sizes for Marginal False Discovery Rate Control. Souther Regional Council on Statistics, Charleston, SC, 2008.

Nonparametric Confidence Intervals for Quantitative Trait Loci. Annual Bioinformatics Symposium, Iowa State University, 2006.

Teaching

Oklahoma State University

- STAT 2013 Elementary Statistics[2]
- STAT 2023 Honors Business Statistics
- STAT 4033 Engineering Statistics
- STAT 5053 Time Series Analysis
- STAT 4463/5063 Multivariate Methods (applied)
- STAT 4463/5063 Statistical Machine Learning with R[2,3]
- STAT 5002 Applied Masters Creative Component

[2]Course offered online
[3]Course developed

- STAT 5093 Computational Statistics
- STAT 4191/5191/4193/5193 R Programming[2,3]
- STAT 5513 Multivariate Analysis (theory)
- STAT 6010 Statistics Literature Review
- STAT 6193 Advanced Probability

At Other Universities

- BIOS 872 Mathematical Statistics II (University of Kansas Medical Center)
- STAT 110 Introduction to Descriptive Statistics (University of South Carolina)
- STAT 320 Statistics for the Social Sciences (Kansas State University)
- STAT 350 Statistics for Business and Economics Majors (Kansas State University)

Current Advisees

Statistics PhD: Tianyu (Chase) Cao, Huizi Wang.

Statistics MS: Amir Javid.

Applied Statistics MS: Christina Harrington, Kurt Scheurmann

Former Advisees

David Watts (PhD): A New Multiple Testing Protocol and the Local Misclassification Rate.

Tina Shi (MS): On Statistical Methods for Next Generation Sequencing Data.

Tamanna Hossein (MS): Temporal Dependence Structures for Functional Magnetic Resonance Imaging Data.

Anna Tehrani (McNair, MS in Applied Statistics): Exact Tests for Multinomial Models.

Zhesi Chen (MS): A Jackknife Approach for Empirical Bayes Parameter Estimation in Multiple Testing.

Professional Service

Associate Editor: The American Statistician, 2017 - present.

Referee: Annals of Statistics, Annals of the Institute of Statistical Mathematics, Biometrical Journal(4 articles), Biometrics(3 articles), Biometrika, Computational Statistics and Data Analysis(2 articles), Electronic Journal of Statistics(3 articles), Journal of Applied Statistics, Journal of the Korean Statistical Society, Journal of the American Statistical Association(4 articles), Journal of Multivariate Analysis, Journal of the Royal Statistical Society Series B(3 articles), Journal of Statistical Planning and Inference(2 articles), Revistá Mathematica Compultense, STAT, TEST, Statistics in Medicine(3 articles), Statistics and Probability Letters(2 articles).

External reviewer for 3 applications for promotion to Associate Professor with tenure, 2019 - present.

Secretary: American Statistical Association Council of Chapters Governing Board, 2015 - 2017.

President: Oklahoma Chapter of the American Statistical Association, 2014 - 2015.

Reviewer: American Mathematical Society, 2012 - 2019.

Session Chair: Joint Statistical Meetings in Vancouver, Canada, 2010.

University Service

College of Arts and Science Faculty Council Chair, 2021 - 2022.

College of Arts and Science Faculty Council Vice Chair, 2020 - 2021.

College of Arts and Sciences Faculty Council Representative, 2019.

Referee for President's Cup Award for Interdisciplinary Research, 2017.

Group III Graduate Faculty Vice Chair, 2016.

Group III Graduate Faculty Secretary, 2015.

Faculty Advisor for the Tennis on Campus Club, 2015 - 2016.

Judge at the 23rd Annual OSU Research Symposium and Research Scholar Conference, 2012.

Faculty Advisor for the Bioinformatics and Entangled Genomes Summer Workshop, 2012.

Outside committee member on 16 PhD student committees, 2010 - present.

Departmental Service

Graduate Coordinator, 2019 - present.

Committee Membership

- Graduate Committee, 2010 - present (Chair, 2019 - present).
- Personnel Committee, 2013 - present (Chair, 2017 - 2018).
- Curriculum, 2013 - present (Chair 2013 - 2019).
- Hiring Committee, 2017 - present (Chair, 2017 - 2019).
- Colloquium Committee Chair, 2010 - 2013.

Other Service

- Member of 46 statistics graduate student committees, 2010 - present.
- Faculty mentor for Dr. Rudra, 2017 - present.

Awards

Oklahoma State University, College of Arts and Sciences FY2016 ASR + 1 Supplemental Program: Statistical Inference Methods for Big Data.

Oklahoma State University, College of Arts and Sciences FY2014 Fall Travel Grant: Multiple Test Functions.

Southern Regional Council on Statistics Travel Award, 2014.

President's Cup Award for Interdisciplinary Research, Oklahoma State University, 2013.

Oklahoma State University, College of Arts and Sciences FY2013 Fall Travel Grant: Optimal Confidence Sets with Flexible Criterion in Discrete Data Analysis.

Oklahoma State University, College of Arts and Sciences FY2013 Deans Incentive Grant: The revision of "Bridging the Gap Between Statistical Significance, Practical Significance, and Replication."

Oklahoma State University, College of Arts and Sciences FY2012 ASR + 1 Supplemental Program: Compound Distribution-free Test Statistics in Multiple Testing.

Oklahoma State University, College of Arts and Sciences FY2012 Dean's Incentive Grant: Robust and Efficient p-Value Statistics for Multiple Testing Procedures.

Oklahoma State University, College of Arts and Sciences FY2012 Spring Travel Grant: Presentation of Nonparametric Procedures in Multiple Testing at the Eighth Annual Graybill Conference.

Bioinformatics and Entangled Genomes Workshop Faculty Scholarship Award, Oklahoma State University, 2012.

Journal of Nonparametric Statistics Travel Award, 2011.

Dean's Award for Excellence in Graduate Study at the University of South Carolina, 2010.

James D. Lynch Graduate Student Researcher of the Year Award, University of South Carolina, 2009.

Winner of the Student Paper Competition in the ASA's Nonparametric Statistics Section at JSM, 2009.

Applied Statistics in Agriculture Conference Travel Award, 2009.

Graduate Student Travel Award, University of South Carolina, 2009.

Southern Regional Council on Statistics Travel Award, 2009.

Graduate Student Travel Award, University of South Carolina, 2008.

Southern Regional Council on Statistics Travel Award, 2008.

Inducted into the Mu Sigma Rho Statistics Honor Society, 2007.

Professional Societies

American Statistical Association