
CONTACT INFORMATION

2207 Snedecor Hall
Department of Statistics
2438 Osborn Dr, Ames, IA 50011

Email: kgoode@iastate.edu
Phone: 920-904-7072
Website: <https://goodekat.github.io/>

EDUCATION

- Jan 2016 - Current **Doctor of Philosophy, Statistics**
Iowa State University, Ames, IA
Major Professor: Dr. Heike Hofmann
Research Topic: Visual Diagnostics for Machine Learning Models
Expected Completion: December 2020
- Aug 2013 - May 2015 **Master of Science, Statistics**
University of Wisconsin, Madison, WI
- Sep 2009 - June 2013 **Bachelor of Arts, Mathematics**
Lawrence University, Appleton, WI
Graduated Magna Cum Laude
Senior Capstone: "An Explanation of Double-Error-Correcting BCH Codes"
- Summer 2012 **Study Abroad**
University of Granada, Centro de Lenguas Modernas, Spain
Fall 2010 Lawrence London Centre, England

AWARDS AND HONORS

- 2019 **Midwest Statistical Machine Learning Colloquium Poster Award**
Awarded for poster "Using LIME to Interpret a Random Forest Model with an Application to Bullet Matching Data"
- 2018 **ISU Department of Statistics Dan Mowrey Consulting Excellence Award**
Awarded in recognition of outstanding contributions in the area of statistical consulting while working toward a graduate degree.
- 2017 **ISU Department of Statistics Award for Experiential Development**
Presented to a graduate student for excellent performance in multiple statistical efforts (teaching and consulting) as part of the graduate program.

WORK EXPERIENCE

- May 2018 - Current **Senior Statistical Consultant**
Agriculture Experiment Station, Iowa State University
- Helped with administrative decisions
- Oversaw organizational tasks for the group
- Mentored and trained new consultants
- Continued with statistical consultant responsibilities
- May 2016 - Apr 2018 **Statistical Consultant**
Agriculture Experiment Station, Iowa State University
- Provided statistical support on research projects for graduate students, professors, and staff from the colleges of agriculture and life sciences, engineering, human sciences, liberal arts and sciences, and veterinary medicine

- Advised clients on study designs and statistical analysis methods in areas of statistics including linear and generalized linear models, mixed models, data visualization, predictive modeling, multivariate analyses, and Bayesian models
- Assisted with the implementation of analyses in R, SAS, and JMP

Dec 2015 **Data Analyst**

Research Administration Office, Lawrence University

- Analyzed data from a study to compare the academic success and mood towards the university of undergraduates from freshman to sophomore years
- Performed statistical analyses using SPSS

Data Collection Assistant

Sep 2014 - May 2015 *Research Administration Office, Lawrence University*

- Assisted with the data collection for a study on the evaluation of warning lights installed at a busy crosswalk on the university campus
- Used Tracker software to determine the deceleration rate of vehicles from videos taken of cars approaching the crosswalk

RESEARCH EXPERIENCE

Dec 2019 - Current **Statistical Sciences Research and Development Internship**

Sandia National Laboratories

Assisted with a research project on Bayesian neural networks (BNNs). Focused on visualizations of BNNs for assessment and explanations for prediction. Supervised by Dr. Daniel Ries.

Sep 2017 - Current **PhD Research**

Iowa State University

Development of diagnostic tools for the assessment of LIME applied to interpret random forest models. Advised by Dr. Heike Hofmann.

May 2019 - Aug 2019 **Research Assistant**

Iowa State University

Computation of profile confidence intervals for dose response curve models. Application to a toxicology study of monarch butterfly larvae exposed to insecticides. Collaborative work with Dr. Steven Bradbury and PhD Student Niranjana Krishnan.

SOFTWARE DEVELOPMENT

Mar 2017 - Current **ggResidpanel: An R package for easy visualization of model diagnostic plots**

Iowa State University

Developed an R package that produces panels of diagnostic plots for one one, panels of plots for comparing multiple models, and interactive versions of the plots. Joint work with Dr. Katie Rey. Source code can be found at <https://goodekat.github.io/ggResidpanel/>.

WORKSHOPS

July 2019 **Industrial Math/Stat Modeling (IMSM) Workshop for Graduate Students**

The Statistical and Applied Mathematical Sciences Institute (SAMSI)

- Worked in a research group mentored by senior statisticians from Rho Inc.
- Analyzed continuously monitored glucose data using functional data analysis
- Assisted with the writing of a report and presentation on the analysis

PAPERS AND TECHNICAL REPORTS

Dixon, P.M., Goode, K.J., and Lay, C., "Profile likelihood confidence intervals for ECx" (2020). Statistics Technical Reports. https://lib.dr.iastate.edu/stat_las_reports/1

Ball, E.E., Goode, K.J., and Weber, M.J., 2019. "Effects of Transport Duration and Water Quality on Age-0 Walleye Stress and Survival", North American Journal of Aquaculture, 82:33–42.

CONTRIBUTED TALKS

Goode, K. and Hofmann, H. "Visual Diagnostics of a Model Explainer: Tools for the Assessment of LIME Explanations from Random Forests". Joint Statistical Meetings. July 29, 2019.

Goode, K. "A Review and Discussion of Residuals for Mixed Models". NCCC-170 Meeting. June 20, 2019.

CONTRIBUTED POSTERS

Goode, K. and Hofmann, H. "Using LIME to Interpret a Random Forest Model with an Application to Bullet Matching Data", Iowa State University Graduate and Professional Student Research Conference and Midwest Statistical Machine Learning Colloquium. April 10, 2019 and May 13, 2019.

Goode, K. and Rey, K. "Introducing ggResidpanel: An R Package for Easy Visualization of Residuals". Kansas State University Conference on Applied Statistics in Agriculture. Contributed Poster. May 2018.

TEACHING EXPERIENCE

Seminar Leader	Aug 2018 and 2019	Predictive plant phenomics graduate student statistics bootcamp <i>Iowa State University</i> - Led a one day statistics bootcamp - Discussed randomization, confidence intervals, and design of experiments - Prepared slides
Instructor	Spring 2016	STAT 101: Introduction to statistics <i>Iowa State University</i> - Prepared and led lectures - Wrote and graded exams - Topics included summary statistics, visualization, normal distribution, hypothesis testing, confidence intervals, and JMP
	Fall 2015	MATH 107: Elementary statistics <i>Lawrence University</i> - Organized the curriculum - Prepared and graded homework and exams - Topics included summary statistics, visualizations, randomization tests, bootstrap, normal distribution, hypothesis testing, confidence intervals, and R
Teaching Assistant	Spring 2015	BMI 552: Regression methods for population health graduate students <i>UW Madison</i> - Taught labs - Held office hours - Topics included simple and multiple linear regression, logistic regression, survival analysis, and SAS
	Fall 2014	BMI 551: Introduction to biostatistics for population health graduate students <i>UW Madison</i> - Taught labs - Held office hours

- Topics included summary statistics, visualizations, probability, normal distributions, hypothesis testing, confidence intervals, and R.

Summer 2014 **STAT 301: Introduction to statistical methods for non-statistics majors**
UW Madison

- Prepared and led discussions
- Graded homework and exams
- Held office hours
- Topics included summary statistics, visualizations, probability, normal distributions, hypothesis testing, and confidence intervals

Spring 2014 **STAT 302: Accelerated introduction to statistical methods for statistics undergraduate majors**
UW Madison

- Prepared and led discussions
- Graded homework and exams
- Held office hours
- Topics included summary statistics, visualizations, randomization tests, bootstrap, normal distribution, hypothesis testing, confidence intervals, and R

Fall 2013 **STAT 371: Introductory applied statistics for the life sciences**
UW Madison

- Prepared and led discussions
- Graded homework and exams
- Held office hours and worked in the statistics help room
- Topics included summary statistics, visualizations, probability, normal distributions, hypothesis testing, confidence intervals, and R

Mentor Sep 2014 - May 2015 **Academic Mentor for Minority and First Generation Undergraduates**
Center for Academic Excellence, University of Wisconsin, Madison

- Mentored minority and first generation undergraduate students enrolled in statistics courses
- Met weekly throughout the semester with individuals or small groups to review statistical concepts from class and make the material approachable
- Discussed and encouraged strategies for academic success

Tutor Fall 2014 - Spring 2015 Tutored undergraduate students in various introductory statistics courses at UW Madison

SERVICE

Sep 2018 - May 2019 Graduate student representative to ISU statistics department faculty meetings
 Sep 2017 - May 2019 Recycling coordinator for ISU STATers (Statistics Graduate Student Organization)
 Sep 2017 - May 2019 Treasurer and member of StatCom (Statistics in the Community) at Iowa State

COMPUTING SKILLS

Working Knowledge: GitHub, JMP, L^AT_EX, R, R Markdown, SAS, Shiny, SPSS
 Basic Knowledge: C, Mathematica