Derik T. Boonstra Ph.D. Candidate

Contact Information: Derik_Boonstra1@baylor.edu · 𝔖 ◉ 🎮 · *Waco, TX*
Personal Website: https://deriktboonstra.github.io

Research Interest

Sufficient Dimension Reduction · High-Dimensional Data Analysis · Genomics · Machine Learning and Feature Selection · Multivariate Statistics · Computational Statistics · Financial Statistics

Education

Ph.D., *Statistics, Baylor University*   2023 - May 2026 (Expected)

- Concentrations: Data Science and Biostatistics

- Advisors: Dean M. Young, Ph.D. and Rakheon Kim, Ph.D.

- Dissertation: "The Introduction of Dimension Reduction Subspace Ordering Criteria and New Heteroscedastic Sufficient Dimension Reduction Methodologies"

M.S., *Statistics, Baylor University*   2022 - 2023

B.B.A., *Business Fellows (Honors)*, *Baylor University*   2019 - 2022

- Additional Majors: Statistics, Finance, & Accounting

- Honors Thesis: "Statistical Properties of Financial Market Data Structures"

Professional Experience

Baylor University   Waco, TX
Teacher of Record   2023 - Present

- Instructor for elementary statistics (STA 1380) and a junior-level business analytics course (QBA 3305).

Baylor University   Waco, TX
Graduate Teaching Assistant   2022 - 2023

- Recitation instructor for STA 1380.

Baylor University   Waco, TX
MoWaTER Data Science Fellow   Summer 2022

- Served as a MoWaTER Data Science Fellow in an NSF-funded program integrating statistical and environmental data science for Sentry Water Technologies.

Alexander Lankford & Hiers Inc.   Lufkin, TX
Taxation Intern   Summer 2020

- Prepared tax filings including individual (1040), non-profit (1120), and subsidiary (1122).

St. Luke's Health - Memorial Hospital   Lufkin, TX
Financial Clerk   Summer 2018

- Created and maintained insurance attestation forms and recorded day-surgery medical records.

Publications & Manuscripts

Boonstra, D. T., Kim, R., and Young, D. M. (2025). "Subspace Ordering for Maximum Response Preservation in Sufficient Dimension Reduction", *Under Review*, doi:10.48550/arXiv.2510.27593 pdf code

Boonstra, D. T., Kim, R., and Young, D. M. (2025)."Precision Matrix Regularization in Sufficient Dimension Reduction for Improved Quadratic Discriminant Classification", *Under Review*, doi:10.48550/arXiv.2506.19192 pdf code

Manuscripts in Progress

Boonstra, D. T., Kim, R., and Young, D. M. "Heteroscedastic Invariant Sufficient Dimension Reduction",

Boonstra, D. T., Kim, R., and Young, D. M. "Sufficient Dimension Reduction Methods for High-Dimensional Data Are Overly Complicated"

Boonstra, D. T., Kim, R., and Young, D. M. "Ordering Dimension Reduction Subspaces via a Quadratic Discriminant Optimal Error Rate."

Teaching

Baylor University

QBA 3305: *Introduction to Business Analytics*   Fall 2025 - Present

- Teacher of Record. Independently developed all lecture materials, assignments, projects, and examinations. Taught undergraduate business students R programming for statistical methodologies as part of a departmental initiative to expose students to modern-trends in data science for business analytics.

STA 1380: *Elementary Statistics*   Fall 2023, Spring 2024, Fall 2024, Spring 2025

- Teacher of Record advised by Amy B. Maddox, Ph.D. Developed all assignments and examinations. Taught core statistical concepts including probability models, hypothesis testing, and regression with data analysis and visualization using JMP.

STA 1380: *Elementary Statistics (Supplemental Instructor)*   Fall 2022, Spring 2023

- Taught recitation courses for STA 1380 and assisted with grading examinations.

Awards & Scholarships

- Baylor Outstanding Graduate Student Instructor Recognition   Fall 2023, Spring 2024, Fall 2024
- Baylor Presidents Scholarship ($80,915)   2019 - 2022
- Achievement Gold Baylor Scholarship ($24,000)   2019 - 2022
- Richard/Fern Davis Scholarship ($16,200)   2019 - 2022
- Robert & Sara E Carnahan Scholarship ($8,290)   2019 - 2022
- Bruce McMillan Jr Scholarship ($5,620)   2019 - 2021
- Baylor LEAD LLC Scholarship ($3,000)   2019 - 2020

Certifications

- Institute of Management Accountants Data Analytics Certificate

Open-Source Statistical Software

D. T. Boonstra, Sufficient Dimension Reduction (`sdr`). Available on Github.

- An `R` package for modern sufficient dimension reduction techniques including dimension selection, feature selection, and subspace ordering.

Technical Competencies

- Programming: R (including R Markdown, Quarto, and Shiny app development), Python, SAS, MAT-LAB, Wolfram (Mathematica), Bash, html, css

- Version Control: Git, GitHub user @DerikTBoonstra

- Applications: Posit, TeX, LaTeX, BibTeX, Vim, JMP, SPSS, Microsoft Office

Professional Affiliations

American Statistical Association (ASA)   2022 - Present

- Section on Statistics and Data Science Education

- Section on Statistical Computing

- Section on Statistics in Genomics and Genetics

- Business and Economic Statistics Section