

Nathen Byford

Statistical Consultant

Status: Statistical Consultant and PhD Student, Baylor University
Field: Data Science, Statistical Analysis, Spatial Statistics
Techs: R, bash, Python, Statistical Modeling, Machine Learning, Git

Waco, Texas
natebyford.com
nathenbyford@gmail.com

Summary

PhD student at Baylor University working on projects in spatial statistics, anomaly detection, Bayesian modeling, and computational statistics. In addition to working on research I also work for the statistical consulting center helping clients from a wide range of fields from social work to geosciences. Experienced in data manipulation, data visualization, and multiple modeling techniques.

Experience

Statistical Consultant - Statistical Consulting Center, Baylor University	Sep. 2023 - Present
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- * Perform statistical analysis for diverse range of clients and projects
- * Analyses of large scale and unstructured data sets with R and Bash
- * Present results in clear and elementary manner for clients

Graduate Teaching Assistant - Baylor University	Aug. 2022 - Aug. 2024
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- * Teach supplemental instruction sessions for introduction to statistics
- * Hold office hours for introductory statistics and statistical methods
- * Grade homework, quizzes, and exams

Undergraduate Researcher - Oregon State University	June 2021 - Aug. 2021
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- * Developing new methods to test for Benford's law in real data
- * Implementing methods in R
- * Comparing tests for greatest power and lowest error rate
- * Also look into Benford's law in english words and texts

Data Science Fellow - Baylor University and Denver Water	June 2020 - Aug. 2020
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- * Worked directly with stakeholders at Denver Water to analyze effectiveness and efficiency of water filtration
- * Produce statistical analysis and interpret results

Education

Ph.D. in Statistical Science - Baylor University	Aug. 2022 - Present
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- * Project: Correcting for under reported count data in Bayesian Spatial Scan Statistics
- * Developing and implementing Bayesian method to model under-reported and over-dispersed spatial counts

Master of Science in Statistical Science - Baylor University	Aug. 2022 - Dec. 2023
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- * Project: Anomaly Detection in Time Series Data
- * Focus on Statistical Methods, Mathematical Statistics, and Computational Statistics.

Bachelor of Science in Statistical Science - Baylor University	Aug. 2019 - May 2022
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- * Major Courses: Mathematical Statistics, Computational Statistics, Database Design.

Interdisciplinary Collaborations

Data Analysis of Anti-bacterial Coatings - Department of Environmental Science	Current collaboration
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- * Work with zero inflated positive data to determine differences in anti-bacterial coatings
- * Utilized an ordinal data model as traditional parametric approaches were ineffective due to non-normal distributions in the data

Data Analysis for Presentation - Department of Physical Therapy	Mar. 2024 - Aug. 2024
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- * Work with survey data from physical therapists to determine the most often taught and used outcome measures by teachers and clinicians.
- * Worked with text data to clean up results and repeat responses.

Survey Data Analysis for Dissertation - Department of Social Work	Dec. 2023 - Apr. 2024
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- * Work alongside PhD candidate in Social Work to complete statistical analysis for dissertation.
- * Analyze survey results with logistic regression with model selection

Projects

Analysis of ChatGPT Decision Making Process - Baylor Economics	Current work
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- * Working with Dr. Van Pham from economics
- * Analyzing how chatGPT makes decisions in prompted situations using story telling

Machine Learning Imputation for Missing Data - Baylor Stats and Eli Lilly	Current work
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- * Use recurrent neural networks (RNN) to impute missing values in clinical trials
- * Try to correct for bias in missing not at random (MNAR) data

Spatial Under-Reporting of COVID-19 - Spatial Statistics final project	May 2024
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- * Project: Correcting under-reporting in over-dispersed spatial count data
- * Developing and implementing Bayesian method to model under-reported and over-dispersed spatial counts

Anomaly Detection in Time Series Data - Baylor University	Dec. 2023
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- * Anomaly detection using data driven methods
- * Methods include; regression leverage points, STL, neural network, and isolation forest

Capstone project (Planarian Growth) - Baylor University	May 2022
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- * Worked with freshmen in BIO 1406 as statistical consultant
- * Analyzed the growth of planarian based on light exposure
- * Guided students from experimental design through to presentation of results