BRIAN N. WHITE

bnw@unc.edu | briannathanwhite | (210) 705 - 4150

Research Areas & Interests

Spatial extremes, data assimilation, change-of-support problems, Bayesian hierarchical modeling, statistical consulting and machine intelligence.

Technical Skills

Programming Languages: R, Python, SAS, MATLAB, LaTeX, Markdown

Operating Systems: Linux (PopOS, Ubuntu), MacOS, Windows10

High Performance Computing: Bash scripting, PuTTY, SLURM job scripting

Machine Learning Frameworks: Tidymodels, scikit-learn, keras

Statistical modeling: Bayesian hierarchical modeling, spatial statistics, extreme value theory, causal inference, survival analysis, meta-analysis, statistical machine learning

Data Wrangling/Manipulation Tidyverse, pandas

Data Visualization: Ggplot2, gganimate, matplotlib/seaborn

IDEs/Version Control: Rstudio, Jupyter Notebook, Git

Professional Experience

Biostatistician II, Wake Forest School of Medicine, June 2022 - Present

Currently, my work in the Wake Forest School of Medicine falls into three categories:

1. **Statistical Consulting**
   I provide study design advice, grant development services and statistical analysis for medical professionals across the Wake Forest School of Medicine and Atrium Health medical system.
2. **Spatial Epidemiology**
   I work with Dave Kline & Staci Hepler to develop and implement high-dimensional Bayesian hierarchical models of the opioid epidemic in co-operation with public health officials and medical experts.
3. **OpenLong**
   I work with Jaime Speiser & Byron Jaeger to develop OpenLong, an open-source R package that harmonizes commonly used longitudinal data sets on aging. OpenLong facilitates machine learning benchmark studies, prediction modeling, and meta-analyses, enabling researchers to perform more efficient and accurate analyses.

Graduate Researcher, UNC Chapel Hill, August 2021 - Present

I conduct methodological research at the intersection of spatial statistics, extreme value theory and data assimilation. My work is composed of three parts:

1. **Combining Observational and Model Data for Spatial Extremes**
   Developed a multivariate spatial extreme value model which integrates observational and model data, enhancing the accuracy of return level estimates.
2. **Forecasting Spatial Extremes Using Climatic Covariates**
   Utilized climatic covariates to forecast models for spatial extremes under a range of climate change scenarios.
3. **Vecchia Approximation for Spatial Extremes**
   Applied Vecchia approximations to spatial extreme value models, significantly reducing the computational costs associated with large spatial data sets, while maintaining model accuracy..

Education

Ph.D. Student in Statistics and Operations Research, UNC Chapel Hill — August 2020 - Present
Advisor: Richard L. Smith.

M.A. in Mathematical Statistics, Wake Forest University — May 2020

B.S. in Environmental Studies, minor in Mathematics, UNC Asheville — May 2018

Publications

1. Estadt AT, **White BN**, Ricks JM, Lancaster KE, Hepler S, Miller WC, Kline D. *The impact of fentanyl on state- and county-level psychostimulant and cocaine overdose death rates by race in Ohio from 2010 to 2020: a time series and spatiotemporal analysis.* Harm Reduct J. 2024 Jan 17;21(1):13. doi: 10.1186/s12954-024-00936-9. PMID: 38233924; PMCID: PMC10792830.
2. Khanna AK, Banga A, Rigdon J, **White BN**, Cuvillier C, Ferraz J, Olsen F, Hackett L, Bansal V, Kaw R. *Role of continuous pulse oximetry and capnography monitoring in the prevention of postoperative respiratory failure, postoperative opioid-induced respiratory depression and adverse outcomes on hospital wards: A systematic review and meta-analysis.* J Clin Anesth. 2024 Jun;94:111374. doi: 10.1016/j.jclinane.2024.111374. Epub 2024 Jan 6. PMID: 38184918.
3. Vesely BD, Kipp JA, Lance TA, **White BN**, Medda AW, Scott AT. *BMI influence on total ankle arthroplasty outcomes: A systematic review.* Foot & Ankle Surgery: Techniques, Reports & Cases. 2024 Mar 24; Volume 4, Issue 2. doi: https://doi.org/10.1016/j.fastrc.2024.100377.
4. Fabian SB, Adkins EW, **White BN**, Kirse DJ, Kiell EP. *Temporal trends in BAHA softband wear time among pediatric patients.* International Journal of Pediatric Otorhinolaryngology. Volume 182. 2024. 112000. ISSN 0165-5876. https://doi.org/10.1016/j.ijporl.2024.112000.

Submitted

1. Kline D, **White BN**, Lancaster KE, Egan KL, Murphy E, Miller WC, Hepler SA. Estimating prevalence of opioid misuse in North Carolina counties from 2016-2021: An integrated abundance model approach.

Accepted Abstracts

1. Lassiter R, **White BN**, Skelton JA, Ip E, Vitolins M, Brown CL. *Parental concerns about tap water associated with childrens increased consumption of sugar-sweetened beverages.* Pediatric Academic Societies Meeting. Toronto, CA. May 2024. Platform Presentation.
2. Cyrille N, Garcia R, **White BN**, Danford DS, Harmon L, Bernardo S, Rose H, Patel S, DeVore AD, Nandkeolyar S, Mishkin J. *Sex-Specific Trends in the Use of Temporary Mechanical Circulatory Support in Patients Listed for Orthotopic Heart Transplant Before and After The UNOS Allocation System Change*; International Society of Heart & Lung Transplantation. 44th Annual Meeting & Scientific Sessions. Prague, Czech Republic. April 2024. Platform Presentation.

Certifications

CITI Program: Biomedical Investigators and Human Research: Jun 2022 - June 2025 (Credential ID: 49280602)

Relevant Coursework

UNC Chapel Hill

Applied Statistics I/II (Linear Models/Generalized Linear Models), Statistical Theory I/II (Finite Sample/Asymptotics), Probability I/II (Measure Theoretic), Advanced Machine Learning, Optimization I, Stochastic Modeling I, Object Oriented Data Analysis, Extreme Value Theory, Bayesian Statistics & GLMs, Brain Network Data Analysis, Non-parametric statistics