

Bradley Goodnight, Ph.D.

Senior Research Scientist, Real-World Evidence and Health Analytics

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Professional Summary

Dr. Goodnight has ten years of experience in public health research, biostatistics, and scientific writing, demonstrated by his extensive publication record comprising eighteen scientific manuscripts published in peer-reviewed journals since 2014 (h-index of 14).

During his tenure at Guidehouse, Dr. Goodnight created and led an innovative service line providing “cradle-to-grave” scientific research planning and administration for clients in the public and private sectors. This support spanned from hypothesis generation to manuscript publication, including methodology selection, sampling design, data collection, statistical analysis, and academic writing support, demonstrating Dr. Goodnight’s comprehensive mastery of real-world evidence and life sciences research across the project lifespan.

In this role, Dr. Goodnight personally led six research studies for private-sector clients, including two pharmaceutical companies and one medical device manufacturer, and he assisted numerous public sector clients at the Centers for Disease Control, Department of State, and Department of Defence, including projects requiring active top-secret clearance.

Dr. Goodnight has provided extensive statistical modeling and analytic support, including multiple imputation (MI) for missing data, validity and reliability assessment of survey instruments, structural equation modeling (SEM), difference-in-difference (DiD), and interrupted time-series (ITS) analyses, among others.

Dr. Goodnight also has extensive experience creating publication-ready data visualizations, high-quality dynamic dashboards, and using best practices in data and project management to generate reproducible, auditable analytic results using R Shiny, Markdown, and Github.

Dr. Goodnight has led teams of junior statisticians and health scientists on numerous large-scale research projects, including a nationwide study assessing quality of life for people living with disabilities, a study on the impact of housing renovations on childhood asthma in three US cities, a meta-analysis comparing the performance of a novel medical device to a direct competitor, two projects mapping disparity in access to cancer care across US counties, and three projects assessing the impact of PTSD on patients and families.

Areas of Expertise

- **Quantitative research methodology, study design, and data analysis:**
Designs and implements research studies through all stages of the research process, including literature review, hypothesis generation, analytic plan development, sample selection, data collection, statistical analysis, results interpretation, journal selection, academic writing, publication, and peer-review.
- **Project leadership and capacity building:**
Leads teams of junior statisticians and health scientists on high-profile health analytics projects. Communicates effectively to convey complex information to diverse audiences, including junior staff, project leadership, and external stakeholders. Articulate and persuasive in public speaking and leadership roles.
- **Scientific writing and academic publishing:**
Manages the academic publication and peer-review process for rigorous academic studies in health analytics published in reputable journals. Proficient in quickly and effectively incorporating feedback from collaborators, internal reviewers, and peer-reviewers. Experienced with multiple citation management software packages.

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- **Advanced statistical analyses:**
Performs statistical analyses using a variety of methods, including Linear, Poisson, Logistic, Ordinal, and Quantile Regression, ANOVA, ANCOVA, MANOVA, Pearson's and Spearman's Correlation, Student's *t*, Wilcoxon, Shapiro-Wilk Normality Test, Chi-Squared Goodness of Fit, Chi-Squared Test of Independence, Cronbach's Alpha Reliability, Fixed and Random Effect Models, Mixed Models, Hierarchical Linear Modeling, Principal Component Analysis (PCA), Exploratory and Confirmatory Factor Analysis (EFA and CFA), Latent Class Analysis (LCA), Path Analysis, Meta Analysis, Matching Adjusted Indirect Comparison (MAIC) Analysis, Difference-In-Difference (DiD), Interrupted Time Series (ITS), Structural Equation Modeling (SEM), Survival Analysis, Growth Curve Modeling, and Item Response Theory (IRT), among others.
- **Data analysis, visualization, and associated software expertise:**
Creates high-quality publication-ready data visualizations using the ggplot2 package in R and develops dynamic interactive dashboards in R Shiny and Tableau. Creates reproducible and auditable analyses following best practices using R Markdown. Manages source control for analytic scripts across teams of varying size with Github. Highly experienced with R, Mplus, SPSS, SAS, Tableau, R Shiny, R Markdown, Zotero, Mendeley, EndNote, and Microsoft Office.
- **Experience with secondary data sources:**
Conducts analysis using notable proprietary and publicly-available datasets including social determinants of health (SDOH) data from the US Census American Community Survey (ACS), CDC Social-Vulnerability Index (SVI), and County Health Rankings datasets, as well as mortality, morbidity, claims, and disease incidence data from CMS, CDC WONDER, CDC SEER, USCS, and other national and state-level sources.

Professional Experience

- **Large Pharmaceutical Company, Disparities in Access to Head and Neck Cancer Care.** Led project on disparities in access to care for head and neck cancers based on geographic location and social determinants of health. Obtained data from extant sources, including cancer incidence from CDC SEER, USCS, and state-level cancer registries. Performed web-scrape of an oncology society website and "doctor-finder" tool to create a dataset of provider locations. Geocoded provider addresses and then used Travel Time API with population weighted county centroids from US Census to estimate drive times to nearest provider for all counties. Created a client-facing dashboard to allow unguided data exploration. Led manuscript development for academic publication in development.
- **Large Medical Device Manufacturer, Network Meta-Analysis for Indirect Clinical Comparison.** Led project to perform a meta-analysis comparing the relative performance of a novel medical device to a direct competitor in the absence of head-to-head trial data using matching adjusted indirect comparison (MAIC). The meta-analysis used clinical trial data from published sources, and demonstrated that both devices performed statistically equivalently across all endpoints, with the exception that the novel device had a better safety profile, providing key evidence regarding the utility of the novel medical device in the absence of head-to-head trial data. Results were published in a peer-reviewed journal.
- **Large Pharmaceutical Company, Barriers in the Post-Traumatic Stress Disorder (PTSD) Diagnostic Process.** Led study to identify common causes of delayed diagnosis for PTSD and determine relative impact. Designed and validated novel

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survey instrument used for primary data collection with over 400 health care providers. Led data analysis, including linear regression with post-hoc contrasts and Bonferroni correction and Plackett-Luce model for comparisons of ranked data. Led writing of academic manuscript.

- **Large Pharmaceutical Company, Impact of Post-Traumatic Stress Disorder (PTSD) on Caregiver Burden.** Led analytic component of study assessing impact of PTSD severity and comorbidities on unpaid care providers, including romantic partners, parents, adult children or other family members, and friends. Performed initial literature review to identify measures of burden and psychosocial functioning, developed analytic plan and study design. Administered primary data collection. Led data analysis and presentation of results.
- **Large Pharmaceutical Company, Post-Traumatic Stress Disorder (PTSD) Patient Experience.** Led analytic component of study assessing impact of PTSD severity and symptoms on day-to-day activities and psychosocial functioning, controlling for potential confounding, moderating, and mediating effects. Performed literature review to identify measures of quality of life and psychosocial functioning. Developed study design and analytic plan.
- **Large Pharmaceutical Company, Electronic Health Record (EHR) Implementation of a Short Post-Traumatic Stress Disorder (PTSD) Screener.** Led study design for project assessing impact of short PTSD screener implemented in an EHR system on PTSD diagnosis rates. Study design was an interrupted time-series (ITS) analysis with random assignment to a waitlist control group, combining a strong quasi-experimental design with random assignment to control for seasonal effects and potential unobserved confounders.
- **CDC, Division of Environmental Health Science and Practice, Green Housing Study.** Provided statistical consulting and performed statistical modeling, including exploratory and confirmatory factor analysis and structural equation modeling, for a scientific study of the impact of green housing implementation on asthma. Used factor analysis to identify latent combinations of airborne and urinary volatile organic compounds, and subsequently used SEM to assess the impact of latent combinations of compounds in the environment on each other, as well as their relationship with various aspects of the homes reported by participants and project staff. Wrote results for academic publication in development.
- **CDC, Division of Environmental Health Science and Practice, Dust Mite Analysis.** Led statistical modeling efforts, including machine learning approaches and multilevel modeling with GLMM, for a scientific study of the impact of time, temperature, and humidity on the prevalence of dust-mite related allergens in the home environment.
- **CDC, Childhood Lead Poisoning Prevention Program.** Conducted mixed-method analysis of social media data assessing public opinion toward environmental plastics exposure. Performed logistic regression data analyses using R statistics and participated in manuscript writing. Manuscript was published in a peer-reviewed journal. Additionally, used Adobe Analytics and R statistics on web performance data to improve utilization of online content for the prevention of lead poisoning in children.
- **State of Tennessee, TennCare Evaluation.** Led analytic efforts for evaluation of TennCare III intervention. Provided statistical advising to junior statisticians regarding appropriate matching methods and conducting interrupted time-series and difference-in-difference analysis. Oversaw analytic work and assisted with the final report.

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- **United States Department of Veterans Affairs, Social Determinants of Health and Mortality Regression Analysis.** Performed regression analysis to determine impact of specific social determinants of health, including poverty, education, and access to healthcare, on county-level mortality stratified by cause of death. Utilized zero-inflated models to account for the high number of counties reporting zero deaths for rare causes.
- **Large Pharmaceutical Company, Access to Genetic Counselors for Cancer.** Provided statistical support for a study quantifying understand disparities in access to care from certified genetic counselors based on geographical location and social determinants of health. Reviewed analytic products for client submission and eventual publication, consulted on application of statistical theory and assumption tests for analyses. Published two research papers in collaboration with the client team.
- **Large Pharmaceutical Company, Policy and Real-World Evidence Group.** Provided statistical consulting on a project using publicly available data to derive geographical distributions of health care providers & vaccine-eligible adults. Used public use microsample data to estimate populations at different geographical granularities stratified by sample responses for the entire United States to estimate socioeconomic distributions.
- **AmeriCorps, Office of the Chief Risk Officer (OCRO).** Providing data analytic support for Enterprise Risk Management and Internal Control processes. Developed R scripts to reperform prior analyses by previous contractors with limited documentation, producing results that matched prior years exactly within project deadlines.
- **Hospital Clients, COVID-19 Response Funding.** Led team in data collection, assessment, and presentation of healthcare funding opportunity data for thirty-four hospitals and hospital systems across the U.S. Response efforts supported 250 staff across 30 states and helped hospital and hospital system clients recover \$605M in FEMA / HHS CARES Act funding. Developed initial data visualizations and data collection methods, and then managed a team of twelve researchers in the implementation and continual improvement of the tool.
- **CDC, National Center for Environmental Health.** Assisted project team developing research tool utilizing natural language processing (NLP) technology. Acted as SME to advise project team on CDC environment, including IT assets and common workflows.
- **CDC, NCIPC Opioid Overdose Branch Prevention Effectiveness Researcher.** Responsible for identification of gaps in the empirical literature, designing studies to address gaps, and disseminating insights based on state-of-the-art methodology and data analysis. Preparation of manuscripts for peer review. Development of programmatic tools and resources to translate and apply research findings. Presenting modern data analytic techniques to peers.
- **CDC, NCIPC Data Collation and Integration for Public Health Event Response Project.** Developed, maintained, and facilitated use of a sophisticated data platform and analytical tool for opioid overdose prevention as part of the CDC injury center. This platform hosted mortality data from NCHS for all deaths in the U.S. by ICD-10 code by state and county over the past ten years. Dr. Goodnight was the injury center lead for this project, and in this capacity he helped translate the scientific research needs of NCIPC staff to contractors performing technical work, helped create custom in-platform tools for CDC scientists, regularly presented platform functionality to

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leadership, developed training materials, created data visualization and dashboarding solutions for CDC leadership and partners, and lead the development of advanced data analytical tools to facilitate the ongoing work of the opioid overdose branch.

- **CDC, NCIPC-NCHS NVSS Rapid Release Provisional Drug Overdose Death Count Workgroup.** Represented the National Center for Injury Prevention and Control (NCIPC) Division for Overdose Prevention (DOP) in meetings with National Center for Health Statistics (NCHS) scientists to improve regular releases of provisional drug overdose death counts from the National Vital Statistics System in their Vital Statistics Rapid Release publication. Provided feedback on the use of rapid release mortality data by NCIPC scientists and provided recommendations to NCHS for changes to the rapid release publication.
- **University of Minnesota, Methodologist and Psychometrician for Center on Outcome Measurement.** Managed nationwide research activities for project assessing measurement of quality of life for people living with disabilities in community settings. Produced all reports of quantitative findings including results and methods sections for publication, designed dynamic data visualization dashboards, provided technical assistance for state-level policy makers and stakeholders, participated in measure development, and performed statistical tests to establish reliability and validity of new measures.
- **CDC, Program Performance and Evaluation Office.** Program evaluation, logic modeling, and conference planning for public health initiatives regarding chemical exposures, vaccine adverse events, and data sharing across the CDC.

Work History

- Guidehouse (formerly Price Waterhouse Cooper Public Sector): Managing Consultant (2022 – Present)
- Guidehouse: Senior Consultant (2019 – 2022)
- Centers for Disease Control and Prevention: Evaluation Fellow (2017-2019)
- University of Minnesota: Research Associate (2016-2017)

Education

- Ph.D. in Psychology (Biostatistics Focus), Georgia State University, 2016
- M.A. in Psychology (Biostatistics Focus), Georgia State University, 2014
- B.A. in Psychology, North Carolina State University, 2008

Publications

- Kernen, K. M., Omar, S., Goodnight, B., Skodny, P., Bruce, S., & Yu, T. M. (2023). Temporarily implanted nitinol device versus prostatic urethral lift for minimally invasive surgical treatment of benign prostatic hyperplasia with lower urinary tract symptoms: a matching-adjusted indirect comparison. *The Canadian journal of urology*, 30(5), 11676-11685.
- Riordan, S., Richardson, J., Zierhut, H., Goodnight, B. L., Sieling, F. H., Black, C. M., & Moore, R. A. (2023). Medicare beneficiary barriers to genetic counselor services:

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Implications for patient policy, decision-making, and care. *Journal of Genetic Counseling*.

- Tian, H., Gaines, C., Launi, L., Pomales, A., Vazquez, G., Goodnight, B.L., ... & Rogers, R. D. (2022). Understanding public perceptions of per-and polyfluoroalkyl substances: infodemiology study of social media. *Journal of Medical Internet Research*, 24(3), e25614.
- Bellaiche, M. M., Fan, W., Walbert, H. J., McClave, E. H., Goodnight, B. L., Sieling, F. H., ... & Black, C. M. (2021). Disparity in Access to Oncology Precision Care: A Geospatial Analysis of Driving Distances to Genetic Counselors in the US. *Frontiers in Oncology*, 11.
- Borgman, R., Goodnight, B., & Swartout, K. (2020). The Virtual Violence Against Women Scale (VVAWS): A measure of players' experiences of violence against women in video games. *Psychology of popular media*, 9(4), 513.
- Song, W., Qian, X., & Goodnight, B. (2019). Examining the roles of parents and community involvement and prevention programs in reducing school violence. *Journal of school violence*, 18(3), 403-420.
- Brennan, C. L., Swartout, K. M., Goodnight, B. L., Cook, S. L., Parrott, D. J., Thompson, M. P., ... & Leone, R. M. (2019). Evidence for multiple classes of sexually violent college men. *Psychology of violence*, 9(1), 48.
- Mendoza, H., Tully, E. C., Goodnight, B., Gray, J., & Masuda, A. (2018). The indirect effect of self-concealment on distress through psychological inflexibility in Asian American, black American, and white American college students. *Personality and Individual Differences*, 126, 93-98.
- Johnson, S. B., Goodnight, B. L., Zhang, H., Daboin, I., Patterson, B., & Kaslow, N. J. (2018). Compassion-based meditation in African Americans: Self-criticism mediates changes in depression. *Suicide and Life-Threatening Behavior*, 48(2), 160-168.
- Mendoza, H., Goodnight, B. L., Caporino, N. E., & Masuda, A. (2018). Psychological distress among Latina/o college students: The roles of self-concealment and psychological inflexibility. *Current Psychology*, 37(1), 172-179.
- Gaskin-Wasson, A. L., Calamaras, M. R., LoParo, D., Goodnight, B. L., Remmert, B. C., Salami, T., ... & Kaslow, N. J. (2017). Childhood emotional abuse, self/other attachment, and hopelessness in African-American women. *Attachment & human development*, 19(1), 22-37.
- Hipp, T. N., Bellis, A. L., Goodnight, B. L., Brennan, C. L., Swartout, K. M., & Cook, S. L. (2017). Justifying sexual assault: Anonymous perpetrators speak out online. *Psychology of Violence*, 7(1), 82.
- Cook, S. L., Swartout, K. M., Goodnight, B. L., Hipp, T. N., & Bellis, A. L. (2015). Impact of violence research on participants over time: Helpful, harmful, or neither?. *Psychology of violence*, 5(3), 314.
- Leleux-Labarge, K., Hatton, A. T., Goodnight, B. L., & Masuda, A. (2015). Psychological distress in sexual minorities: Examining the roles of self-concealment and psychological inflexibility. *Journal of Gay & Lesbian Mental Health*, 19(1), 40-54.
- Moore, M., Masuda, A., Hill, M. L., & Goodnight, B. L. (2014). Body image flexibility moderates the association between disordered eating cognition and disordered eating behavior in a non-clinical sample of women: A cross-sectional investigation. *Eating behaviors*, 15(4), 664-669.

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- Goodnight, B. L., Cook, S. L., Parrott, D. J., & Peterson, J. L. (2014). Effects of masculinity, authoritarianism, and prejudice on antigay aggression: A path analysis of gender-role enforcement. *Psychology of Men & Masculinity*, 15(4), 437.
- Armistead, L., Cook, S., Skinner, D., Toefy, Y., Anthony, E. R., Zimmerman, L., ... & Chow, L. (2014). Preliminary results from a family-based HIV prevention intervention for South African youth. *Health Psychology*, 33(7), 668.
- Goodnight, B., Salama, C., Grim, E. C., Anthony, E. R., Armistead, L., Cook, S. L., ... & Toefy, Y. (2014). Perceived control and communication about sex: A study of South African families. *African Journal of AIDS Research*, 13(1), 31-36.