

Nicholas Williams

Department of Epidemiology
Mailman School of Public Health, Columbia University
New York, New York, USA

e: ntw2117@cumc.columbia.edu
p: +1 719 650 1307
w: nicholastwilliams.com

EDUCATION

M.P.H. Biostatistics, Columbia University, 2019
B.A. Psychology, University of Colorado at Boulder, 2017

PROFESSIONAL

2021- Columbia University, Mailman School of Public Health
Senior Data Analyst
Department of Epidemiology
2021 Bayer AG, Independent Statistical Consultant
2019-21 Weill Cornell Medical College
Research Biostatistician I
Division of Biostatistics, Department of Population Health Sciences
2018 Columbia University, Mailman School of Public Health
Research Assistant for Christine Mauro, Ph.D.
Department of Biostatistics

RESEARCH INTERESTS

Nonparametric causal inference.
Open source statistical software development.

PUBLICATIONS

Research in statistics

2023 **Williams, N.**, Hoffman, K, Rudolph, K.E., and Díaz, I. “Learning optimal dynamic treatment regimes from longitudinal data.” In press at *American Journal of Epidemiology*.
2023 Rudolph, K.E., **Williams, N.**, Miles, C.H., Antonelli, J., and Díaz, I. “All models are wrong, but which are useful? Comparing parametric and nonparametric estimation of causal effects in finite samples.” In press at *Journal of Causal Inference*. DOI: 10.48550/arXiv.2211.10310.
2023 Díaz, I., **Williams, N.**, and Rudolph, K.E. “Efficient and flexible causal mediation with time-varying mediators, treatments, and confounders.” *Journal of Causal Inference* DOI: 10.1515/jci-2022-0077.

- 2022 Rudolph, K.E., **Williams, N.**, and Díaz, I. “Efficient and flexible estimation of natural direct and indirect effects under intermediate confounding and monotonicity constraints.” *Biometrics*. DOI: 10.1111/biom.13850
- 2022 **Williams, N.**, Rosenblum, M. and Díaz, I. “Optimizing Precision and Power by Machine Learning in Randomized Trials, with an Application to COVID-19.” *Journal of the Royal Statistical Society: Series A*. DOI: 10.1111/rssa.12915
- 2021 Díaz, I., **Williams, N.**, Hoffman, K. and Schenck, E. “Non-parametric causal effects based on longitudinal modified treatment policies.” *Journal of the American Statistical Association - Theory and Methods*. DOI: 10.1080/01621459.2021.1955691

Software

- 2023 **Williams, N.** and Díaz, I. “lmt: An R package for estimating the causal effects of modified treatment policies.” *Observational Studies*. <https://muse.jhu.edu/article/883479>

Applied Epidemiology

- 2022 Hoffman, K.L., Schenck, E.J., Satlin, M.J., Whalen, W., Pan, D., **Williams, N.** and Díaz, I. “Comparison of a target trial emulation framework to Cox regression to estimate the effect of corticosteroids on COVID-19 mortality.” *JAMA Network Open*. DOI: 10.1001/jamanetworkopen.2022.34425
- 2022 Rudolph, K.E., **Williams, N.**, Singham-Goodwin, A.T., Shulman, M., Fishman, M., Díaz, I., Hu, M., Luo, S.X., Rotrosen, J. and Nunes, E. “Buprenorphine & methadone dosing strategies to reduce risk of relapse in the treatment of opioid use disorder.” *Drug and Alcohol Dependence*. DOI: <https://doi.org/10.1016/j.drugalcdep.2022.109609>
- 2022 Rudolph, K.E., **Williams, N.**, Díaz, I., Luo, S.X., Rotrosen, J. and Nunes, E.V. “Optimally choosing medication type for patients with opioid use disorder.” In press at *American Journal of Epidemiology*.
- 2022 Min, J.Y., Simmons, W., Banerjee, S., Wang, F., **Williams, N.**, Zhang, Y., Reese, A.B., Mushlin, A.I. and Flory, J.H. “Association between antidiabetic drug use and the risk of COVID-19 hospitalization in the INSIGHT Clinical Research Network in New York City.” *Diabetes, Obesity and Metabolism*. DOI: 10.1111/dom.14704
- 2022 Min, J.Y., **Williams, N.**, Simmons, W., Banerjee, S., Wang, F., Zhang, Y., Reese, A.B., Mushlin, A.I. and Flory, J.H. “Baseline Hemoglobin A1c and the Risk of COVID-19 Hospitalization Among Patients with Diabetes in the INSIGHT Clinical Research Network.” *Diabetic Medicine*. DOI: 10.1111/dme.14815
- 2022 Hoffman, J.W., Bitar, R.C., **Williams, N.**, Steineman, B.D., Sturnick, D.R., Garrison, G.W., Demetracopoulos, C.A., Drakos, M.C. and O'Malley, M.J. “Orthosis and foot structure affect the fifth metatarsal principal strains during simulated level walking.” *The American Journal of Sports Medicine*. DOI: 10.1177/03635465221079652
- 2022 Punjani, N., Alawamlh, O.H., Kim, S.J., Salter, C.A., Wald, G., Feliciano, M., **Williams, N.**, Dudley, V., and Goldstein, M. “Changes in semen analysis over time: A temporal trend analysis of 20 years of subfertile non-azoospermic men.” *World Journal of Mens Health*. DOI: 10.5534/wjmh.210201

- 2021 Winston, G., Guadix, S., Lavieri, M., Uribe-Cardenas, R., Kocharian, G., **Williams, N.**, Sholle, E., Grinspan, Z., and Hoffman, C. "Closed-Loop Vagal Nerve Stimulation for Intractable Epilepsy: A Single-Center Experience." *Seizure: European Journal of Epilepsy*. DOI: 10.1016/j.seizure.2021.03.030
- 2021 Goel, A.R., Bruce, H.A, **Williams, N.** and Alexiades, G. "Long-Term Effects of Hearing Aids on Hearing Ability in Patients with Sensorineural Hearing Loss." *Journal of the American Academy of Audiology*.
- 2020 Thiesmeyer, J.W., Ullmann, T.M., Greenberg, J., **Williams, N.T.**, Limberg, J., Stefanova, D., Beninato, T., Finnerty, B.M., Vignaud, T., Leclerc, J., Fahey III, T.J., Mirallie, E.M., Brunaud, L. and Zarnegar, R. "Hypertension resolution after adrenalectomy for primary hyperaldosteronism: Which is the best predictive model?" *Surgery*. DOI: 10.1016/j.surg.2020.04.017
- 2020 Riley, C.A., Zheng, Z., **Williams, N.**, Smith, T.L., Orlandi, R.R. and Tabaei, A. "Concordance of self-reported practice patterns of American Rhinologic Society members with the International Consensus Statement of Allergy and Rhinology: Rhinosinusitis" *International Forum of Allergy and Rhinology*. DOI: 10.1002/alr.22533
- 2020 Day, J., Conti, M.S., **Williams, N.**, Ellis, S.J., Deland, J.T. and Cody, E.A. "Contribution of First-Tarsometatarsal Joint Fusion to Deformity Correction in the Treatment of Adult-Acquired Flatfoot Deformity." *Foot and Ankle Orthopaedics*. DOI: 10.1177/2473011420927321
- 2020 Day, J., Kim, J., Conti, M.S., **Williams, N.**, Deland, J.T. and Ellis, S.J. "Outcomes of Idiopathic Flexible Flatfoot Deformity Reconstruction in the Young Patient." *Foot and Ankle Orthopaedics*. DOI: 10.1177/2473011420937985
- 2020 Cronin, S., Conti, M., **Williams, N.** and Ellis, S.J. "Relationship Between Demographic and Radiographic Characteristics and Second Ray Pathology in Hallux Valgus Patients." *Foot and Ankle Orthopaedics*. DOI: <https://doi.org/10.1177/2473011420909088>
- 2019 Hussain, I., Winston, G.M., Goldberg, J., Curri, C., **Williams, N.**, Chazen, J.L., Greenfield, J.P. and Baaj, A.A. "Impact of imaging modality, age, and gender on craniocervical junction angles in adults without structural pathology." *Journal of Craniovertebral Junction and Spine*. PMID: 32089618

Preprints and manuscripts under review

- 2023 "Studying complex and/or longitudinal exposures using modified treatment policies."
- 2023 Rudolph, K.E., **Williams, N.**, Stuart, E.A., and Díaz, I. "Efficiently transporting average treatment effects using a sufficient subset of effect modifiers". Available on arXiv.
- 2022 Rudolph, K.E., **Williams, N.**, and Díaz, I. "Nonparametric estimators of interventional (transported) direct and indirect effects that accommodate multiple mediators and multiple intermediate confounders." Under review at *Epidemiology*. DOI: 10.48550/arXiv.2212.08164.
- 2021 Rudolph, K.E., **Williams, N.** and Díaz, I. "Causal Mediation with Instrumental Variables." Under review at *Journal of the Royal Statistical Society: Series B*.

INVITED TALKS

- 2020 “An Introduction to Answering Causal Questions with the lmtip R package.” Weill Cornell Biostatistics Computing Club. New York, NY. July 14.

SOFTWARE

Maintainer

- lmtip R: Non-Parametric Causal Effects of Feasible Interventions Based on Modified Treatment Policies
- cabinets R: Project Specific Workspace Organization Templates
- simul R: Fast Simultaneous Confidence Bands Based on the Efficient Influence Function and Multiplier Bootstrap
- catfun R: Categorical Data Analysis

Contributer

- broom R: Convert Statistical Objects into Tidy Tibbles

CONFERENCE ACTIVITY

Conference Presentations

Presenting author *italicized*.

- 2021 *Brantner, C., Pearce-Fisher, D., Moezina, C., ..., Williams, N., Demetres, M., and Goodman, S.* “Treatment knowledge and preferences for Black people with hip and knee osteoarthritis: A Systematic Literature Review and Meta-Analysis.” European Congress of Rheumatology.
- 2020 *Williams, N., Savenkov, O. and Chrea, B.* “Estimating the Causal Effect of Surgical Treatment for Posterior Malleolus Fracture with Different Treatment Rules on Patient Reported Outcomes.” Joint Statistical Meetings (Virtual), Philadelphia, PA.
- 2019 *Mauro, C., Williams, N. and An, A.* “Experiences with Incorporating R into a Second-Level Biostatistics Course for MPH Students.” Joint Statistical Meetings, Denver, CO.

SERVICE

Academic Journal Peer Review

The R Journal

GRANTS AND AWARDS

Awards and Honors

- 2017 Graduate with Distinction, University of Colorado at Boulder

Grants and Fellowships

2015 Virginia Summer Undergraduate Research Initiative. Project: “The relationship between cognitively oriented verbs and affect.”

TEACHING

Weill Cornell Medicine

Data Science I – Teaching Assistant

Columbia University

Categorical Data Analysis – Lead Teaching Assistant

Research Methods, Quantitative Foundations – Teaching Assistant

PROFESSIONAL AFFILIATIONS

2020– American Statistical Association

TECHNICAL SKILLS

R expert

SAS

SQL

TEX

Julia intermediate

C++ novice

Ruby novice

Updated November 2023