Christopher B. Boyer, PhD — Curriculum Vitae

Contact Information

Department of Epidemiology
677 Huntington Avenue
Harvard University
Boston, MA 02115 USA

+1 (937) 657-8163
cboyer@hsph.harvard.edu
christopherbboyer.com
https://orcid.org/0000-0002-1101-2045
Google Scholar Profile

Research Interests

Causal inference, infectious disease, randomized-controlled trials, statistics, machine learning, epidemiology, global health, econometrics, networks, Bayesian methods

Academic Experience

Harvard University, Cambridge, Massachusetts USA
Center for Communicable Disease Dynamics
Postdoctoral Research Fellow — 2023 - present

Education

Harvard University, Cambridge, Massachusetts USA

Ph.D., Epidemiology — 2023

Concentration: Causal Inference & Biostatistics
Dissertation: *New approaches to factual and counterfactual prediction.*
Committee: Goodarz Danaei (*Chair*), James Robins, Andrew Beam

Columbia University, New York, New York USA

M.P.H., Epidemiology — 2015

Wright State University, Dayton, Ohio USA

B.S., Mechanical Engineering — 2010

Selected Publications

[1] **Boyer, C.**, Paluck, E. L., Annan, J., Nevatia, T., Cooper, J., Namubiru, J, Heise, L., & Lehrer, R. (2022) "Religious leaders can motivate men to cede power and reduce intimate partner violence: experimental evidence from Uganda". *PNAS*. 119(31), e2200262119. https://doi.org/10.1073/pnas.2200262119

[2] **Boyer, C**, Rumpler, E, Kissler, S, & Lipsitch, M. (2022) "Infectious disease dynamics and restrictions on social gathering size". *Epidemics*, 40, 100620. https://doi.org/10.1016/j.epidem.2022.100620

[3] Chatterji, S., **Boyer, C.**, Sharma, V., Abramsky, T., Levtov, R., Doyle, K., Harvey, S., & Heise, L. (2023). "Optimizing the construction of outcome measures for impact evaluations of intimate partner violence prevention interventions". *Journal of Interpersonal Violence*, 0(0). https://doi.org/10.1177/08862605231162887

[4] NCD Risk Factor Collaboration (NCD-RisC). (2021) "Worldwide trends in hypertension prevalence and progress in treatment and control from 1990 to 2019: a pooled analysis of 1201 population-representative studies with 104 million participants". *The Lancet*. 398(10304), 957–980. https://doi.org/10.1016/S0140-6736(21)01330-1

Pre-Prints

[1] **Boyer, C.** & Lipsitch, M. (2023). "Defining and emulating target trials of the effects of postexposure vaccination using observational data". *medRxiv*.
https://doi.org/10.1101/2023.05.03.23289471
Forthcoming at American Journal of Epidemiology

[2] **Boyer, C.**, Dahabreh, I. J., & Steingrimsson, J. A. (2023). "Assessing model performance for counterfactual predictions". *arXiv*. https://doi.org/10.48550/arXiv.2308.13026
Under review

[3] Joshi, K., Kahn, R., **Boyer, C.**, & Lipsitch, M. (2023). "Some principles for using epidemiologic study results to parameterize transmission models". *medRxiv*.
https://doi.org/10.1101/2023.10.03.23296455
Under review

[4] **Boyer, C.**, Chatterji, S., Cooper, J., & Heise, L. (2022). "Outcome coding choice in randomized trials of programs to reduce violence". *arXiv*. http://arxiv.org/abs/2204.12385
Under review

In Preparation

[1] Voter, S. Dahabreh, I. J., **Boyer, C.**, & Steingrimsson, J. A. (2023) "Counterfactual prediction, transportability, and joint analysis".
Special Issue BMC Medical Informatics and Decision Making

[2] Rosen, J. B., Arciulo, R. J., Pathela, P., **Boyer, C.**, Baumgartner, J., Latash, J., Malec, L., Lee, E., Vasudha, R., King, R., Real, J. E., Lipsitch, M., & Zucker, J. R. (2023) "JYNNEOS™ effectiveness as post-exposure prophylaxis against monkeypox (mpox): challenges using real-world outbreak data".
Under review

[3] **Boyer, C.**, Paluck, E. L., Annan, J., Nevatia, T., Cooper, J., Namubiru, J, Heise, L., & Lehrer, R. (2023) "Does asking about violence increase reporting at subsequent interviews? Evidence from a randomized trial in Uganda".
Under review

[4] NCD Risk Factor Collaboration (NCD-RisC). (2023) "Long-term and recent trends in serum cholesterol treatment and control in 14 high-income countries: an analysis of 125 nationally representative surveys".
Under review

[5] **Boyer, C.**, Beam, A., Robins, J, & Danaei, G. (2022) "Factual and counterfactual risk prediction using the g-formula".
Under review

[6] **Boyer, C.**, Beam, A., Robins, J, & Danaei, G. (2022) "Target trials for prediction: emulating a trial to estimate the treatment-naive risk".
Under review

Previous Peer-reviewed Publications

[1] Haber, N. A., Clarke-Deelder, E., Feller, A., Smith, E. R., Salomon, J. A., MacCormack-Gelles, B., Stone, E. M., Bolster-Foucault, C., Daw, J. R., Hatfield, L. A., & others. (2022). Problems with evidence assessment in COVID-19 health policy impact evaluation: A systematic review of study design and evidence strength. *BMJ Open*, 12(1), e053820.
https://doi.org/10.1136/bmjopen-2021-053820

[2] Bawah, A. A., Awoonor-Williams, J. K., Asuming, P. O., Jackson, E. F., **Boyer, C. B.**, Kanmiki, E. W., Achana, S. F., Akazili, J., & Phillips, J. F. (2019). The child survival impact of the Ghana Essential Health Interventions Program: A health systems strengthening plausibility trial in Northern Ghana. *PLoS One*, 14(6), e0218025.
https://doi.org/10.1371/journal.pone.0218025

[3] Chowdhuri, R. N., Pinchoff, J., **Boyer, C. B.**, & Ngo, T. D. (2019). Exploring gender and partner communication: Theory of planned behavior predictors for condom use among urban youth in Zambia. *International Journal of Gynecology & Obstetrics*, 147(2), 258–267.
https://doi.org/10.1002/ijgo.12952

[4] Pinchoff, J., **Boyer, C. B.**, Nag Chowdhuri, R., Smith, G., Chintu, N., & Ngo, T. D. (2019). The evaluation of the Woman's Condom marketing approach: What value did peer-led interpersonal communication add to the promotion of a new female condom in urban Lusaka? *Plos One*, 14(12), e0225832. https://doi.org/10.1371/journal.pone.0225832

[5] Pinchoff, J., **Boyer, C. B.**, Mutombo, N., Chowdhuri, R. N., & Ngo, T. D. (2017). Why don't urban youth in Zambia use condoms? The influence of gender and marriage on non-use of male condoms among young adults. *PloS One*, 12(3), e0172062. https://doi.org/10.1371/journal.pone.0172062

[6] Patel, S., Awoonor-Williams, J. K., Asuru, R., **Boyer, C. B.**, Tiah, J. A. Y., Sheff, M. C., Schmitt, M. L., Alirigia, R., Jackson, E. F., & Phillips, J. F. (2016). Benefits and limitations of a community-engaged emergency referral system in a remote, impoverished setting of northern Ghana. *Global Health: Science and Practice*, 4(4), 552–567. https://doi.org/10.9745/GHSP-D-16-00253

[7] Phillips, J. F., Sheff, M., & **Boyer, C. B.** (2015). The astronomy of africa's health systems literature during the MDG era: Where are the systems clusters? *Global Health: Science and Practice*, 3(3), 482–502. https://doi.org/10.9745/GHSP-D-15-00034

Honors and Awards

Department of Epidemiology Excellence in Teaching Award	2022
Bok Center Certificate of Distinction in Teaching (×3)	2019, 2020, 2021
Summa Cum Laude, Columbia University	2015
Magna Cum Laude, Wright State University	2010
Tau Beta Pi, Wright State University	2010
National Merit Scholarship Finalist	2006
Salutatorian, Miamisburg High School	2006

Extramural Grants

USAID Development Innovation Ventures (APS9-7414). $200,000. Role: *co-PI*	2021
SVRI/World Bank Development Marketplace Award. $50,000. Role: *co-PI*	2020
NIH T32 Training Grant (T32 HL 098048). Role: *Trainee*	2019
Wellspring Philanthropic Fund. $450,000. Role: *co-PI*	2017

Conference Presentations

Boyer, C. & Lipsitch, M. (2023). "Defining and emulating target trials of the effects of postexposure vaccination using observational data". EPIDEMICS 9 – 9th International Conference on Infectious Disease Dynamics. November 29, 2023 (Bologna, Italy). *Oral presentation.*

Boyer, C., Beam, A., Robins, J, & Danaei, G. (2023). "Validating counterfactual prediction models". Annual Meeting – Society for Epidemiologic Research. June 14, 2023 (Portland, OR). *Poster presentation.*

Boyer, C. & Namubiru, J. (2022). "Religious Leaders Can Motivate Men To Cede Power And Reduce Violence: Main Findings from Becoming One". SVRI Forum 2022. September 21, 2022 (Cancun, Mexico). *Oral presentation.*

Namubiru, J. & **Boyer, C.**. (2022). "Reduced IPV driven largely by highest quality, most progressive facilitators". SVRI Forum 2022. September 22, 2022 (Cancun, Mexico). *Oral presentation.*

Boyer, C. & Danaei, G. (2021). "New Approaches to Factual and Counterfactual Risk Prediction for Cardiovascular Disease Using the Parametric G-formula". AHA21 – American Heart Association Scientific Sessions. *Poster presentation.*
Published abstract: *Circulation*, 144(Suppl_1), A14191-A14191.

Boyer, C., Jackson, E., Bawah, A., Schmitt, M., Awoonor-Williams, J., & Phillips, J. (2015).

"Estimating indices of health system readiness: an example from rural northern Ghana". COGH15 - Consortium of Universities for Global Health. *Oral presentation.*
Published abstract: *The Lancet Global Health*, 3, S14.

Invited Talks

"Machine learning-based counterfactual prediction versus factual prediction for time-varying treatments: theory and practice." Janssen Pharmaceuticals Real World Evidence Methodology Lab. October 24, 2023.

"JYNNEOS Effectiveness as Post-Exposure Prophylaxis Against Monkeypox, New York City, 2022". Advisory Committee on Immunization Practices (ACIP) Mpox Working Group Meeting. July 28, 2023.

"Measuring Intimate Partner Violence: innovative ways to select outcome measures for impact evaluation" World Bank/SVRI seminar series. June 12, 2023.

"Working with religious leaders to reduce intimate partner violence: findings and lessons learned from a randomized trial in Uganda. Research Program on Children and Adversity GRIT seminar series." Boston College. January 19, 2023.

Research Projects

Boyer, C. & Field, E. (2022) "Hablemos entre Patas: A Randomized-Controlled Trial of a WhatsApp Intervention to Reduce Intimate Partner Violence" AEA RCT Registry. October 14. https://www.socialscienceregistry.org/trials/10043

Annan, J., **Boyer, C.**, Cooper, J., Heise, L., & Paluck, E.L. (2019) "A Pair-Matched Randomized Evaluation of Faith-Based Couples Counseling in Uganda." AEA RCT Registry. March 11. https://doi.org/10.1257/rct.3994-4.1

Annan, J., Fink, G., & Paluck, E.L. (2019) "Modern Man Challenge Intimate Partner Violence Study." AEA RCT Registry. June 10. https://doi.org/10.1257/rct.4245-1.0

Teaching Experience

EPI260 - Mathematical Modeling of Infectious Diseases

Teaching Fellow/Instructor 2023
Dynamical models to study the transmission dynamics of infectious diseases. Design and construction of appropriate differential equation models, equilibrium and stability analysis, parameter estimation from epidemiological data, determination and interpretation of the basic reproductive number of an infection, stochastic and deterministic models, heterogeneity, techniques for sensitivity analysis, and critique of model assumptions.
Instructors: Dr. Marc Lipsitch

EPI207 - Advanced Epidemiologic Methods

Lead Teaching Fellow 2020, 2021
Causal inference for time-varying exposures: g-formula, inverse-probability weighting, marginal structural models, g-estimation, static and dynamic treatment regimes. Responsible for leading 90 min lab section, office hours, and grading homeworks and tests. As lead, also responsible for organizing other fellows, curriculum development, and the primary point-of-contact for students.
Instructor: Dr. James Robins

PHS2000 - Quantitative reseach methods

Teaching Fellow 2019, 2020, 2021
Year-long required methods course for first-year PhD students. Regression models, sampling, longi-

tudinal and multilevel analysis, time-varying confounding, mediation and interaction, econometric methods, missing data. Responsible for leading 90 min lab section, developing homework assignments and tests, and drafting course materials.
Instructors: Dr. Tyler Vanderweele, Dr. Jarvis Chen, Dr. Michael Hughes

Professional Experience

Innovations for Poverty Action, New York, New York USA

Technical Lead 2017 - 2018
Senior Research Associate 2016 - 2017
Research Associate 2015 - 2016

Columbia University, New York, New York USA
Research Associate 2013 - 2015

Peace Corps, Montepuez, Cabo Delgado, Mozambique
Secondary Science Teacher 2010 - 2012

Consulting Experience

StellarEmploy, New York, New York USA
Data Scientist 2017 - 2018

World Bank, Washington, DC USA
R/Python Programmer 2016

Published Software

Boyer, C., Danaei, G, Hajifathalian, K, Ueda, P, & Carrillo Larco, R. M. (2021) `globorisk`, R package for Globorisk Global CVD Risk Calculator.

Boyer, C., Baako, I.A., & Sandino, R.S. (2018) `ipacheck`, Stata package for running high-frequency checks of survey data.

Boyer, C. & White, M. (2016) `bcstats`, Stata package for comparing survey and back check data.

Service

Member, Society for Epidemiologic Research (SER)
Member, American Heart Association (AHA)
Affiliate, Innovations for Poverty Action (IPA) Investigator Network

Ad-hoc reviewer: *Epidemiology*, *American Journal of Epidemiology*, *BMJ open*, *PLoS one*, *PLoS Global Public Health*, *Heart and Vessels*, *Scientific Reports*

References

Marc Lipsitch, DPhil
Professor of Epidemiology
Director of Center for Communicable Disease Dynamics
Department of Epidemiology
Harvard T.H. Chans School of Public Health
677 Huntington Avenue,
Boston, MA 02115
Email: mlipsitc@hsph.harvard.edu

Issa Dahabreh, ScD
Associate Professor of Epidemiology
Department of Epidemiology
Harvard T.H. Chans School of Public Health
677 Huntington Avenue,
Boston, MA 02115
Email: idahabreh@hsph.harvard.edu

Goodarz Danaei, ScD
Bernard Lown Professor of Cardiovascular Health
Department of Epidemiology
Harvard T.H. Chans School of Public Health
677 Huntington Avenue,
Boston, MA 02115
Email: gdanaei@hsph.harvard.edu

James Robins, MD
Mitchell L. and Robin LaFoley Dong Professor of Epidemiology
Department of Epidemiology
Harvard T.H. Chans School of Public Health
677 Huntington Avenue,
Boston, MA 02115
Email: robins@hsph.harvard.edu

Elizabeth Levy Paluck, PhD
Professor, Psychology
Public Affairs
Deputy Director, Kahneman-Treisman Center for Behavioral Science & Policy
Princeton University
Peretsman Scully Hall, Office 420
Princeton, NJ 08540
Email: epaluck@princeton.edu