Division of Biostatistics
School of Public Health
University of California, Berkeley
Berkeley Way West # 5317
Berkeley, CA 94720, USA
✉ *laura.balzer@berkeley.edu*
Twitter: LauraBBalzer

Laura B. Balzer, PhD

INTERESTS

- Causal inference and supervised machine learning
- Development, evaluation, and implementation of data-driven solutions in Public Health and Medicine
- Design and analysis of cluster randomized and pragmatic trials
- Analyses with complex measurement, missingness, and dependence
- Applications: global health, infectious diseases, community health

APPOINTMENT

2022–Present **Associate Professor of Biostatistics**, *University of California, Berkeley.*
Division of Biostatistics, School of Public Health

2017–2022 **Assistant Professor of Biostatistics**, *University of Massachusetts, Amherst.*
Department of Biostatistics and Epidemiology. School of Public Health and Health Sciences

EDUCATION

2010–2015 **PhD in Biostatistics**, *University of California, Berkeley.*
- Design and analysis of cluster randomized trials with application to HIV prevention and treatment
- Advisors: Drs. Maya Petersen and Mark van der Laan
- Berkeley Fellowship: "Awarded to outstanding applicants to doctoral programs in all fields"

2008–2009 **MPhil in Computational Biology**, *University of Cambridge, UK.*
- Director's Award for outstanding performance
- Graduated 1^{st} in the class

2004–2008 **BS in Applied Mathematics**, *University of Vermont.*
- Barry M. Goldwater Scholarship Award: "The most prestigious undergraduate scholarship in the natural sciences, mathematics and engineering in America"

POST-DOCTORAL TRAINING

2015–2017 **Post-Doctoral Fellow in Biostatistics**, *Harvard School of Public Health.*
- Advisor: Dr. Victor DeGruttola
- Harnessing social network information to target interventions and to improve study designs for program and policy evaluation

HONORS & AWARDS

2021 ***American Journal of Epidemiology* (AJE) 2020 Article of the Year**, *AJE & Society for Epidemiologic Research.*

2021 **UMass Amherst Spotlight Scholar**, *UMass Amherst.*

2019 **The Distinguished Young Alumna Award**, *Westover School.*

2017 **Postdoctoral Association 2017 Spring Travel Award**, *Harvard.*

2015 **Chin Long Chiang Biostatistics Student of the Year**, *UC Berkeley.*
"For her innovative research in HIV prevention and treatment and her many contributions to the Biostatistics Program"

2015 **Travel Award: Infectious Disease Research Conference**, *NIAID/NIH.*

2014 **Gertrude M. Cox Scholarship**, *ASA.*
"For outstanding academic achievement in the University of California, Berkeley biostatistics program, significant contributions to methodological development of causal inference for group-randomized studies, inter-departmental cooperation as demonstrated by effective collaborations with epidemiology students and faculty, and exceptional commitment to ambitious, engaging, creative and superhero-studded teaching"

2014 **Causality in Statistics Education Award**, *ASA.*
Jointly with Dr. Maya Petersen to the "individual or team that does the most to enhance the teaching and learning of causal inference in introductory statistics courses"

2014 **Travel Award: Joint Statistical Meetings**, *ASA - San Francisco Bay Area Chpt.*

2014 **Russel M. Grossman Endowment Award**, *UC Berkeley.*

2013 **3^{rd} place poster**, *Society for Epidemiologic Research.*

2012 **Outstanding Graduate Student Instructor**, *UC Berkeley.*

2012 **2^{nd} place at School of Public Health Research Symposium**, *UC Berkeley.*

2012 **Lois Rifkin Scholarship**, *UC Berkeley.*

2012–2014 **Division of Biostatistics stipend for scholastic achievements**, *UC Berkeley.*

2010–2012 **Berkeley Fellowship**, *UC Berkeley.*
"Awarded to outstanding applicants to doctoral programs in all fields"

2009 **Director's Award for outstanding performance**, *Cambridge, UK.*
Equivalent to Distinction; Graduated 1^{st} in the class

2008 ***Summa Cum Laude***, *University of Vermont.*
Graduated 1^{st} in the class

2008 **Honors College Scholar**, *University of Vermont.*

2008 **Mathematics Senior Award**, *University of Vermont.*

2008 **Statistics Departmental Senior Award**, *University of Vermont.*

2007 **Sang Kil Nam Scholarship in Mathematics**, *University of Vermont.*
"In recognition of the value of education as a path toward the betterment of mankind"

2007 **Barry M. Goldwater Scholarship Award**.
"The most prestigious undergraduate scholarship in the natural sciences, mathematics and engineering in America"

2006 **Chemistry Rubber Company Award**, *University of Vermont.*

2004–2008 **Presidential Scholarship for academic excellence**, *University of Vermont.*

RESEARCH SUPPORT

ONGOING

2020–2025 **A Multisectoral Strategy to Address Persistent Drivers of the HIV Epidemic in East Africa (SEARCH-Sapphire)**
- Funding: NIH-NIAID U01AI150510 (MPIs: Petersen, Havlir, Kamya)
- Role: Sub-Award Principal Investigator

2018–2023 **Strategic antiretroviral therapy and HIV testing for youth in rural Africa (SATURN)**
- Funding: NIH-NICHD UG3HD096915 (PI: Havlir)
- Role: Sub-Award Principal Investigator

2018–2023 **Paternal preconception phthalates and reproductive health - potential mediation through sperm DNA methylation**
- Funding: NIH-NIEHS R01ES028298 (PI: Pilsner)
- Role: Co-Investigator

2016–2023 **Simplified Isoniazid Preventive Therapy Strategy to Reduce TB Burden (SPIRIT)**
- Funding: NIH-NIAID R01AI125000 (PI: Havlir)
- Role: Sub-Award Principal Investigator

COMPLETED

2017–2020 **Leadership & Operations Center (LOC), AIDS Clinical Trials Group (ACTG); Sustainable East Africa Research in Community Health (SEARCH)**
- Funding: NIH-NIAID UM1AI068636 (PI: Currier; Havlir)
- Role: Sub-Award Principal Investigator

2015–2017 **Methods to Advance the HIV Prevention Research Agenda**
- Funding: NIH-NIAID R37AI051164 (PI: Degruttola)
- Role: Post-Doctoral Scholar

2012–2017 **Reducing Failure-to-Initiate ART: Streamlined ART Start Strategy (START)**
- Funding: NIH-NIAID U01AI099959 (PI: Havlir)
- Role: Co-Investigator

PUBLICATIONS- On Google Scholar.

*DENOTES MENTEE; **DENOTES EQUAL CONTRIBUTION

PEER-REVIEWED PUBLICATIONS

[1] J. Nugent* and **L.B. Balzer**. A demonstration of Modified Treatment Policies to evaluate shifts in mobility and COVID-19 case rates in U.S. counties. *Am J Epidemiol*, In Press, 2022.

[2] E. Kakande*, C. Christian*, **L.B. Balzer**, A. Owaraganise, et al. A mid-level health manager intervention to promote uptake of Isoniazid Preventive Therapy in Uganda: a cluster randomized trial.

Lancet HIV, In Press, 2022.

[3] J.R. Pilsner, H. Saddiki*, B.W. Whitcomb, ..., and **L.B. Balzer**. Sperm epigenetic clock associates with pregnancy outcomes in the general population. *Hum Reprod*, In Press, 2022.

[4] F. Mwangwa, E.D. Charlebois, J. Ayieko*, W. Olio, ..., **L.B. Balzer**, et al. Overlapping life-events are associated with lower rates of treatment and virologic suppression among youth with HIV in Uganda and Kenya. *AIDS Care*, In Press, 2022.

[5] A. Phillips, A. Bershteyn, P. Revill, L. Bansi-Matharu, ..., **L.B. Balzer**, et al. Cost-effectiveness of oral pre-exposure prophylaxis (PrEP) for all during seasons of risk: Re-thinking the role of PrEP in generalized HIV epidemics in sub-Saharan Africa. *Lancet HIV*, In Press, 2022.

[6] **L.B. Balzer**, M. van der Laan, J. Ayieko*, M. Kamya, et al. Two-stage TMLE to reduce bias and improve efficiency in cluster randomized trials. *Biostatistics*, kxab043, 2021.

[7] G. Yang*, **L.B. Balzer**, and D. Benkeser. Causal inference methods for vaccine sieve analysis with effect modification. *Stat Med*, In Press, 2021.

[8] A. Wong* and **L.B. Balzer**. State-level masking mandates and COVID-19 outcomes in the United States: A demonstration of the causal roadmap. *Epidemiology*, In Press, 2021.

[9] A. Jakubowski, J. Kabami*, **L.B. Balzer**, J. Ayieko*, et al. Universal HIV treatment leads to significant improvements in socio-economic well-being in rural Kenya and Uganda. *Lancet Global Health*, 10(1):e96–e104, 2022.

[10] M.D. Hickey*, J. Ayieko*, A. Owaraganise, N. Sim, **L.B. Balzer**, et al. Effect of a patient-centered hypertension delivery strategy on all-cause mortality: Secondary analysis of SEARCH, a community-randomized trial in rural Kenya and Uganda. *PLoS Med*, 18(9):e1003803, 2021.

[11] T. Snyder*, J. Ravenhurst, E.Y. Cramer, N.G. Reich, **L.B. Balzer**, et al. Serological surveys to estimate cumulative incidence of SARS-CoV-2 infection in adults (Sero-MAss study), Massachusetts, July-August 2020- a mail-based cross-sectional study. *BMJ open*, In Press, 2021.

[12] J. Ayieko*, M.L. Petersen, J. Kabami*, F. Mwangwa, F. Opel, M. Nyabuti, E.D. Charlebois, C.A. Koss, **L.B. Balzer**, et al. Uptake and outcomes of a novel community-based post-exposure prophylaxis (PEP) program in rural Kenya and Uganda. *J Acquir Immune Defic Syndr*, 24(e25670), 2021.

[13] B. Jewell, **L.B. Balzer**, T.D. Clark, E.D. Charlebois, et al. Predicting HIV incidence in the SEARCH trial: A mathematical modeling study. *J Acquir Immune Defic Syndr*, 87(4):1024–1031, 2021.

[14] C.A. Koss*, D.V. Havlir, J. Ayieko*, ..., and **L.B. Balzer**. HIV incidence after pre-exposure prophylaxis initiation among women and men at elevated HIV risk: A population-based study in rural Kenya and Uganda. *PLoS Med*, 18(2):e1003492, 2021.

[15] K. Potter, B. Masteller, and **L. Balzer**. Examining obedience training as a physical activity intervention for dog owners: Findings from the stealth pet obedience training (SPOT) pilot study. *Int J Environ Res Public Health*, 18(902):1–11, 2021.

[16] M.R. Kamya, M.L Petersen, ..., **L.B. Balzer**, and D.V. Havlir. SEARCH Human Immunodeficiency Virus (HIV) streamlined treatment intervention reduces mortality at a population level in men with low CD4 counts. *Clin Infect Dis*, ciaa1782, 2021.

[17] O.A. Oluwayiose, H. Wu, H. Saddiki*, B.W. Whitcomb, **L.B. Balzer**, et al. Sperm DNA methylation mediates the association of male age on reproductive outcomes among couples undergoing infertility treatment. *Scientific Reports*, 11:3216, 2021.

[18] Y. Chen*, L. Brown, G. Chamie, ..., and **L.B. Balzer**. Social networks and HIV care outcomes in rural Kenya and Uganda. *Epidemiology*, 32:551–559, 2021.

[19] M.N. Nyabuti, M.L. Petersen, E.A. Bukusi, M.R. Kamya, F. Mwangwa, J. Kabami*, N. Sang, E.D. Charlebois, **L.B. Balzer**, et al. Characteristics of HIV seroconverters in the setting of universal test and treat: Results from the SEARCH trial in rural Uganda and Kenya. *PloS ONE*, 16(2):e0243167, 2021.

[20] K. Potter, R.T Marcotte, G.J. Petrucci, C. Rajala, C. Saleeba, D.E. Linder, and **L.B. Balzer**. Examining the contribution of dog walking to total daily physical activity among dogs and their owners. *J Meas Phys Behav*, 4(2):97–101, 2021.

[21] M.D. Hickey*, J. Ayieko*, D. Kwarisiima, F.J. Opel, A. Owaraganise, **L.B. Balzer**, et al. Improved viral suppression with streamlined care in the SEARCH study. *JAIDS*, 85(5):571–578, 2020.

[22] J. Kabami*, **L.B. Balzer**, H. Saddiki*, J. Ayieko*, et al. Population-level viral suppression among pregnant and post-partum women in a universal test and treat trial. *AIDS*, 34:1407–1415, 2020.

[23] **L.B. Balzer**, J. Ayieko*, D. Kwarisiima, G. Chamie, et al. Far from MCAR: obtaining population-level estimates of HIV viral suppression. *Epidemiology*, 31(5):620–627, 2020.

[24] J.L Marcus, W. Sewell, **L.B. Balzer****, and D.S. Krakower**. Artificial intelligence and machine learning for HIV prevention: Emerging approaches to ending the epidemic. *Curr HIV/AIDS Rep*, 17:171–179, 2020.

[25] A.N. Muiru*, E. Charlebois, **L.B. Balzer**, D. Kwarisiima, et al. The epidemiology of chronic kidney disease (CKD) in rural East Africa: a population-based study. *PloS ONE*, 15(3):e0229649, 2020.

[26] L.B. Brown, **L.B. Balzer**, J. Kabami*, D. Kwarisiima, et al. The influence of social networks on antiretroviral therapy initiation among HIV-infected antiretroviral therapy-naïve youth in rural Kenya and Uganda. *J Acquir Immune Defic Syndr*, 83(1):9–15, 2020.

[27] C. Marquez*, M. Atukunda, **L.B. Balzer**, G. Chamie, et al. The age-specific burden and household and school-based predictors of child and adolescent tuberculosis infection in rural uganda. *PloS ONE*, 15(1):e0228102, 2020.

[28] C.A. Koss*, E.D. Charlebois, J. Ayieko*, D. Kwarisiima, J. Kabami*, M. Atukunda, **L.B. Balzer**, et al. Uptake, engagement, and adherence to pre-exposure prophylaxis offered after population HIV testing in rural Kenya and Uganda: 72 week interim observational data from the SEARCH trial. *Lancet HIV*, 7(4):E249–E261, 2020.

[29] S. Puryear*, **L. Balzer**, J. Ayieko*, D. Kwarisiima, J.A. Hahn, et al. Associations between alcohol use and HIV care cascade outcomes among adults undergoing population-based HIV testing in East Africa. *AIDS*, 34(3):405–413, 2020.

[30] D.J. Heller, **L.B. Balzer**, D. Kazi, E. Charlebois, D. Kwarisiima, et al. Hypertension testing and treatment in Uganda and Kenya through the SEARCH study: an implementation fidelity and outcome evaluation. *PloS ONE*, 15(1):e0222801, 2020.

[31] M.P. Fox, J.K. Edwards, R. Platt, and **L. Balzer**. The critical importance of asking good questions: The role of epidemiology doctoral training programs. *Am J Epidemiol*, 189(4):261–264, 2020.

[32] H. Saddiki* and **L.B. Balzer**. A primer on causality in Data Science. *Journal de la Société Française de Statistique*, 161(1):67–90, 2020.

[33] **L. Balzer**, D. Havlir, M. Kamya, G. Chamie, et al. Machine learning to identify persons at high-risk of HIV acquisition in rural Kenya and Uganda. *Clinical Infectious Diseases*, 71(9):2326–2333, 2020.

[34] K Potter, J.E. Teng, B. Masteller, C. Rajala, and **L.B. Balzer**. Examining how dog 'acquisition' affects physical activity and psychosocial well-being: Findings from the BuddyStudy pilot trial. *Animals*, 9(666), 2019.

[35] D.V. Havlir, **L.B. Balzer**, E. Charlebois, T.D. Clark, D. Kwarisiima, J. Ayieko*, J Kabami*, et al. HIV testing and treatment with the use of a community health approach in rural Africa. *New England Journal of Medicine*, 381:219–229, 2019.

[36] V.A. Shetty, **L.B. Balzer**, K.H. Geissler, and D.L. Chin. Association between specialist office visits and health expenditures in accountable care organizations. *JAMA Netw Open*, 2(7):e196796, 2019.

[37] D. Kwarisiima, M. Atukunda, A. Owaraganise, G. Chamie, T. Clark, J. Kabami*, V. Jain, D. Byonanebye, F. Mwangwa, **L.B. Balzer**, et al. Hypertension control in integrated HIV and chronic disease clinics in Uganda in the SEARCH study. *BMC Public Health*, 19(511), 2019.

[38] J. Ayieko*, G. Chamie, **L. Balzer**, D. Kwarisiima, J. Kabami*, et al. Mobile, population-wide, hybrid HIV testing strategy increases number of children tested in rural Kenya and Uganda. *Pediatric Infectious Disease Journal*, 37(12):1279–1281, 2018.

[39] S.B. Shade, T. Osmand, A. Luo, R. Aine, E. Assurah, B. Mwebaza, D. Mwai, A. Owaraganise, F. Mwangwa, J. Ayieko*, D. Black, L.B. Brown, T.D. Clark, D. Kwarisiima, H. Thirumurthy, C.R. Cohen, E.A. Bukusi, E.D. Charlebois, **L. Balzer**, et al. Costs of streamlined HIV care delivery in rural Ugandan and Kenyan clinics in the SEARCH study. *AIDS*, 32(15):2179, 2018.

[40] **L.B. Balzer**, W. Zheng, M.J. van der Laan, M.L. Petersen, and the SEARCH Collaboration. A new approach to hierarchical data analysis: Targeted maximum likelihood estimation for the causal effect of a cluster-level exposure. *Statistical Methods in Medical Research*, 28(6):1761–1780, 2018.

[41] A. Jakubowski, K. Snyman, D. Kwarisiima, N. Sang, R. Burger, **L. Balzer**, et al. High CD4 counts associated with better economic outcomes for HIV-positive adults and their HIV-negative household members in the SEARCH trial. *PloS ONE*, 13(6):e0198912, 2018.

[42] A.I. Naimi and **L.B. Balzer**. Stacked generalization: An introduction to Super Learning. *European Journal of Epidemiology*, 33(5):459–464, 2018.

[43] J.A. Labrecque, J.K. Kaufman, **L.B. Balzer**, R.F. Maclehose, et al. Effect of a conditional cash transfer program on length-for-age and weight-for-age in Brazilian infants at 24 months using doubly-robust, targeted estimation. *Social Science & Medicine*, 211:9–15, 2018.

[44] J. Ayieko*, M.L. Petersen, E. Wafula, A. Van Rie, W. Opudo, T.D. Clark, M.R. Kamya, **L.B. Balzer**, et al. Effect of a patient-centered phone call by a clinical officer at time of HIV testing or re-contact on linkage to care in rural Kenya. *Open Forum of Infectious diseases*, 5(1):ofy126, 2018.

[45] C.A. Koss*, J. Ayieko*, F. Mwangwa, A. Owaraganise, D. Kwarisiima, **L.B. Balzer**, et al. Early adopters of HIV preexposure prophylaxis in a population-based combination prevention study in rural Kenya and Uganda. *Clinical Infectious Diseases*, 67(15):1853–1860, 2018.

[46] D. Perriat, **L. Balzer**, R. Hayes, S. Lockman, F. Walsh, et al. Comparative assessment of five large-scale studies of universal HIV testing and treatment in Sub-Saharan Africa. *Journal of the International AIDS Society*, 21(1), 2018.

[47] W. Zheng, **L. Balzer**, M. van der Laan, M. Petersen, and the SEARCH Collaboration. Constrained binary classification using ensemble learning: an application to cost-efficient targeted PrEP strategies. *Statistics in Medicine*, 37(2):261–279, 2018.

[48] M. Petersen, **L. Balzer**, D. Kwarsiima, N. Sang, G. Chamie, J. Ayieko*, et al. Association of implementation of a universal testing and treatment intervention with HIV diagnosis, receipt of antiretroviral therapy, and viral suppression among adults in East Africa. *JAMA*, 317(21):2196–2206, 2017.

[49] **L. Balzer**, P. Staples, J. Onnela, and V. DeGruttola. Using network-based simulations to evaluate the effect of adding targeted PrEP to an ongoing treatment-as-prevention trial. *Clinical Trials*, Jan:1–10, 2017.

[50] **L. Balzer**, M. van der Laan, M. Petersen, and the SEARCH Collaboration. Adaptive pre-specification in randomized trials with and without pair-matching. *Statistics in Medicine*, 35(25):4528–4545, 2016.

[51] M.A. Gianfrancesco, **L. Balzer**, K.E. Taylor, L. Trupin, et al. Genetic risk and longitudinal disease activity in systemic lupus erythematosus using targeted maximum likelihood estimation. *Genes and Immunity*, 17:358–362, 2016.

[52] **L. Balzer**, M. Petersen, M.J. van der Laan, and the SEARCH Collaboration. Targeted estimation and inference of the sample average treatment effect in trials with and without pair-matching. *Statistics in Medicine*, 35(21):3717–3732, 2016.

[53] **L. Balzer**, J. Ahern, S. Galea, and M.J. van der Laan. Estimating effects with rare outcomes and high dimensional covariates: Knowledge is power. *Epidemiologic Methods*, 5(1):1–18, 2016.

[54] M. Pearl, **L. Balzer**, and J. Ahern. Targeted estimation of marginal absolute and relative associations in case-control data: An application in social epidemiology. *Epidemiology*, 27:512–517, 2016.

[55] D. Kwarisiima, **L. Balzer**, D. Heller, P. Kotwani*, et al. Population-based assessment of hypertension epidemiology and risk factors among HIV-positive and general populations in rural Uganda. *PLoS ONE*, 11(5):e0156309, 2016.

[56] G. Chamie, T.D. Clark, J. Kabami*, K. Kadede, E. Ssemmondo, R. Steinfeld, G. Lavoy, D. Kwarisiima, N. Sang, V. Jain, H. Thirumurthy, T. Liegler, **L. Balzer**, et al. A hybrid mobile HIV testing approach for population-wide HIV testing in rural East Africa. *Lancet HIV*, January, 2016.

[57] J. Ahern, **L. Balzer**, and S. Galea. The role of outlet density and norms in alcohol use disorder. *Drug and Alcohol Dependence*, 151:144–150, 2015.

[58] **L.B. Balzer**, M.L. Petersen, M.J. van der Laan, and the SEARCH Consortium. Adaptive pair-matching in randomized trials with unbiased and efficient effect estimation. *Statistics in Medicine*, 34(6):999–1011, 2015.

[59] P. Kotwani*, **L. Balzer**, D. Kwarisiima, T.D. Clark, et al. Evaluating linkage to care for hypertension after community-based screening in rural Uganda. *Tropical Medicine & International Health*, 19(4):459–468, 2014.

[60] G. Chamie, D. Kwarisiima, T.D. Clark, J. Kabami, V. Jain, E. Geng, **L.B. Balzer**, et al. Uptake of community-based HIV testing during a multi-disease health campaign in rural Uganda. *PloS ONE*, 9(1):e84317, 2014.

[61] V. Jain, D.M. Byonanebye, T. Liegler, D. Kwarisiima, G. Chamie, J. Kabami, M.L. Petersen, **L.B. Balzer**, et al. Changes in Population HIV RNA Levels in Mbarara, Uganda During Scale-Up of HIV Antiretroviral Therapy Access. *JAIDS*, 65(3):327–332, 2014.

[62] M. van der Laan, **L. Balzer**, and M. Petersen. Adaptive Matching in Randomized Trials and Observational Studies. *Journal of Statistical Research*, 46(2):113–156, 2012.

PEER-REVIEWED COMMENTARIES & LETTERS

[63] **L.B. Balzer** and T. Westling. Demystifying statistical inference when using machine learning in causal research. *Am J Epidemiol*, In Press, 2021.

[64] **L.B. Balzer** and M.L. Petersen. Machine learning in causal inference: *How do I love thee? Let me count the ways. Am J Epidemiol*, 190(8):1483–1487, 2021.

[65] **L.B. Balzer** and F. Dominici. Randomization versus real-world evidence. *New England Journal of Medicine*, 338(4):e21, 2020.

[66] **L.B. Balzer**. "All generalizations are dangerous, even this one." - Alexandre Dumas [Commentary]. *Epidemiology*, 28(4):562–566, 2017.

REGISTERED STATISTICAL ANALYSIS PLANS

[67] **L.B. Balzer**, J. Nugent*, D.V. Havlir, and G. Chamie. Statistical analysis plan for health outcomes in phase 1 of the SEARCH-IPT study. *Pre-registered Protocol: https://arxiv.org/abs/2111.10467*, 2021.

[68] **L.B. Balzer**, D.V. Havlir, J. Schwab, M.J. van der Laan, M.L. Petersen, and the SEARCH Collaboration. Statistical analysis plan for SEARCH Phase I: Health outcomes among adults. *Pre-registered Protocol: https://arxiv.org/abs/1808.03231*, 2018.

[69] **L.B. Balzer**, J. Schwab, M.J. van der Laan, and M.L. Petersen. Evaluation of progress towards the UNAIDS 90-90-90 HIV care cascade: A description of statistical methods used in an interim analysis of the intervention communities in the SEARCH study. *Pre-registered Protocol: http://biostats.bepress.com/ucbbiostat/paper357/*, 2017.

BOOK CHAPTERS

[70] **L.B. Balzer**, M.L. Petersen, and M.J. van der Laan. The sample average treatment effect. In M.J. van der Laan and S. Rose, editors, *Targeted Learning in Data Science*. Springer, 2018.

[71] **L.B. Balzer**, M.J. van der Laan, and M.L. Petersen. Data-adaptive estimation in cluster randomized trials. In M.J. van der Laan and S. Rose, editors, *Targeted Learning in Data Science*. Springer, 2018.

[72] **L. Balzer**, M. Petersen, and M.J. van der Laan. Tutorial for causal inference. In P. Buhlmann, P. Drineas, M. Kane, and M. van der Laan, editors, *Handbook of Big Data*. Chapman & Hall/CRC, 2016.

OTHER PUBLICATIONS

[73] **L.B. Balzer** and B.W. Whitcomb. Coronavirus deaths in San Francisco vs. New York: What causes such big differences in cities' tolls? *The Conversation: https://theconversation.com/coronavirus-deaths-in-san-francisco-vs-new-york-what-causes-such-big-differences-in-cities-tolls-138399*, June 2020.

MANUSCRIPTS UNDER PEER-REVIEW OR REVISION

[74] M.D. Hickey*, A. Owaraganise, ..., **L.B. Balzer**, M.R. Kamya, and D.V. Havlir. Effect of a one-time financial incentive on linkage to chronic hypertension care in Kenya and Uganda: A randomized controlled trial. 2022.

[75] H. Saddiki* and **L.B. Balzer**. Screening with Super Learner: a model-agnostic, ensemble approach to high-dimensional feature selection. 2021.

[76] A. Benitez*, M.L. Petersen, M. van der Laan, ..., and **L.B. Balzer**. Defining and estimating effects in cluster randomized trials: A methods comparisons. *https://arxiv.org/abs/2110.09633*, 2021.

[77] K. Sabapathy, **L.B. Balzer**, J. Larmarange, L. Block, et al. Achieving 90-90-90 – comparative analysis of four large community randomised trials delivering universal testing and treatment to reduce HIV transmission in sub-Saharan Africa. 2021.

[78] J. Moyer*, **L.B. Balzer**, and K. Kleinman. Association between institutional affiliation and journal publication for U.S.-based authors in applied statistics from 2006-2015 using targeted maximum likelihood estimation. 2021.

[79] K.H. Shutta*, **L.B. Balzer**, D.M. Scholtens, and R. Balasubramanian. An ensemble approach to gaussian graphical model estimation. 2021.

[80] **L.B. Balzer**, A.K. Wong*, C. Marquez*, et al. A national assessment of the timing of COVID-19 shelter-in-place orders and mortality. 2020.

[81] S.A. Lauer*, N.G. Reich, and **L.B. Balzer**. The covariate-adjusted residual estimator and its use in both randomized trials and observational settings. *https://arxiv.org/abs/1910.11397*, 2019.

SOFTWARE: https://github.com/LauraBalzer

- `Comparing_CRT_Methods`: `R` code for a paper entitled ""Defining and Estimating Effects in Cluster Randomized Trials: A Methods Comparison." (Last update: Jan 17, 2022)
- `TwoStageTMLE`: `R` code for a paper entitled "Two-Stage TMLE to Reduce Bias and Improve Efficiency in Cluster Randomized Trials." (Last update: Nov 3, 2021)
- `DemystifyML`: `R` code for a paper entitled "Demystifying Statistical Inference When Using Machine Learning in Causal Research." (Last update: Mar 28, 2022)
- `MachineLearningLove`: `R` code for a paper entitled "Machine Learning in Causal Inference: How do I love thee? Let me count the ways." (Last update: Jan 24, 2021)
- `Simulated_paradox`: `R` code for a paper entitled "Coronavirus deaths in San Francisco vs. New York: What causes such big differences in cities' tolls" (Last update: May 20, 2020)
- `Far-From-MCAR`: `R` code for a paper entitled "Far from MCAR: obtaining population-level estimates of HIV viral suppression" (Last update: Feb 25, 2020)

- `HierarchicalTMLE`: `R` code to generate simulated data and implement the hierarchical TMLEs (Last update: Oct 17, 2019)
- `SEARCH_Analysis_Adults`: `R` code for evaluating adult HIV incidence, health, & implementation outcomes for the first phase of the SEARCH Study (Last update: June 25, 2019)
- `ISES_ISEE_Workshop`: `R` code for workshop entitled "Introduction to Double Robust Estimation for Causal Inference" (Last update: Oct 2, 2018)
- `TMLE-for-SATE`: `R` code and simulations to illustrate estimation and inference for the sample average treatment effect (SATE) in trials with and without pair-matching. (Last update: Apr 17, 2017)
- `AdaptivePrespecification`: `R` code and simulations to illustrate estimation and inference using a pre-specified, yet data-adaptive approach, in randomized trials. (Last update: Apr 17, 2017)
- `On-Generalizability`: `R` code to implement simulations in the Invited Commentary: 'All generalizations are dangerous, even this one.'- Dumas by Balzer (Last update: Mar 12, 2017)
- `Estimating-90-90-90-in-SEARCH`: `R` code to evaluate the UNAIDS 90/90/90 Coverage in the SEARCH Study. (Last update: Feb 25, 2017)

ACADEMIC INSTRUCTION - Limited to last 5 years

- **Graduate Course - Introduction to Causal Inference**
  This course presents a general framework for causal and statistical inference: 1) clear statement of the research question, 2) definition of the causal model and parameter of interest, 3) assessment of identifiability - that is, linking the causal effect to a parameter estimable from the observed data distribution, 4) choice and implementation of modern estimators including G-computation, inverse probability weighting, and TMLE with Super Learning, and 5) interpretation of findings.
  - *ASA's Causality in Statistics Education Award* - "individual or team that does the most to enhance the teaching and learning of causal inference in introductory statistics courses"
  - Course materials available at www.ucbbiostat.com

  2021 **Instructor** - *UMass Amherst* [3 credits]
  2019 **Instructor** - *UMass Amherst* [3 credits]
  2018 **Instructor** - *UMass Amherst* [3 credits]
  2017 **Instructor** - *UMass Amherst* [3 credits]

- **Graduate Experimental Seminar - Ethical Challenges in Data Science**
  This seminar was created in direct response to Black Lives Matter and to our students' desire to learn how scientific ethics applied to the work of Biostatisticians and Epidemiologists. With an overall aim to improve equity in public health, medicine, and beyond, our topics of discussion included ethical frameworks in statistics; recognizing and eliminating biases in machine learning algorithms; how to handle race, gender, and ethnicity in our analyses; the importance and challenges to reproducible and transparent research; whistleblowing, and COVID-19 vaccine distribution.
  2020 **Instructor** - *UMass Amherst* [1 credit]

- **Graduate Experimental Course - Targeted Learning in Biomedical Big Data**
  The course aims to actively learn and apply the core principles of the Targeted Learning methodology, which (1) generalizes machine learning to any estimand of interest; (2) obtains an optimal estimator of the given estimand, grounded in theory; (3) integrates the state-of-the-art ensemble machine learning

techniques; and (4) provides formal statistical inference in terms of confidence intervals and testing of specified null hypotheses of interest.

2019 **Instructor** - *UMass Amherst* [3 credits]

- **Undergraduate Experimental Seminar - Data Science to Improve Public Health**
  Ever wonder why Data Scientists have been labeled the "sexiest job of the 21st Century"? Is Big Data really a revolution or simply hype? Why is it so hard to move from correlation to causation? Drawing on real examples from Public Health, this course will answer these and other pressing questions. Students will be introduced to a formal research framework, including specifying a well-defined scientific question, formally representing background knowledge and uncertainties, and finally answering their question using modern methods in machine learning and causal inference.

  2018 **Instructor** - *UMass Amherst* [1 credit]

- **Graduate Experimental Seminar - Hot Topics in Data Science**
  The seminar will be a mixture of guest lectures from leading researchers in academia and industry (e.g., Google) as well as group presentations on top papers in Machine Learning and Causal Inference. We will also have dedicated time for professional development, including an interactive workshop "Professional and Multi-disciplinary Communication Strategies" and the discussion of tenure-track job searches.

  2018 **Instructor** - *UMass Amherst* [1 credit]

WORKSHOPS & SHORT COURSES

- **Introduction to Parametric and Semi-parametric Estimators for Causal Inference**
  This workshop will introduce participants to the Causal Roadmap for research questions. The focus is on estimation with parametric G-computation, inverse probability of weighting, and targeted maximum likelihood estimation (TMLE) with Super Learner.

  2022 **Instructor** - *Society for Epidemiologic Research*, Chicago, IL [Upcoming]
  2021 **Instructor** - *Society for Epidemiologic Research*, San Diego, CA
  2020 **Instructor** - *Society for Epidemiologic Research*, Boston, MA
  2019 **Instructor** - *NICHD*, Bethesda, MD
  2018 **Instructor** - *SERtalks*, Boston, MA
  Instructor - *ISES-ISEE*, Ottawa, Canada
  Instructor - *Society for Epidemiologic Research*, Baltimore, MD
  Instructor - 32^{nd} *New England Statistics Symposium*, Amherst, MA
  Instructor - *SERtalks*, Los Angeles, CA
  2017 **Instructor** - *SERtalks*, New York, NY
  Instructor - *University of Utah, School of Medicine*, Salt Lake City, UT
  2016 **Instructor** - *Society for Epidemiologic Research*, Miami, FL
  Instructor - *SERtalks*, Minneapolis, MN
  Instructor - *University of California, San Francisco*, San Francisco, CA
  2015 **Instructor** - *Society for Epidemiologic Research*, Denver, CO

- **Causal inference for multiple time point (longitudinal) exposures**
  This workshop applies the Causal Roadmap to estimate the causal effects with multiple intervention variables, such as the cumulative effect of an exposure over time and the effects on survival-type out-

comes with right-censoring. We will cover longitudinal causal models, identification in the presence of time-dependent confounding, and estimation of joint treatment effects using G-computation, inverse probability weighting (IPW), and targeted maximum likelihood estimation (TMLE) with Super Learner.

2022 **Instructor** - *Society for Epidemiologic Research*, Chicago, IL [Upcoming]
Instructor - *American Causal Inference Conference*, Berkeley, CA [Upcoming]
Instructor - *Society for Epidemiologic Research*, Virtual [Upcoming]
2021 **Instructor** - *Society for Epidemiologic Research*, San Diego, CA
Instructor - *American Statistical Association*, Virtual
2020 **Instructor** - *Society for Epidemiologic Research*, Boston, MA
2019 **Instructor** - *Society for Epidemiologic Research*, Minneapolis, MN
2017 **Instructor** - *X Congresso Brasileiro de Epidemiologia*, Florianópolis, Brazil

GUEST LECTURES - Limited to last 5 years

Spr2022 **UMass Amherst** - Topics in Biostatistics & Data Science in Public Health
UC Berkeley - Methods in Social Epidemiology
Spr2021 **UMass Amherst** - Topics in Biostatistics & Data Science in Public Health
Spr2020 **Amherst College** - Epidemiology and Causal Inference
UC Berkeley - Methods in Social Epidemiology
Spr2019 **UC Berkeley** - Methods in Social Epidemiology
Fa2018 **UMass Amherst** - Analysis of Categorical Data in Public Health
Spr2018 **UMass Amherst** - Advanced Epidemiological Methods
UC Berkeley - Methods in Social Epidemiology
Mount Holyoke College -Topics in Biostatistics
Spr2017 **UC Berkeley** - Methods in Social Epidemiology

PHD & MS DISSERTATION COMMITTEES

Doctoral Committee Chair

Current **Joshua Nugent**, *Biostatistics*, Sept 2022.

Past **Hachem Saddiki**, *Biostatistics*, Sept 2021, Post-doc at Mount Sinai Hospital.
Guandong Yang, *Biostatistics*, Sept 2021, Senior data scientist at Traveler's insurance.
Stephen Lauer, *Biostatistics*, Feb 2019, Director of data science at Certilytics.
(Co-advised with Dr. Nicholas Reich)

Doctoral Committee Member

Current **Herb Susmann**, *Biostatistics*, Sept 2022, Co-mentor on his Chateaubriand Fellowship.
Gabriel Reif, *Education*, May 2022.

Past **Jon Moyer**, *Biostatistics*, Dec 2021, Post-doc at the NIH.
Kate Hoff Shutta, *Biostatistics*, Sept 2021, Post-doc at Harvard.

Joshua Freeman, *Epidemiology*, Sept 2021, Post-doc at the NIH.
Graham (Casey) Gibson, *Biostatistics*, Sept 2021, Post-doc at University of Texas Austin.
Alejandra Benitez, *Biostatistics (UC Berkeley)*, June 2020, Statistician at GenenTech.
Emily Peterson, *Biostatistics*, Dec 2019, Post-doc at Emory University.

Masters Committee Chair

Past **Angus Wong**, *Biostatistics*, May 2021, Data scientist at Scipher Medicine.

Masters Committee Member

Current **Keith Allison**, *Biostatistics*, May 2022.

Past **Gregory Guranich**, *Biostatistics*, Aug 2019, Researcher at Alkema Lab.
Caroline Kusiak, *Biostatistics*, Sept 2018, Verily (Google).

Other

Past **Sam Witty**, *Computer Science - Synthesis project advisor*, Oct 2020.
Julianne Higgins, *Mathematics (Undergraduate) - Advisor on their Lee-SIP scholarship & CHC honors research assistant fellowship*, May 2019.

MENTORING OF EARLY CAREER INVESTIGATORS

I am deeply committed to mentoring early stage investigators, especially those working in Medicine and Public Health. Below is a list of persons for whom I serve or have served as their primary statistical mentor. I provide in-depth consultations on their research projects, including, but not limited to, the study design, the statistical analyses, as well as the drafting, editing, submission, and response to reviewers for manuscripts and scientific grants.

Current **James Ayieko, MBChB PhD**, *Kenya Medical Research Institute, Nairobi, Kenya.*
Elijah Kakande, MD, *Infectious Diseases Research Collaboration, Kampala, Uganda.*
Jane Kabami, MPH, *Makerere University College of Health Sciences, Kampala, Uganda.*
Carina Marquez, MD, *UC San Francisco, USA.*
Catherine Koss, MD, *UC San Francisco, USA.*
Mathew Hickey, MD, *UC San Francisco, USA.*
Canice Christian, MSc, *UC San Francisco, USA.*
Sarah Puryear, MD, *UC San Francisco, USA*, Co-mentor on her K23: Understanding alcohol misuse & its impact on viral suppression in youth living with HIV in East Africa.
Carrie Nobles, PhD, *UMass Amherst, USA*, Co-mentor on her K01 application: Exposure to Ambient Air Pollution and Temperature During Spermatogenesis (Under review).

Past **James Peng, MS**, *UC San Francisco, USA.*
Anthony Muiru, MD, *UC San Francisco, USA.*
Prashant Kotwani, MD, *UC San Francisco, USA.*
Yiqun Chen, *UC Berkeley, USA.*

DIVERSITY, EQUITY, & INCLUSION STATEMENT

Big change – protecting and promoting health, globally and locally – only happens when we embrace diversity, partner hand-in-hand with communities, and invest in training.

- My applied research focuses on eliminating HIV and improving community health in sub-Saharan Africa. To achieve this bold research agenda and maximize impact, I work on interdisciplinary and multinational teams to conduct community-based participatory research.
- I am deeply committed to capacity building and the training of scholars from resource-limited settings. By working side-by-side, we develop the optimal research approach, where almost always "optimal" is not driven solely by statistical principles. Instead, we prioritize the potential for highest impact, while recognizing the real-life challenges of working in resource-limited settings. To date, more than half of my publications are co-authored by at least one colleague from sub-Saharan Africa.
- In Fall 2020, I developed and led a new graduate seminar entitled "Ethical Challenges in Data Science". This seminar was created in direct support of Black Lives Matter and in response to my students' demand to learn about ethics in our work as Biostatisticians and Epidemiologists.
- My courses and workshops attract students from diverse backgrounds and disciplines, including Public Health, Computer Science, Sociology, Statistics, Public Policy, and Medicine. This presents an interesting challenge - how to teach statistical concepts clearly and non-technically, yet rigorously. I embrace this diversity by presenting concepts at several levels and providing references to more advanced topics. I also facilitate interdisciplinary collaborations through team-based learning activities.
- I am a mentor in the National Alliance for Doctoral Studies in the Mathematical Sciences! and provide daily informal mentorship, especially for women in STEM at UMass and beyond.

SERVICE TO THE PROFESSION - Limited to last 5 years

Ongoing

2022-present **Board Member**, *Society of Epidemiologic Research Conference.*
2020-present **Speed Mentoring**, *Society of Epidemiologic Research Conference.*
2019-present **Mentor**, *National Alliance for Doctoral Studies in the Mathematical Sciences!.*
2019-present **Education Committee**, *Society of Epidemiologic Research.*
2018-present **SER Champion**, *Society of Epidemiologic Research.*
2017-present **Representative**, *Universal Test & Treat Trials Consortium (UT3C).*
2015-present **Poster judge**, *Society of Epidemiologic Research Conference.*
2015-present **Abstract review**, *Society of Epidemiologic Research Conference.*

Past

2022 **Abstract review**, *American Causal Inference Conference.*
2021 **Speed Mentoring**, *Voices of Data Science Conference (UMass Amherst).*
2018–2019 **Local organizing committee**, *StatFest 2018.*
2018 **Invited speaker**, *Career panel at Stoneleigh-Burnham.*
2018 **Poster judge**, *New England Statistics Symposium.*
2015-2017 **Organizer**, *Quantitative Group for Research on Infectious Diseases.*

REVIEW OF SCIENTIFIC GRANTS, REPORTS, & JOURNALS

Grants & Reports: Patient-Centered Outcomes Research Institute (PCORI)
Medical Research Council (UK), Methodology Research Panel
Netherlands Organisation for Health Research and Development (ZonMw)

Editorial Board: *International Journal of Biostatistics*
Journal of Causal Inference
Biostatistics

Reviewer: *American Journal of Epidemiology; Annals of Epidemiology; Biometrics; BMC Medical Research Methodology; BMJ Open; Clinical Infectious Diseases; Epidemiology; International Journal of Epidemiology; Journal of Causal Inference; Journal of the International AIDS Society; Journal of Rheumatology; PLoS ONE; Social Science & Medicine - Population Health; Statistics and Probability Letters; Statistics in Medicine; Statistical Communications in Infectious Diseases; Statistical Methods in Medical Research*

SERVICE TO THE UNIVERSITY & BEYOND IN RESPONSE TO THE COVID-19 PANDEMIC

2020-2021 **Primary Biostatistician for the campus COVID-19 response**.

UMass COVID-19 Dashboard, *Director*.

COVID-19 video updates, *Writer & Producer*.

Public Health Response Team, *Member*.

Epidemiology Advisory Committee, *Member*.

Local Epidemic Modeling for Management & Action (LEMMA), *Biostatistician*.

SERVICE TO THE DEPARTMENT & SCHOOL

Ongoing

2020–present **Search committee for Epidemiology faculty**, *Member*.
2019–present **Graduate Affairs Committee**, *Chair*.
2018–present **UMass Causality Lab**, *Director*.
2017–present **Academic advisor**, *2 PhD students & 11 MS students for AY21/22*.

Past

2020–2021 **Departmental seminar series**, *Organizer*.
2019–2020 **MS degree development & recruitment**, *Committee member*.
2018–2020 **Curriculum**, *Committee member*.
2018–2019 **Departmental Personnel**, *Committee member*.
2017–2018 **Departmental seminar series**, *Organizer*.
2017–2018 **Admissions**, *Committee member*.
2017–2018 **Student outreach**, *Committee member*.
2017–2018 **21st Annual SPHHS Research Day**, *Abstract & Poster judge*.

INVITED RESEARCH SEMINARS - Limited to last 5 years

1. RAND Statistics Group: "Machine Learning & Causal Inference to Improve Community Health in East Africa", Apr2022

2. Johns Hopkins University Causal Inference Working Group: "Evaluating Community-Based Interventions with Two-Stage TMLE", Apr2022

3. Data Sciences Speaker Series at the University of Toronto (DSSSatUofT): "Machine Learning & Causal Inference to Improve Community Health in East Africa", Feb2022

4. Center for Inference & Dynamics of Infectious Diseases: "Causal Inference with Missing & Dependent Data for HIV prevention", Jan2022

5. University of North Carolina - Causal Inference Research Group: "Evaluating Community-Based Interventions with Two-Stage TMLE", Nov2021

6. University of California, Berkeley - School of Public Health: "Improving community health in East Africa with causal inference and machine learning", Oct2021

7. Emory University - Department of Epidemiology: "Improving community health in East Africa with causal inference and machine learning", Sep2021

8. Thomas Jefferson University - Biostatistics Seminar Series: "Causal inference to improve missing data control", Apr2021

9. Massachusetts Institute of Technology (MIT) - PACT All-Hands Meeting: "Causal inference, Machine Learning, & Missing Data in Infectious Disease Research & Response', Apr2021

10. University of Massachusetts Amherst - Data meets Healthcare Seminar Series: "Missing data, causal inference, & infectious diseases", Mar2021

11. Emory University - Department of Biostatistics and Bioinformatics: "Improving community health in East Africa with causal inference and machine learning", Nov2020

12. University of Massachusetts Amherst - Dean's Forum: "Public Health & Health Sciences Showcase: Answering the Call in a Time of Pandemic", Oct2020

13. University of Massachusetts Amherst - Epidemiology Seminar Series: "COVID-19 Research Highlights from the Biostatistics & Epidemiology Department", Sep2020

14. Georgetown University - Department of Biostatistics, Bioinformatics and Biomathematics (Bio3) Seminar Series: "Causal inference and machine learning in HIV prevention", Mar2020

15. Delaware ACCEL - Tech Talk Seminar Series: "Machine Learning for Causal Inference", Mar2020

16. Brown University - Department of Epidemiology: "Causal inference to improve community health in East Africa", Feb2020

17. University of Massachusetts, Amherst - Kinesiology Department: "Optimizing the design & analysis of randomized trials", Feb2019

18. University of California, Los Angeles - UCLA Statistics Seminar: "Design & Analysis of Pragmatic, Cluster Randomized Trials", Feb2019

19. University of Massachusetts, Amherst - Data Science for Health Lab: "Ensemble & Targeted Learning for HIV Prevention & Treatment", Jul2018.

20. University of Massachusetts, Amherst - Statistics & Probability Seminar: "A new approach to hierarchical data analysis: TMLE for the causal effect of a cluster-level exposure", Apr2018.

21. University of Massachusetts Medical School - Quantitative Methods Core Methods Seminars: "Targeted Learning to evaluate the effects of community-based interventions: the SEARCH trial & HIV prevention in East Africa", Feb2018.

22. Amherst College Statistics & Data Science Colloquia: "Estimating the Impact of Cluster-Based Interventions: the SEARCH trial and HIV prevention in East Africa", Feb2018.

23. Yale University - Public Health Modeling Concentration Seminar Series: "Causal inference with cluster-level exposures: HIV prevention in East Africa", Jan2018.

24. University of Massachusetts, Amherst - Computational Social Science Institute: "Estimating the Effects of Community-based Interventions: SEARCH Trial & HIV prevention in East Africa", Dec2017.

25. 5College Stats & Data Science Research Bytes (Amherst, MA): "Machine Learning & Causal Inference for HIV Prevention & Treatment, Nov2017.

26. University of Massachusetts, Amherst - Statistics Working Group: "Why Bother with Causal Inference?", Sept2017.

CONFERENCE PRESENTATIONS - Limited to last 5 years

*DENOTES MENTEE OR STUDENT; **DENOTES EQUAL CONTRIBUTION
Since many conferences do not distinguish between "invited" vs. "contributed", all talks are labeled "Oral".

1. C. Marquez*, . . . , **L. Balzer**. Impact of a community-wide HIV test and treat intervention on population level TB transmission in rural Uganda
   2022 *24th International AIDS Conference*, Montreal, Canada (Oral)
   [Upcoming]

2. M. Hickey*, . . . , **L. Balzer**, M. Kamya, D. Havlir. Effect of a one-time financial incentive on linkage to chronic hypertension care in Kenya and Uganda: A randomized controlled trial
   2022 *24th International AIDS Conference*, Montreal, Canada (Poster)
   [Upcoming]

3. **L. Balzer**. Session chair: The Real World: Epidemiology
   2022 *Society for Epidemologic Research*, Chicago, IL (Oral)

4. A. Castro Rivadeneira*, F. English*, L. Russo*, **L. Balzer**. Physical activity & sleep: an exercise in weighting.
   2022 *Society for Epidemologic Research*, Chicago, IL (Poster)

5. A. Benitez*, M.L. Petersen, M.J. van der Laan, ..., **L. Balzer**. Defining and Estimating Effects in Cluster Randomized Trials: A Methods Comparison
   2022 *American Causal Inference Conference*, Berkeley, CA (Oral)

6. J.R. Nugent* & **L. Balzer** for the SEARCH Collaboration. Blurring cluster randomized trials and observational studies: Evaluating the SEARCH intervention on incident TB in rural Uganda
   2022 *American Causal Inference Conference*, Berkeley, CA (Oral)

7. A. Castro Rivadeneira*, F. English*, L. Russo*, **L. Balzer**. Physical activity & sleep: an exercise in weighting.
   2022 *UMass SPHHS Research Day*, Amherst, MA (Poster)

8. E. Kakande*, C. Christian*, **L. Balzer**, J.R. Nugent*, *et al.* Cluster RCT of a mid-level manager intervention to promote IPT uptake in Uganda
   2022 *Conference on Retroviruses and Opportunistic Infections*, Denver, CO (Oral)

9. M. Hickey*, ..., **L. Balzer****, J. Ayieko** Weight change following switch to dolutegravir in rural Kenya
   2022 *Conference on Retroviruses and Opportunistic Infections*, Denver, CO (Poster)

10. **L. Balzer**. On Cluster Randomized Trials
    2021 *Postnatal prophylaxis to reach elimination of vertical transmission*, WHO & IMPAACT (International Maternal Pediatric Adolescent AIDS Clinical Trials Network) (Oral)

11. **L. Balzer**. Lessons learned from the SEARCH Study
    2021 *Postnatal prophylaxis to reach elimination of vertical transmission*, WHO & IMPAACT (International Maternal Pediatric Adolescent AIDS Clinical Trials Network) (Oral)

12. **L. Balzer**. Machine Learning to Improve the Analysis of CRTs
    2021 *Current Developments in Cluster Randomized Trials & Stepped Wedge Designs*, Queen Mary University of London (Oral)

13. J. Nugent* & **L. Balzer**. Using a modified treatment policy approach to examine associations between shifts in mobility and COVID-19 case rates in U.S. counties
    2021 *New England Statistics Symposium*, Providence, RI (Oral)

14. **L. Balzer**, A. D'Amour, L. Hu, N. Kilbertus, R. Nabi, & U. Shalit. Conference Co-organizer at International Conference on Machine Learning (ICML2021)
    2021 *The Neglected Assumptions in Causal Inference*, Virtual (Oral)

15. **L. Balzer**. Conference Panelist
    2021 *A gentle introduction to targeted learning in RCTs*, Ghent University, Belgium (Oral)

16. J. Nugent* & **L. Balzer**. Examining shifts in mobility on COVID-19 case rates in U.S. counties: A modified treatment policy approach
    2021 *Society for Epidemologic Research*, San Diego, CA (Poster)

17. A. Wong* & **L. Balzer**. Evaluating public masking mandates on COVID-19 growth rates in U.S. states
    2021 *Society for Epidemologic Research*, San Diego, CA (Poster)

18. **L. Balzer**. Challenges and Solutions in the Design and Analysis of Cluster Randomized Trials
    2021 *Food and Drug Administration (FDA)*, Virtual (Oral)

19. **L. Balzer**. Machine Learning & Causal Inference for Infectious Disease Prevention.
    2021 *Danish Epidemiological Society Annual Meeting*, Nyborg, Denmark (Oral)

20. **L. Balzer**. Discussant: Data and Methods for Causal Inference.
    2021 *Population Association of America*, St. Louis, MO (Oral)

21. **L. Balzer**. Panel Discussant: How can epidemiologists ask better questions & get better answers?
    2021 *2nd Annual UNC Epidemiology Zoomposium*, Virtual (Oral)

22. **L. Balzer** & the SEARCH Collaboration. Causal inference and machine learning to control for missing data in infectious disease research and response.
    2021 *Measuring Development 2021: Emerging Data & Methods in Global Health Research*, Center for Effective Global Action (CEGA) & the World Bank (Oral)

23. C.A. Koss*, J.R. Nugent*, . . . , and **L. Balzer**. Social networks predict PrEP uptake in SEARCH Study in rural Kenya and Uganda
    2021 *Conference on Retroviruses and Opportunistic Infections*, Virtual (Oral)

24. **L. Balzer** & the SEARCH Collaboration. Missing data, causal inference, and infectious diseases.
    2021 *Voices of Data Science*, UMass Amherst (Oral)

25. **L. Balzer**. Session chair: On non-casual causality: networks, mediation, generalizability & more
    2020 *Society for Epidemologic Research*, Virtual (Oral)

26. H. Saddiki* & **L. Balzer**. High-dimensional feature selection with Super Learner
    2020 *Society for Epidemologic Research*, Virtual (Oral)

27. **L. Balzer** & the SEARCH Collaboration. Far from MCAR: obtaining population-level estimates of HIV viral suppression.
    2020 *Joint Statistical Meetings*, Philadelphia, PA (Oral)

28. **L. Balzer**, C.A. Koss*, & the SEARCH Collaboration. Machine learning to identify persons at high-risk of HIV acquisition in rural Kenya and Uganda
    2020 *SER-SPC Journal Club*, Virtual (Oral)

29. C.A. Koss*, D.V. Havlir, J. Ayieko*, . . . , **L. Balzer**. Lower than Expected HIV Incidence among Men and Women at Elevated HIV Risk in a Population-based PrEP Study in Rural Kenya and Uganda: Interim Results from the SEARCH Study.
    2020 *23rd International AIDS Conference* , Virtual (Oral)

30. J. Peng*, J. Kabami*, J. Ayieko*, . . . , **L. Balzer**, *et al.* Geographic hotspots of high population HIV viremia and association with HIV incidence in a universal test-and-treat setting in rural Uganda and Kenya.
    2020 *23rd International AIDS Conference* , Virtual (Oral)

31. F. Mwangwa, E.D. Charlebois, J. Ayieko*, . . . , **L. Balzer**, *et al.* Overlapping Significant Life Events are Associated with HIV Viral Non-Suppression among Youth in Clinics in Rural East Africa.
    2020 *23rd International AIDS Conference* , Virtual (Oral)

32. S. Gupta, J. Kabami*, G. Chamie, N. Sang, D. Kwarisiima, D. Black, **L. Balzer**, *et al.* Population-level HIV-free infant survival in the SEARCH trial.

2020 *Conference on Retroviruses and Opportunistic Infections*, Boston, MA (Late-breaker Oral)

33. M.D. Hickey*, J. Ayieko*, D. Kwarisiima, F.J. Opel, A.Owaraganise, **L. Balzer**, *et al.* Improved time in care and viral suppression with streamlined care in the SEARCH Study.
2020 *Conference on Retroviruses and Opportunistic Infections*, Boston, MA (Oral)

34. L. Brown, Y. Chen*, **L. Balzer**, G. Chamie, J. Ayieko, *et al.* Using social networks to reach individuals with low CD4 at high risk of death.
2020 *Conference on Retroviruses and Opportunistic Infections*, Boston, MA (Poster)

35. S.B. Puryear*, A. Mucunguzi, **L. Balzer**, J. Kironde, J.A. Hahn, *et al.* Alcohol use is associated with incident TB infection in HIV+ and HIV- Ugandan adults.
2020 *Conference on Retroviruses and Opportunistic Infections*, Boston, MA (Poster)

36. Y. Chen*, G. Chamie, D. Kwarisiima, **L. Balzer**, J. Kabami*, *et al.* HIV+ persons in rural Uganda with fewer social connections have lower HIV suppression.
2020 *Conference on Retroviruses and Opportunistic Infections*, Boston, MA (Poster)

37. C.S. Camlin, E.D. Charlebois, M.L. Petersen, **L. Balzer**, T.B. Neilands, *et al.* Metrics of mobility by sex are associated with HIV incidence in rural Kenya & Uganda.
2020 *Conference on Retroviruses and Opportunistic Infections*, Boston, MA (Poster)

38. S.B. Puryear*, D. Kwarisiima, J. Ayieko*, J.A. Hahn, A. Mucunguzi, S. Ogachi, **L. Balzer**, *et al.* SEARCH Test & Treat intervention improves viral suppression among hazardous drinkers.
2020 *Conference on Retroviruses and Opportunistic Infections*, Boston, MA (Poster)

39. J. Ahern and **L. Balzer**, Estimation approaches for causal inference: parametric and semi-parametric estimators.
2020 *SERtalks-Texas*, Austin, TX (Oral)

40. **L. Balzer**. Far from MCAR: Machine learning to flexibly adjust for missing data.
2019 *Dean's Symposium "Statistics and the Life Sciences: Creating a Healthier World"*, Boston University (Oral)

41. **L. Balzer**. Machine Learning for Causal Inference.
2019 *Kidney Week 2019*, Washington, D.C. (Oral)

42. C. Marquez*, Y. Chen*, M. Atukunda, J. Kironde, C. Chamie, **L. Balzer**, *et al.* Social network characteristics are associated with prevalent tuberculosis infection among people living with and without HIV in nine communities in rural Uganda.
2019 *22nd International AIDS Conference*, Mexico City, Mexico (Oral)

43. C. Koss*, J. Ayieko*, D. Kwarisiima, M. Atukunda, **L. Balzer**, *et al.* PrEP uptake, engagement, and adherence following population-wide HIV testing in rural Kenya and Uganda in the SEARCH Study.
2019 *22nd International AIDS Conference*, Mexico City, Mexico (Poster)

44. S. Puryear*, J. Ayieko*, D. Kwarisiima, J. Hahn, **L. Balzer**, *et al.* Increased levels of current alcohol use are associated with worse HIV care cascade outcomes among HIV-positive adults in rural Kenya and Uganda in the SEARCH Trial.
2019 *22nd International AIDS Conference*, Mexico City, Mexico (Poster)

45. **L. Balzer**. Biologically or socially transmitted outcomes? Be (un)certain of your uncertainty!
    2019 *Society for Epidemiologic Research*, Minneapolis, MN (Oral)

46. **L. Balzer**. Super Learning vs. traditional approaches for population-based HIV risk assessment in rural East Africa.
    2019 *Society for Epidemiologic Research*, Minneapolis, MN (Oral)

47. **L. Balzer**. An overview of Big Data: Promises and potential pitfalls.
    2019 *The Association for Research in Vision and Ophthalmology (ARVO) Conference 2019*, Vancouver, Canada (Oral)

48. **L. Balzer**. Data-adaptive estimation to control for missing data, to increase efficiency, and for risk prediction in the SEARCH Study
    2019 *NIAID Conference: Statistical challenges & opportunities in HIV/AIDS research in the era of getting-to-zero HIV infections*, Philadelphia, PA (Oral)

49. J. Kabami*, H. Saddiki* , J. Ayieko*, D. Kwarisiima, ..., **L. Balzer****, G. Chamie**. SEARCH intervention increases viral suppression among pregnant and postpartum women.
    2019 *Conference on Retroviruses and Opportunistic Infections*, Seattle, WA (Poster)

50. G. Chamie, N. Sang, D. Kwarisiima, J. Kabami*, ... **L. Balzer**, *et al.* Yield of HIV testing and re-engagement of key populations in Uganda and Kenya.
    2019 *Conference on Retroviruses and Opportunistic Infections*, Seattle, WA (Poster)

51. L. Brown, **L. Balzer**, J. Kabami*, D. Kwarisiima, N. Sang, J. Ayieko*, *et al.* Social networks and tie strength predict outcomes of HIV+ youth in SEARCH trial.
    2019 *Conference on Retroviruses and Opportunistic Infections*, Seattle, WA (Poster)

52. H. Thirumurthy A. Jakubowski, Y. He, J. Kabami*, D. Kwarisiima, N. Sang **L. Balzer**, *et al.* Socioeconomic impacts of universal antiretroviral therapy in the SEARCH trial.
    2019 *Conference on Retroviruses and Opportunistic Infections*, Seattle, WA (Poster)

53. D. Kwarisiima, Y. Mwinike, J. Ayieko*, A. Mucunguzi, W. Olilo, **L. Balzer**, *et al.* Hypertension control in integrated HIV/NCD clinics in the SEARCH study.
    2019 *Conference on Retroviruses and Opportunistic Infections*, Seattle, WA (Poster)

54. M. Kamya, M.L. Petersen, D. Kwarisiima, J. Ayieko*, N. Sang, J. Kabami, T.D. Clark, E.D. Charlebois, **L. Balzer**, *et al.* SEARCH intervention reduces mortality at a population-level in men with low CD4 count.
    2019 *Conference on Retroviruses and Opportunistic Infections*, Seattle, WA (Oral)

55. **L. Balzer**. Pragmatic Trials To Bridge Efficacy to Effectiveness.
    2018 *HIV prevention efficacy trials design of the future (HVTN Conference)*, Seattle, WA (Oral)

56. J. Higgins*, **L. Balzer**. Towards Generalizability: Recovering from Non-Random Participant Selection and Measurement
    2018 *Research Experiences for Undergraduates (REU) Poster Symposium*, Amherst, MA (Poster)

57. D. Havlir, E. Charlebois, **L. Balzer** T. Clark, D. Kwarisiima, J. Ayieko*, J. Kabami*, *et al.* SEARCH community cluster randomized study of HIV "test and treat" using multi-disease approach and streamlined care in rural Uganda and Kenya.
    2018 *21st International AIDS Conference*, Amsterdam, Netherlands (Late-breaker Oral)

58. B. Jewell, **L. Balzer**, T. Clark, E. Charlebois, S.R. Maddali, M. Kamya, D.V. Havlir, M.L. Petersen, A. Bershteyn. Modeling Projected HIV Incidence in the SEARCH Study of Treatment as Prevention in East Africa.
    2018 *21st International AIDS Conference*, Amsterdam, Netherlands (Poster)

59. **L. Balzer**. Introduction to and overview of the distinction between generalizability and transportability.
    2018 *Society for Epidemiologic Research*, Baltimore, MD (Oral)

60. **L. Balzer**. Multilevel Madness.
    2018 *Society for Epidemiologic Research*, Baltimore, MD (Poster)

61. **L. Balzer**. Session Chair & Discussant: Modern Methods for Missingness.
    2018 *New England Statistics Symposium*, Amherst, MA (Oral)

62. D. Kwarisiima, J. Kabami*, N. Sang, . . . , **L. Balzer**, *et al.* Who remains untested following near-universal (>95%) population HIV testing?
    2018 *Conference on Retroviruses and Opportunistic Infections*, Boston, MA (Oral)

63. C. Marquez*, A Mucunguzi, G. Chamie, **L. Balzer**, *et al.* Mobility predicts incident TB infection in children & adults in rural Uganda
    2018 *Conference on Retroviruses and Opportunistic Infections*, Boston, MA (Poster)

64. J. Ayieko*, E. Wafula, W. Opudo, C. Cohen, E. Bukusi, T. Clark, **L. Balzer**, *et al.* Phone call from clinical officer at HIV testing/re-contact improves linkage to care
    2018 *Conference on Retroviruses and Opportunistic Infections*, Boston, MA (Poster)

65. S. Lauer*, **L. Balzer**, E. Ray, S. Iamsirithaworn, J. Lessler, N. Reich. Building on forecasting models to assess the impact of an intervention.
    2017 *Epidemics 6*, Sitges, Spain (Poster)

66. **L. Balzer**. Causal inference in a big data world - The roadmap
    2017 *X Congresso Brasileiro de Epidemiologia*, Florianópolis, Brazil (Oral)

67. **L. Balzer**. The roadmap - a systematic approach from the causal question through the statistical analysis and to impact.
    2017 *Joint Statistical Meetings*, Baltimore, MD (Oral)

SELECTED NEWS ARTICLES - Limited to last 5 years

- Spot Scholar: A Global Impact on Public Health, Research Next, Mar 19, 2021.
- Balzer Partners with Student Affairs and Campus Life to Provide Weekly COVID Updates, Inside UMass, Mar 19, 2021

- Social networks key to PrEP uptake in rural Kenya and Uganda, aidsmap, Mar 11, 2021.
- Balzer Among International Team Receiving $23 Million Grant to Combat HIV in East Africa, Inside UMass, Nov 19, 2020.
- PrEP prevents an estimated three-quarters of HIV infections in people at risk in large African study, aidsmap, Jul 4, 2020.
- Balzer and International Team Evaluate Community Health Approach to Universal HIV Testing and Treatment in Rural East Africa, Inside UMass, Oct 1, 2019.
- Intensive Anti-H.I.V. Efforts Meet With Mixed Success in Africa, The New York Times, July 18, 2019.
- Balzer Receives Distinguished Young Alumna Award, The SPHHS E-Newsletter, June 13, 2019.
- Balzer Discusses Trial Design at HIV Prevention Symposium, Inside UMass, Nov 19, 2018.
- Balzer, International Team Lead Community-Based HIV Trial in East Africa, Inside UMass, Aug 7, 2018.
- 'Test and Treat' Programs Reduce HIV Infections: Multi-disease attack shows benefits across the board, MedPage Today, July 27, 2018.
- Multi-disease health fairs, universal "test and treat" help East African communities achieve HIV benchmarks, by National Institutes of Health, July 25, 2018.