

Forrest W. Crawford

Yale School of Public Health
Department of Biostatistics
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Education

PhD Biomathematics, University of California Los Angeles (2012)

- Advisor: Marc A. Suchard

MS Biomathematics, University of California Los Angeles (2009)

BA Neuroscience, Oberlin College (2002)

Professional Experience

Senior Statistician (2023 – present)

RAND Corporation, Santa Monica, CA

- Led teams working on biosecurity, AI, emerging technology
- Briefed high-level US Government policymakers

Adjunct Associate Professor (2024 – present)

Associate Professor with Tenure, Biostatistics, Statistics & Data Science, Operations Management, Ecology & Evolutionary Biology (2020 – 2024)

Associate Professor (2017-2020)

Assistant Professor (2012-2017)

Yale University, New Haven, CT

Other Yale affiliations: Center for Interdisciplinary Research on AIDS, Computational Biology and Bioinformatics inter-departmental program, Institute for Network Science, Public Health Modeling Concentration

- Received NIH Director's New Innovator Award (\$1.5MM)
- Built and led a research lab of quantitative scientists working on methodology, modeling, causal inference, with applications in biomedicine, infectious disease epidemiology, public health, social science.
- Published 80+ peer-reviewed articles; H-index 31, 4k+ citations.
- Gave 100+ invited presentations at university/industry seminars, legislative briefings, conferences
- Advised/mentored 6 postdoctoral scholars, 7 PhDs, 3 MS students; placed trainees in tenure-track faculty positions, Google, Meta/Facebook, Amazon, Netflix, CDC, FDA, McKinsey
- Led data science and modeling for Connecticut and Department of Public Health during COVID-19 pandemic
- Taught computational statistics, stochastic modeling, network analysis, causal inference, genetics; instructor rating 4.7/5
- Served as Associate Editor of four top Statistics journals

Senior Scientist (2021 – present)

Whitespace LTD, Alexandria, VA

- Led R&D and built analysis tools for geospatial intelligence startup

Scientific Consultant / Subject Matter Expert (2018 – present)

I work with private sector and government clients to solve problems in biomedicine, epidemiology, diagnostics, market forecasting, national security, and human rights. Selected clients:

- OpenAI (San Francisco, CA)
- Twist Bioscience / Revelar Biotherapeutics (South San Francisco, CA)

- Metron Inc (Reston, VA)
- Global Diagnostic Systems (Potomac, MD)
- Re-open Connecticut Advisory Committee, Connecticut Department of Public Health
- US Department of Labor, Project to Accelerate Action Against Child Labor and Forced Labor
- US Department of State, NORC (Bethesda MD), Global Fund to End Modern Slavery

Graduate Student Researcher, University of California Los Angeles (2009-2012)

Los Angeles, CA

- Applied mathematics coursework
- Computational biology and evolutionary phylogenetics research

Research Associate, Department of Radiology, University of California San Francisco (2002-2006)

San Francisco, CA

- Magnetic resonance imaging software development
- MR and spectroscopic image acquisition and processing
- Statistical computing
- Neuro-oncology research

Peer-Reviewed Publications

- [1] A Attal-Juncqua, S Popescu, J Tarangelo, G Griffin, R Moritz, and **Forrest W. Crawford**. “Mapping the Informal Bioeconomy: Assessing the Current Landscape and Opportunities for Reinforcing Biosafety and Biosecurity.” *RAND* (2025).
- [2] A Djorno and **Forrest W. Crawford**. “Mutually exciting point processes for crowdfunding platform dynamics.” *Annals of Applied Statistics* (2025).
- [3] A Berke, **Forrest W. Crawford**, T Webster, J Smith, S Zakaria, and S Nevo. “Data and AI-Enabled Biological Design.” *RAND* (2025).
- [4] G L Epstein, **Forrest W. Crawford**, and S Nevo. “Policy Options to Prevent the Creation of Mirror Organisms.” *RAND* (2025).
- [5] D Luckey, S Duhachek Muggy, T Frey, D Stebbins, T Rissman, B Espinosa, D Tapia, Jr G McKelvey, N Pokhriyal, J Dawson, S Hughes, M Sandler, R Bakhshi, M Kepe, G Kirkwood, S W Denton, D DeSmet, M Makino, E Guest, S Beaghley, S Genc, M Miller, S A Miner, B Del Castello, **Forrest W. Crawford**, J Lee, C Strickland, S D Bhatt, J Vahedi, L Grek, V Barrer, Jr. R Insuasti, J Lashendock, D Roberts, A Esparza Hartunian, S Walsh, W Shumate, E Brennan, T Liggett, K Jia, A K Kochhar, J Smith, and J Ryseff. “Mitigating Risks at the Intersection of Artificial Intelligence and Chemical and Biological Weapons.” *RAND* (2025).
- [6] **Forrest W. Crawford**, K Webster, GL Epstein, D Roberts, J Fair, and S Nevo. “Securing commercial nucleic acid synthesis.” *RAND* (2024).
- [7] N Josephs, S Peng, and **Forrest W. Crawford**. “Communication network dynamics in a large organizational hierarchy.” *Annals of Applied Statistics* **18** (2024).
- [8] N Josephs, D Feehan, and **Forrest W. Crawford**. “A sample size formula for network scale-up surveys.” *Sociological Methods and Research* **53**, 1252–1289 (2024).
- [9] H Lu, **Forrest W. Crawford**, G S Gonsalves, and L E Grau. “Geographic and temporal trends in fentanyl-involved deaths in Connecticut, 2009-2019.” *Annals of Epidemiology* **79**, 32–38 (2023).
- [10] H Aroke, A Buchanan, N Katenka, **Forrest W. Crawford**, T Lee, ME Halloran, and C Latkin. “Evaluating the Mediating Role of Recall of Intervention Knowledge in the Relationship between a Peer-Driven Intervention and HIV Risk Behaviors among People Who Inject Drugs.” *AIDS & Behavior* **27**, 578–590 (2023).
- [11] J Sun, L Van Baelen, E Plettinckx, and **Forrest W. Crawford**. “Dependence-Robust Confidence Intervals for Capture–Recapture Surveys.” *Journal of Survey Statistics and Methodology* p. smac031 (2022).
- [12] M Erlendsdottir and **Forrest W. Crawford**. “Randomized controlled trials of biomarker targets.” *Clinical Trials* **20**, 47–58 (2022).

- [13] D J Eck, O Morozova, and **Forrest W. Crawford**. “Randomization for the susceptibility effect of an infectious disease intervention.” *Journal of Mathematical Biology* **85** (2022).
- [14] L V Orr, **Forrest W. Crawford**, K Khoshnood, D Khouri, F M Fouad, D W Seal, and R Heimer. “Sociodemographic Characteristics and HIV Risk Behaviors of Native-Born and Displaced Syrian Men and Transgender Women Who Have Sex with Men in Lebanon.” *AIDS & Behavior* **26**, 4004–4011 (2022).
- [15] T Nguyen-Anh Tran, N B Wikle, F Yang, H Inam, S Leighow, B Gentileco, P Chan, E Albert, E R Strong, K Brinda, J R Pritchard, L C Madoff, C M Brown, W P Hanage, E M Hanks, **Forrest W. Crawford**, and M F Boni. “SARS-CoV-2 attack rate and population immunity in southern New England, March 2020 - May 2021.” *JAMA Network Open* (2022).
- [16] O Prunas, J L Warren, **Forrest W. Crawford**, S Gazit, T Patalon, D M Weinberger, and V E Pitzer. “Vaccination with BNT162b2 reduces transmission of SARS-CoV-2 to household contacts in Israel.” *Science* **375**, 1151–1154 (2022).
- [17] **Forrest W. Crawford**, S Jones, M Cartter, S G Dean, J L Warren, Zehang Li, J Barbieri, J Campbell, P Kenney, T Valleau, and O Morozova. “Impact of close interpersonal contact on COVID-19 incidence: evidence from one year of mobile device data.” *Science Advances* **8** (2022). (Winner of the Innovative Tradecraft Competition at the US Geospatial Intelligence Foundation 2021 meeting).
- [18] O Schultes, V Clarke, A D Paltiel, M Cartter, L Sosa, and **Forrest W. Crawford**. “COVID-19 Testing and Case Rates and Social Contact Among Residential College Students in Connecticut During the 2020–2021 Academic Year.” *JAMA Network Open* **12**, e2140602 (2021).
- [19] A Zulli, A Pan, S Bart, **Forrest W. Crawford**, E Kaplan, M Cartter, A Ko, M Sanchez, D Cozens, D Brackney, C Brown, and J Peccia. “Predicting daily COVID-19 case rates from SARS-CoV-2 RNA concentrations across a diversity of wastewater catchments.” *FEMS Microbes* **2** (2021).
- [20] O Morozova, Z Li, and **Forrest W. Crawford**. “One year of modeling COVID-19 transmission to support policymakers in Connecticut.” *Scientific Reports* **11**, 20271 (2021).
- [21] X Cai, W W Loh, and **Forrest W. Crawford**. “Identification of causal intervention effects under contagion.” *Journal of Causal Inference* **9**, 9–38 (2021). (Winner of best paper award, ASA Section on Statistics in Epidemiology).
- [22] K Khoshnood, FM Shebl, D Khoury, E Aara, R Barbour, **Forrest W. Crawford**, J Mokhbat, A Parpia, and R Heimer. “Reported History and Correlates of Drug Overdose among People Who Inject Drugs in Lebanon.” *Eastern Mediterranean Health Journal* **27**, 571–579 (2021).
- [23] J Chang, **Forrest W. Crawford**, and EH Kaplan. “Repeat SARS-CoV-2 Testing Models for Residential College Populations.” *Health Care Management Science* **24**, 305–318 (2021).
- [24] E Plettinckx, **Forrest W. Crawford**, J Antoine, L Gremeaux, and L Van Baelen. “How many people injected drugs over the last 12 months in Belgium? Estimates based on a capture-recapture and multiplier method.” *Drug and Alcohol Dependence* **219**, 108436 (2021).
- [25] L Orr, F Shebl, R Heimer, K Khoshnood, R Barbour, D Khouri, E Aaraj, and **Forrest W. Crawford**. “Violence and discrimination against men who have sex with men in Lebanon: the role of international displacement and migration.” *Journal of Interpersonal Violence* **36**, 10267–10284 (2021).
- [26] S Li, **Forrest W. Crawford**, and M Gerstein. “Using sigLasso to optimize cancer mutation signatures jointly with sampling likelihood.” *Nature Communications* **11**, 1–12 (2020).
- [27] D M Weinberger, J Chen, T Cohen, **Forrest W. Crawford**, F Mostashari, D Olson, V E Pitzer, N G Reich, M Russi, L Simonsen, A Watkins, and C Viboud. “Estimation of excess deaths associated with the COVID-19 pandemic in the United States, March to May 2020.” *JAMA Internal Medicine* **180**, 1336–1344 (2020).
- [28] H Shirado, **Forrest W. Crawford**, and N A Christakis. “Collective communication and behaviour in response to uncertain ‘Danger’ in network experiments.” *Proceedings of the Royal Society A* **476**, 20190685 (2020). (Dr. Shirado received the 2020 Marvin B. Sussman Best Dissertation Award in part for this paper).
- [29] N E Dean, P Gsell, R Brookmeyer, **Forrest W. Crawford**, C A Donnelly, S S Ellenberg, T R Fleming, M E Halloran, P Horby, T Jaki, P R Krause, I M Longini, S Mulangu, J Muyembe-Tamfum, M C Nason, P G Smith, R Wang, A M Henao-Restrepo, and V De Gruttola. “Creating a Framework for Conducting Randomized Clinical Trials during Disease Outbreaks.” *New England Journal of Medicine* **382**, 1366–1369 (2020).

- [30] S Cheng, D J Eck, and **Forrest W. Crawford**. “Estimating the size of a hidden finite set: Large-sample behavior of estimators.” *Statistics Surveys* **14**, 1–31 (2020).
- [31] O Morozova, **Forrest W. Crawford**, T Cohen, A D Paltiel, and F L Altice. “Cost-effectiveness of expanding the capacity of opioid agonist treatment in Ukraine: Dynamic modeling analysis.” *Addiction* **115**, 437–450 (2020).
- [32] **Forrest W. Crawford**, F M Marx, J Zelner, and T Cohen. “Transmission modeling with regression adjustment for analyzing household-based studies of infectious disease: application to tuberculosis.” *Epidemiology* **31**, 238–247 (2020). (Runner-up, 2020 Rothman Prize, Epidemiology).
- [33] Z R Li, E Xie, **Forrest W. Crawford**, J L Warren, K McConnell, J T Copple, T Johnson, and G S Gonsalves. “Suspected heroin-related overdoses incidents in Cincinnati, Ohio: A spatiotemporal analysis.” *PLoS Medicine* **16**, e1002956 (2019).
- [34] O Morozova, R E Booth, S Dvoriak, K Dumchev, Y Sazonova, T Salyuk, and **Forrest W. Crawford**. “Divergent estimates of HIV incidence among people who inject drugs in Ukraine.” *International Journal of Drug Policy* **73**, 156–162 (2019).
- [35] **Forrest W. Crawford**, O Morozova, A L Buchanan, and D Spiegelman. “Interpretation of the individual effect under treatment spillover.” *American Journal of Epidemiology* **188**, 1407–1409 (2019).
- [36] L Zeng, J Li, and **Forrest W. Crawford**. “Empirical evidence of recruitment bias in a network study of people who inject drugs.” *American Journal of Drug and Alcohol Abuse* **45**, 460–469 (2019).
- [37] G S Gonsalves and **Forrest W. Crawford**. “Dynamics of the HIV outbreak and response in Scott County, Indiana, 2011–2015: a modelling study.” *The Lancet HIV* **5**, 569–577 (2018).
- [38] P M Aronow, **Forrest W. Crawford**, and J R Zubizarreta. “Confidence intervals for linear unbiased estimators under constrained dependence.” *Electronic Journal of Statistics* **12**, 2238–2252 (2018).
- [39] J Wu, **Forrest W. Crawford**, D A Kim, D Stafford, and N A Christakis. “Exposure, hazard, and survival analysis of diffusion on social networks.” *Statistics in Medicine* **37**, 2561–2585 (2018). (Winner of 2017 WNAR Outstanding Written Paper Award).
- [40] Y Liu and **Forrest W. Crawford**. “Estimating dose-specific cell division and apoptosis rates from chemosensitivity experiments.” *Scientific Reports* **8**, 1–8 (2018).
- [41] L S Ho, **Forrest W. Crawford**, and M A Suchard. “Direct likelihood-based inference for discretely observed stochastic compartmental models of infectious disease.” *Annals of Applied Statistics* **12**, 1993–2021 (2018).
- [42] O Morozova, T Cohen, and **Forrest W. Crawford**. “Risk ratios for contagious outcomes.” *Journal of the Royal Society Interface* **15**, 20170696 (2018).
- [43] **Forrest W. Crawford**, L S Ho, and M A Suchard. “Computational methods for birth-death processes.” *Wiley Interdisciplinary Reviews Computational Statistics* **10**, e1423 (2018).
- [44] **Forrest W. Crawford**, P M Aronow, L Zeng, and J Li. “Identification of homophily and preferential recruitment in respondent-driven sampling.” *American Journal of Epidemiology* **187**, 153–160 (2018).
- [45] J E Pachankis, M L Hatzenbuehler, K Wang, C L Burton, **Forrest W. Crawford**, J C Phelan, and B G Link. “The Burden of Stigma on Health and Wellbeing: A Taxonomy of Concealment, Course, Disruptiveness, Aesthetics, Origin, and Peril across 93 Stigmas.” *Personality and Social Psychology Bulletin* **44**, 451–474 (2018).
- [46] G Gunabushanam, J D Millet, E Stilp, **Forrest W. Crawford**, R L McNamara, and L M Scutt. “Computer-assisted detection of tardus parvus waveforms on Doppler ultrasound.” *Ultrasound* **26**, 81–92 (2018).
- [47] L S Ho, J Xu, **Forrest W. Crawford**, V N Minin, and M A Suchard. “Birth/birth-death processes and their computable transition probabilities with biological applications.” *Journal of Mathematical Biology* **76**, 911–944 (2018).
- [48] G S Gonsalves, **Forrest W. Crawford**, P D Cleary, E H Kaplan, and A D Paltiel. “An Adaptive Approach to Locating Mobile HIV Testing Services.” *Medical Decision Making* **38**, 262–272 (2018).
- [49] **Forrest W. Crawford**, J Wu, and R Heimer. “Hidden population size estimation from respondent-driven sampling: a network approach.” *Journal of the American Statistical Association* **113**, 755–766 (2018).
- [50] A R Bazazi, A Vijay, **Forrest W. Crawford**, R Heimer, A Kamarulzaman, and F L Altice. “HIV testing and awareness of HIV status among people who inject drugs in Greater Kuala Lumpur, Malaysia.” *AIDS Care* **30**,

59–64 (2018).

- [51] J Wu, **Forrest W. Crawford**, M Raag, R Heimer, and A Uusküla. “Using data from respondent-driven sampling to estimate the number of people who inject drugs, with application to the Kohtla-Järve region of Estonia.” *PLoS One* **12**, e0185711 (2017).
- [52] R Heimer, R Barbour, D Khoury, **Forrest W. Crawford**, F Shebl, E Aaraj, and K Khoshnood. “HIV Risk, Prevalence, and Access to Care among Men Who Have Sex with Men in Lebanon.” *AIDS Research and Human Retroviruses* **33**, 1149–1154 (2017).
- [53] L Chen, **Forrest W. Crawford**, and A Karbasi. “Submodular Variational Inference for Network Reconstruction.” *Proceedings of the Conference on Uncertainty in Artificial Intelligence (UAI)* (2017).
- [54] G J Culbert, **Forrest W. Crawford**, A Murni, A Waluyo, A R Bazazi, J Sahar, and F L Altice. “Predictors of Mortality within Prison and after Release among Persons Living with HIV in Indonesia.” *Research and Reports in Tropical Medicine* **8**, 25–35 (2017).
- [55] M Antillón, J L Warren, **Forrest W. Crawford**, D M Weinberger, E Kuruñ, G D Pak, J K Park, F Marks, and V E Pitzer. “The burden of typhoid fever in low- and middle-income countries: a meta-regression approach.” *PLoS Neglected Tropical Diseases* **11**, e0005376 (2017).
- [56] **Forrest W. Crawford**. “The graphical structure of respondent-driven sampling.” *Sociological Methodology* **46**, 187–211 (2016).
- [57] A Kunkel, **Forrest W. Crawford**, J Shepherd, and T Cohen. “Benefits of continuous isoniazid preventive therapy may outweigh resistance risks in a declining TB/HIV co-epidemic.” *AIDS* **30**, 2715–2723 (2016).
- [58] L Chen, A Karbasi, and **Forrest W. Crawford**. “Estimating the size of a large network and its communities from a random sample.” *Advances in Neural Information Processing Systems* **29** (2016).
- [59] **Forrest W. Crawford**, TC Stutz, and K Lange. “Coupling bounds for approximating birth-death processes by truncation.” *Statistics and Probability Letters* **109**, 30–38 (2016).
- [60] V Pitzer, J Bilcke, E Heylen, **Forrest W. Crawford**, M Van Ranst, M Zeller, and J Matthijssens. “Did Large-Scale Vaccination Drive Changes in the Circulating Rotavirus Population in Belgium?” *Scientific Reports* **5**, 18585 (2015).
- [61] L Chen, **Forrest W. Crawford**, and A Karbasi. “Seeing the Unseen Network: Inferring Hidden Social Ties from Respondent-Driven Sampling.” In *Proceedings of The 30th AAAI Conference on Artificial Intelligence and the 28th Innovative Applications of Artificial Intelligence Conference*, volume 30 (2015).
- [62] A R Bazazi, **Forrest W. Crawford**, A Zelenev, R Heimer, A Kamarulzaman, and F L Altice. “HIV Prevalence Among People Who Inject Drugs in Greater Kuala Lumpur Recruited Using Respondent-Driven Sampling.” *AIDS & Behavior* **19**, 2347–2357 (2015).
- [63] **Forrest W. Crawford**. “Hidden network reconstruction from information diffusion.” In *18th International Conference on Information Fusion*, pp. 180–185 (2015).
- [64] PM Aronow, A Coppock, **Forrest W. Crawford**, and DP Green. “Combining list experiment and direct question estimates of sensitive behavior prevalence.” *Journal of Survey Statistics and Methodology* **3**, 43–66 (2015).
- [65] **Forrest W. Crawford**, RE Weiss, and MA Suchard. “Sex, lies, and self-reported counts: Bayesian mixture models for longitudinal heaped count data via birth-death processes.” *Annals of Applied Statistics* **9**, 572–596 (2015).
- [66] I Quintero, P Keil, W Jetz, and **Forrest W. Crawford**. “Historical Biogeography Using Species Geographical Ranges.” *Systematic Biology* **64**, 1059–1073 (2015).
- [67] PM Aronow and **Forrest W. Crawford**. “Nonparametric identification for respondent-driven sampling.” *Statistics and Probability Letters* **106**, 100–102 (2015).
- [68] **Forrest W. Crawford** and D Zelterman. “Markov counting models for correlated binary responses.” *Biostatistics* **3**, 427–440 (2015).
- [69] WH Mulder and **Forrest W. Crawford**. “On the distribution of interspecies correlation for Markov mutation models on Yule trees.” *Journal of Theoretical Biology* **364**, 275–283 (2015).
- [70] ES Braun, **Forrest W. Crawford**, MM Desai, J Meek, PD Kirley, L Miller, EJ Anderson, O Oni, P Ryan, R Lynfield, M Bargsten, NM Bennett, KL Lung, A Thomas, E Mermel, M Lindegren, W Schaffner, A Price,

and SS Chaves. “Obesity not associated with severity among hospitalized adults with seasonal influenza virus infection.” *Infection* **43**, 569–575 (2015).

- [71] **Forrest W. Crawford**, VN Minin, and MA Suchard. “Estimation for General Birth-Death Processes.” *Journal of the American Statistical Association* **109**, 730–747 (2014).
- [72] **Forrest W. Crawford** and MA Suchard. “Diversity, disparity, and evolutionary rate estimation for unresolved Yule trees.” *Systematic Biology* **62**, 439–455 (2013).
- [73] OG Pybus, MA Suchard, P Lemey, F Bernadin, A Rambaut, **Forrest W. Crawford**, RR Gray, N Arinaminpathy, S Stramer, MP Busch, and E Delwart. “Unifying the spatial epidemiology and evolution of emerging epidemics.” *Proceedings of the National Academy of Sciences USA* **109**, 15066–15071 (2012).
- [74] **Forrest W. Crawford** and MA Suchard. “Transition probabilities for general birth-death processes with applications in ecology, genetics, and evolution.” *Journal of Mathematical Biology* **65**, 553–580 (2012).
- [75] S Saraswathy, **Forrest W. Crawford**, KL Lamborn, A Pirzkall, S Chang, S Cha, and SJ Nelson. “Evaluation of MR markers that predict survival in patients with newly diagnosed GBM prior to adjuvant therapy.” *Journal of Neuro-Oncology* **91**, 69–81 (2008).
- [76] **Forrest W. Crawford**, IS Khayal, C McGue, S Saraswathy, A Pirzkall, S Cha, KR Lamborn, S Chang, MS Berger, and SJ Nelson. “Relationship of pre-surgery metabolic and physiological MR imaging parameters to survival for patients with untreated GBM.” *Journal of Neuro-Oncology* **91**, 337–351 (2008).
- [77] IS Khayal, **Forrest W. Crawford**, S Saraswathy, KR Lamborn, SM Chang, S Cha, TR McKnight, and SJ Nelson. “Relationship between choline and apparent diffusion coefficient in patients with gliomas.” *Journal of Magnetic Resonance Imaging* **27**, 718–725 (2008).
- [78] JC Crane, **Forrest W. Crawford**, and SJ Nelson. “Grid enabled magnetic resonance scanners for near real-time medical image processing.” *Journal of Parallel and Distributed Computing* **66**, 1524–1533 (2006).
- [79] S Cha, T Tihan, **Forrest W. Crawford**, NJ Fischbein, S Chang, A Bollen, SJ Nelson, M Prados, MS Berger, and WP Dillon. “Differentiation of low-grade oligodendrogliomas from low-grade astrocytomas by using quantitative blood-volume measurements derived from dynamic susceptibility contrast-enhanced MR imaging.” *American Journal of Neuroradiology* **26**, 266–273 (2005).
- [80] X Li, DB Vigneron, S Cha, EE Graves, **Forrest W. Crawford**, SM Chang, and SJ Nelson. “Relationship of MR-derived lactate, mobile lipids, and relative blood volume for gliomas in vivo.” *American Journal of Neuroradiology* **26**, 760–769 (2005).

Commentaries, Discussions, and Op-Eds

- [1] G S Gonsalves and **Forrest W. Crawford**. “How Mike Pence Made Indiana’s HIV Outbreak Worse.” *Politico* (2020).
- [2] G S Gonsalves and **Forrest W. Crawford**. “Lessons learned from the Indiana HIV outbreak.” *HIV Specialist* **10** (2018).
- [3] **Forrest W. Crawford**. “Discussion of “Co-authorship and citation networks for statisticians” by Pengsheng Ji and Jiashun Jin.” *Annals of Applied Statistics* **10** (2016).

Submitted Manuscripts

- [1] J Sun and **Forrest W. Crawford**. “Causal identification for continuous-time stochastic processes.” *Submitted* (2024). (Winner of Best Student Paper award at 2023 Lifetime Data Science Conference (LiDS)).
- [2] J Sun and **Forrest W. Crawford**. “The role of discretization scales in causal inference with continuous-time treatment.” *Submitted* (2023).
- [3] S Schulz, R Pastor, C Koyuncuoglu, **Forrest W. Crawford**, D Zernick, A Karch, and S Rüdiger. “Real-time Dissection and Forecast of Infection Dynamics during a Pandemic.” *Submitted* (2023).
- [4] M Erlendsdottir, S Eshghi, and **Forrest W. Crawford**. “Modeling COVID-19 care capacity in a major health system.” *Submitted* (2021).
- [5] X Cai, E Kenah, and **Forrest W. Crawford**. “Causal identification of infectious disease intervention effects in a clustered population.” *Submitted* (2021).

Working Papers

- [1] Y Zhang, O Morozova, and **Forrest W. Crawford**. “Two perspectives on direct effects under interference.” *Working Paper* (2025).
- [2] Y Zhang and **Forrest W. Crawford**. “Time-varying confounding in epidemic intervention evaluations.” *Working Paper* (2025).
- [3] M Battaglini, **Forrest W. Crawford**, E Patacchini, and S Peng. “A Graphical Lasso Approach to Estimating Network Connections: The Case of U.S. Lawmakers.” *Working Paper* (2020).

Academic and Conference Presentations

2024

AI and the Next Pandemic Panel, University College Dublin
Statistical Methods for Infectious Diseases Workshop, Pennsylvania State University
Provost’s AI Task Force Panel, Yale

2023

Seminar, Department of Statistics & Actuarial Science, University of Iowa
Invited talk, Public Health Conversation, Boston University School of Public Health
Seminar, RAND Corporation
Invited talk, Brown CFAR Symposium on Statistics and Data Science in HIV
Seminar, Department of Statistics, University of Washington

2022

Seminar, X, The Moonshot Factory (Alphabet/Google)
Seminar, Mailman School of Public Health, Columbia University
Seminar, Department of Biostatistics, McGill University, Montréal
Seminar, Health Policy, Harvard Medical School
Invited talk, Joint Statistical Meetings, Washington D.C.
Invited talk, International Society for Bayesian Analysis annual meeting, Montréal
American Causal Inference Conference, Berkeley, CA
Seminar, Centre de Recherches Mathématiques, Université de Montréal
Seminar, Research at Yale Speaker Series
Invited talk, Utah Winter Operations Conference

2021

Invited talk, CMStatistics
Seminar, Department of Statistics, University of Florida
Seminar, Department of Biostatistics, Boston University
Invited talk, Joint Statistical Meetings 2021
Invited talk, ENAR 2021
Invited talk, Causal Inference Reading Group, Department of Biostatistics, Columbia University
Plenary, National Science Foundation, Division of Mathematical Sciences Student Conference on COVID-19 Modeling
Seminar, Operations, Yale School of Management
Seminar, Yale Occupational and Environmental Medicine Conference Series

2020

Panelist, Yale Day of Data
COVID-19 Briefing to CT house Republican Caucus
COVID-19 Briefing to CT house Democratic Caucus
Invited talk, Society of Mathematical Biology Annual Meeting
Panelist, Yale Engage: “Surveillance and Modeling: A new normal for business operations post-COVID”
Seminar, Institute for Mathematics and its Applications, University of Minnesota
Seminar, Department of Biostatistics, Yale School of Public Health
Invited Talk, Dean’s Workshop, Yale School of Medicine

Invited talk, Eastern North American Region of the International Biometric Society
Invited talk, COVID-19 HASTE Workshop, Yale School of Engineering & Applied Science
Invited talk, Mathematical modelling and statistical analysis of infectious disease outbreaks, Centre International de Rencontres Mathématiques, Marseille, France
Seminar, Center for Empirical Research on Stratification and Inequality, Yale Department of Sociology

2019

Invited session, American Mathematical Society Special Session on Stochastic Processes, Probability & Integration Theory, Riverside, CA
Seminar, National Institute of Allergy and Infectious Diseases, Division of Clinical Research – Biostatistics Research Branch, Bethesda, MD
Seminar, Department of Statistical Science, Duke University
Seminar, Department of Statistics, University of Connecticut
Invited session, Joint Statistical Meetings, Denver, CO
Invited session, Society of Mathematical Biology, Montréal, Canada
Plenary, Journées de Statistique, Nancy, France
Invited session, New England Statistics Symposium
Seminar, Data Science, Brown University
Seminar, Microsoft Research
Seminar, Department of Biostatistics, University of North Carolina

2018

Seminar, Department of Statistical Sciences, University of Toronto
Seminar, Center for Interdisciplinary Research on AIDS
Career panel, New England Statistical Society NextGen Data Science Day
Seminar, College of Public Health, Ohio State University
Seminar, Yale HIV Research Club
Seminar, Health Policy & Management, Yale School of Public Health
Invited session, Joint Statistical Meetings, Vancouver, BC
Invited session, Network Causal Inference and Design of Experiments Satellite, NetSci, Paris
Webinar, European Monitoring Centre for Drugs and Drug Addiction
Seminar, Department of Biostatistics, University of Washington
WHO Blueprint Plan of Action workshop, Harvard T. H. Chan School of Public Health
Seminar, Department of Biostatistics, Harvard T. H. Chan School of Public Health
Seminar, Department of Politics, New York University
Seminar, Department of Biostatistics and Epidemiology, University of Massachusetts Amherst

2017

Seminar, Yale Institute for Network Science
Seminar, Departments of Biostatistics and Epidemiology, Harvard T. H. Chan School of Public Health
Seminar, Department of Biostatistics, Johns Hopkins Bloomberg School of Public Health
Joint Statistical Meetings, Baltimore, MD
SIMID Workshop, Antwerp, Belgium
Seminar, Department of Statistics, North Carolina State University
New England Statistics Symposium, Storrs, CT
Seminar, Veteran's Affairs Healthcare System, West Haven, CT
Seminar, Department of Statistics, Simon Fraser University, BC, Canada
New England HIV Implementation Science Network symposium, Providence, RI
Seminar, Department of Statistics, Harvard University

2016

International Chinese Statistical Association, Shanghai, China
Seminar, Shanghai Jiao Tong University, Shanghai, China
Seminar, Network Science Institute, Northeastern University, Boston, MA

Networks in Public Health Workshop, Center for Interdisciplinary Research on AIDS, Yale
Discussant, Theory of Agnostic Statistics, Yale
Joint Statistical Meetings, Chicago, IL
International Biometric Conference, Victoria, BC, Canada
Political Networks, Washington University, St. Louis, MO
Atlantic Causal Inference Conference, New York, NY
Causal Inference with Highly Dependent Data in Communicable Diseases Research, Harvard
Workshop on Incomplete Network Data, Sandia National Labs, Livermore, CA
Center for Communicable Disease Dynamics at the Harvard T.H. Chan School of Public Health
Center for Research on Inequalities and the Life Course, Yale
Operations Department, Yale School of Management

2015

Seminar, Biostatistics, Brown University School of Public Health, Providence, RI
Seminar, Biostatistics and Biomathematics, Fred Hutchinson Cancer Research Center, Seattle, WA
Yale Day of Data
Seminar, Department of Statistics, University of Wisconsin, Madison, WI
Invited talk, FUSION, Washington, DC
Computational Social Science Summit, Chicago, IL
Invited talk, Statistical Society of Canada Meeting, Halifax, NS
Invited talk, New England Statistics Symposium, Storrs, CT
Public Health Modeling Seminar; Yale, New Haven CT

2014

Yale Institute for Network Science; Yale, New Haven CT
Center for Interdisciplinary Research on AIDS, Yale
Joint Statistical Meetings, Boston, MA
UNAIDS workshop on population size estimation, University of Massachusetts Amherst, Amherst, MA
Invited panelist, career development session, New England Statistics Symposium; Boston, MA
INSNA Sunbelt Conference, St. Petersburg, FL
Invited talk, INFORMS Optimization Society Conference; Rice University, Houston, TX
Seminar, Public Health Modeling Seminar; Yale, New Haven CT
Seminar, MacMillan Center for the Study of American Politics Workshop on Quantitative Research Methods; Yale University, New Haven, CT

2013

Seminar, Department of Biostatistics; Harvard School of Public Health, Boston, MA
Seminar, Department of Statistics; University of Connecticut, Storrs, CT
Contributed Talk, Joint Statistical Meetings; Montréal, Canada
Institute of Mathematical Statistics New Researchers Conference; Montréal, Canada
Invited talk, New England Statistics Symposium; Storrs, CT
Seminar, Ecology and Evolutionary Biology Department, Yale; New Haven CT

2012

Contributed talk, SuSTaIn workshop; Bristol, UK
Contributed talk, Joint Statistical Meetings; San Diego, CA
Poster, International Society for Bayesian Analysis; Kyoto, Japan
Seminar, Carnegie Mellon Statistics; Pittsburgh, PA
Seminar, Yale Biostatistics; New Haven, CT

2011

Case Studies in Bayesian Statistics and Machine Learning; Pittsburgh, PA

2010-2012

Systems and Integrative Biology Retreat; Los Angeles, CA

2006

International Society for Magnetic Resonance in Medicine Scientific Meeting; Seattle, WA

2004

International Society for Magnetic Resonance in Medicine Scientific Meeting; Kyoto, Japan

American Society for Neuroradiology Scientific Meeting; Seattle, WA

Advances in Imaging Research Symposium; San Francisco, CA

Awards & Recognition

2021 Runner-up, Rothman Prize, Epidemiology, for “Transmission Modeling with Regression Adjustment for Analyzing Household-based Studies of Infectious Disease: Application to Tuberculosis”

2020 Best paper award, “Identification of causal intervention effects under contagion”, ASA Section on Statistics and Epidemiology

2019 Best Biostatistics Thesis Award, MS advisee Ning Zhang

2018 Best undergraduate Statistics & Data Science Thesis, Undergraduate research advisee Evaline Xie

2017 WNAR outstanding written paper award for “Exposure, hazard, and survival analysis of diffusion on social networks ”

2016 NIH Director’s New Innovator Award (\$1.5M)

2014 Yale Center for Clinical Investigation Scholar Award

2012 Travel Award, SuSTaIn workshop

2012 Travel Award, International Society for Bayesian Analysis

2012 Travel Award, Statistical Analysis of Neural Data

2011 Young Researcher presentation, Case Studies in Bayesian Statistics and Machine Learning

2011 Travel Award, Case Studies in Bayesian Statistics and Machine Learning

2011 Travel Award, Summer Institute in Statistics and Modeling Infectious Disease

2010 Travel Award, Bayesian Nonparametric Statistical Methods

2011-2012 Regents Fellowship

2010-2011 University Fellowship

2008-2012 NIH Systems and Integrative Biology Training Grant

Professional activities

Associate Editor:

2020- Observational Studies

2016-2023 Annals of Applied Statistics

2017-2020 Journal of the American Statistical Association (Theory & Methods)

2013-2016 Statistics and Probability Letters

Reviewer: American Journal of Epidemiology, Annals of Applied Statistics, Annals of Statistics, Australian & New Zealand Journal of Statistics, Biometrics, Biometrika, Biostatistics, BMC Public Health, BMJ Open, Clinical Infectious Diseases, Clinical Trials, Computational Statistics and Data Analysis, Electronic Journal of Statistics, Epidemiologic Methods, Epidemiologic Reviews, Epidemiology, INFORMS Journal on Applied Analytics, International Journal of Drug Policy, Journal of the American Statistical Association, Journal of Official Statistics, Journal of Mathematical Biology, Journal of Molecular Evolution, Journal of Theoretical Biology, Journal of the Royal Society Interface, Journal of the Royal Statistical Society, Journal of Survey Statistics and Methodology, Journal of Urban Health, Medical Decision Making, PloS One, Proceedings of the National Academy of Sciences, Sociological Methodology, Statistical Science, Statistical Methods in Medical Research, Statistics and Probability Letters, Statistics in Medicine, Survey Methodology

Advisory Panels: Expert panel to review MAP Project to Accelerate Action Against Child Labor and Forced Labor, US Department of Labor, July 2020

Expert Panel on Evaluation of Program to End Modern Slavery, US State Department, August 2020

Re-open Connecticut Advisory Panel, April–June 2020

Technical Advisory and Peer-Review Panel, Global Fund to End Modern Slavery, 2019-present
World Health Organization Blueprint Plan of Action: Combining evidence from randomized trials across outbreaks
March 2018

Grant review/Study section: United States Department of Labor, NIH Director's New Innovator Award, National Institute on Drug Abuse, Advancing Exceptional Research on HIV/AIDS and Substance Abuse, Office of Behavioral and Social Sciences Research, National Institutes of Health, Joint NSF/NIH Initiative on Quantitative Approaches to Biomedical Big Data, Center for Interdisciplinary Research on AIDS

Mentoring

Postdocs

Nathaniel Josephs, Assistant Professor, Department of Statistics, North Carolina State University
Olga Morozova, Assistant Professor, Department of Public Health Sciences, Biological Sciences Division, University of Chicago
Zehang Richard Li, Assistant Professor, Department of Statistics, UC Santa Cruz
Daniel J. Eck, Assistant Professor, Department of Statistics, University of Illinois Urbana-Champaign
Soheil Eshghi, McKinsey & Company
Yushuf Sharkar, Takeda

PhD students

Samantha Dean, CDC
Alexandra Djorno, Amazon
Yichi Zhang, Google
Jinghao Sun, Center for Causal Inference, University of Pennsylvania
Xiaoxuan Cai, Assistant Professor, Department of Statistics, The Ohio State University
Margret Erlendsdottir, Roche

MS students

Ning Zhang, Biostatistics (Winner of best Biostatistics Thesis Award), now at UNC Biostatistics
Natalee Desotell, Epidemiology of Microbial Diseases
Si Cheng, Biostatistics. Now at Netflix
Jiacheng Wu, PhD in Biostatistics, University of Washington Biostatistics. Now at Meta.
Elise Braun, Biostatistics
Sarah Elfenbein, Computational Biology & Bioinformatics

Undergraduates

Evaline Xie, Statistics & Data Science (Winner of best undergraduate Statistics & Data Science Thesis)

PhD dissertation committee

Julian Zhou, Computational Biology & Bioinformatics
Hirokazu Shirado, Sociology, now Associate Professor, Carnegie Mellon University
Kristina Yim, Genetics
Olga Morozova, Epidemiology of Microbial Diseases
Gregg Gonsalves, Epidemiology of Microbial Diseases, Now Associate Professor, Yale University
Joe Lewnard, Epidemiology of Microbial Diseases, Now Associate Professor, University of California Berkeley
Shantao Li, Computational Biology and Bioinformatics
Yiming Hu, Biostatistics
Ignacio Quintero, Ecology and Evolutionary Biology
Xiu Huang, Computational Biology and Bioinformatics
Ken Hui, Computational Biology and Bioinformatics

PhD qualifying committee

Marina Antillon, Epidemiology of Microbial Diseases
Alexander Bazazi, Epidemiology of Microbial Diseases

MD thesis committee

John Millet, MD. (Radiology)

Academic advising

MS academic advisee: Yunwei Wang, Biostatistics

PhD academic advisee: Briana Cameron, Biostatistics

MS academic advisee: Wei Jiang, Biostatistics

MS academic advisee: Xiaotian Wu, Biostatistics

Other

International AIDS trainee: Aleksandr Sirotkin

University service

2022-2023 Co-Director (with A. David Paltiel), Public Health Modeling Concentration

2019 NESS Program Committee

2018 YSPH Diversity Committee

2017-2018 Co-Director (with Virginia E. Pitzer), Public Health Modeling Concentration

2013 CBB Admissions committee

2012-2014 Department of Biostatistics seminar chair

Teaching

2020-2022 BIS 534 Stochastic models

2019,2021 Summer Course in Public Health Modeling

2013-2017 BIS 557A Computational Statistics, Yale School of Public Health

2016 BIS 600 Advanced Causal and Network Statistics, Yale School of Public Health (with P. M. Aronow)

2013 FSCI 6302 Population genetics, University of West Indies Mona, Jamaica