Isabel Rose Fulcher

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Summary

I am a statistician passionate about improving access to and quality of reproductive healthcare through data science and digital health technologies. I am currently the VP of Data Science at Delfina, where I lead a team that leverages multiple data sources and data science tools to build patient-centered technologies for pregnancy care.

Education

Harvard University   **Cambridge, MA**
Doctor of Philosophy, Biostatistics   March 2019

Harvard University   **Cambridge, MA**
Masters of Arts, Biostatistics   May 2016

McGill University   **Montreal, QC**
Bachelor of Arts and Science, Mathematics and Anthropology   May 2012

Work Experience

Delfina Care   **San Francisco, CA**
VP of Data Science   August 2022 – Current

Department of Global Health and Social Medicine, Harvard Medical School   **Boston, MA**
Research Collaborator   August 2022 – Current
Global Health Equity Research Fellow   January 2019 – July 2022

Harvard Data Science Initiative   **Cambridge, MA**
Postdoctoral Fellow   August 2019 – July 2022

Department of Biostatistics, Harvard T.H. Chan School of Public Health   **Boston, MA**
Graduate Researcher   August 2014 – December 2018

ZS Associates   **Evanston, IL**
Business Associate   September 2012 – July 2014

Peer-Reviewed Publications

* Denotes equal contributions

FIRST AUTHOR

1. Sauer, S.*, **Fulcher, I. R.***, Matias, W. R., ..., & Ivers, L. C. (2023). Missing data and missed infections: Investigating racial and ethnic disparities in SARS-CoV-2 testing and infection rates in Holyoke, Massachusetts. In Press at *American Journal of Epidemiology*.

2. Matias, W. R.*, **Fulcher, I. R.***, Sauer, S., ..., & Ivers, L. C. (2023). Disparities in SARS-CoV-2 exposure: evidence from a citywide seroprevalence study in Holyoke, Massachusetts. *Journal of Racial and Ethnic Health Disparities*. DOI: 10.1007/s40615-022-01502-4.

3. **Fulcher, I. R.**, Clisbee, M., Lambert, W., Leandre, F., & Hedt-Gauthier, B. (2022). Adapting Lot Quality Assurance Sampling to accommodate imperfect tests: application to COVID-19 serosurveillance in Haiti. *BMC Public Health*. DOI: 10.1186/s12889-022-14206-5.

4. **Fulcher, I. R.**, Onwuzurike, C., ... & Janiak, E. (2022) The impact of the COVID-19 pandemic on abortion care utilization and disparities by age. *American Journal of Obstetrics & Gynecology*. DOI: 10.1016/j.ajog.2022.01.025.

5. **Fulcher, I. R.**, Shpister, I., Didelez, V., Zhou, K., & Scharfstein, D. (2021). Discussion on "Causal mediation of semicompeting risks" by Yen-Tsung Huang. *Biometrics*. DOI: 10.1111/biom.13519.

6. **Fulcher, I. R.**, Boley, E.J., Gopaluni, A., ... & Hedt-Gauthier, B. (2021). COVID-19 syndromic surveillance using monthly aggregate health information system data: methods with application in Liberia. *International Journal of Epidemiology*. DOI: 10.1093/ije/dyab094.

7. **Fulcher, I. R.**, Nelson, A., Tibaijuka, J., ... & Hoffman, R. (2020). Improving health facility delivery rates in Zanzibar, Tanzania through a large-scale digital community health volunteer program: A process evaluation. *Health Policy & Planning*. DOI: 10.1093/heapol/czaa068.

8. **Fulcher, I. R.***, Neill, S.*, Bhardwa, S., Goldberg, A.B., Janiak, E. (2020). State and federal abortion restrictions increase risk of COVID-19 exposure by mandating unnecessary clinic visits. *Contraception*. DOI: 10.1016/j.contraception.2020.08.017.

9. **Fulcher, I. R.**, Shpitser, I., & Tchetgen Tchetgen, E. J. (2020). Robust inference on population indirect causal effects: the generalized front-door criterion. *Journal of the Royal Statistical Society Series B*. DOI: 10.1111/rssb.12345.

10. **Fulcher, I. R.**, Hedt, K., Marealle, S., ... & Hedt-Gauthier, B. (2020). Errors in estimated gestational ages reduce the likelihood of health facility deliveries: results from an observational cohort study in Zanzibar. *BMC Health Services Research*. DOI: 10.1186/s12913-020-4904-5.

11. **Fulcher, I. R.**, Shi, X., & Tchetgen Tchetgen, E. J. (2019). Estimation of natural indirect effects robust to unmeasured confounding and mediator measurement error. *Epidemiology*. DOI: 10.1097/EDE.1084.

12. **Fulcher, I. R.**, Tchetgen Tchetgen E. J., & Williams, P. L. (2017). Mediation analysis for censored survival data under an accelerated failure time model. *Epidemiology*. DOI: 10.1097/EDE.687

SENIOR AUTHOR

13. Fejfar, D., P., Andom, A.T., ... & **Fulcher, I. R.** (2023) The impact of COVID-19 and national pandemic responses on health service utilization in seven low- and middle-income countries. *Global Health Action*. DOI: 10.1080/16549716.2023.2178604.

14. Habinshuti, P., Nshimyiryo A., Fejfar D.L., ... & **Fulcher, I. R.** (2022) Impact of COVID-19 on access to cancer care in Rwanda: a retrospective time-series study using electronic medical records data. *BMJ Open*. DOI: 10.1136/bmjopen-2022-065398.

15. Janiak, E., Belizaire, C., Liu, J., & **Fulcher, I. R.** (2022). The association of state-level abortion restrictions with medication abortion service delivery innovations during the early COVID-19 pandemic. ***Contraception***. DOI: 10.1016/j.contraception.2022.04.003.

16. Hentschel, E. L., Russell, A., Said, S., . . . & **Fulcher, I. R.** (2022) Program characteristics associated with increased likelihood of health facility delivery in a digitally supported community health worker intervention in Zanzibar: an observational cohort study. ***Maternal and Child Health Journal***. DOI: 10.1007/s10995-022-03432-3.

17. Aranda, Z., Binde, T., Tashman, K., . . . & **Fulcher, I. R.** (2022) Disruptions in maternal health services utilization during the COVID-19 pandemic in 2020: Experiences from 37 health facilities in low- and middle-income countries. ***BMJ Global Health***. DOI: 10.1136/bmjgh-2021-007247

CO-AUTHOR

18. Layer, E., ..., **Fulcher, I. R.**, Hornung, H., Lampariello, R. (2023) The journey of Zanzibar's digitally enabled community health program to national scale: implementation report. ***JMIR Medical Informatics***. DOI: 10.2196/48097.

19. Keefe-Oates, B., **Fulcher, I. R.**, ..., Janiak, E. (2023) Use of abortion services in Massachusetts after the Dobbs decision among in-state vs out-of-state residents. ***JAMA Network Open***. DOI: 10.1001/jamanetworkopen.2023.32400.

20. Kadambi, A., **Fulcher, I. R.**, Venkatesh, K., Schor, J.S., Clapp, M.A., Wen, T. (2023). Predicting the risk of gestational diabetes using clinical data with machine learning: a predictive model study. ***American Journal of Obstetrics & Gynecology MFM***. DOI: 10.1016/j.ajogmf.2023.100965.

21. Bharadwa, S., **Fulcher, I. R.**, , Fortin, J., Pocius, K., Goldberg, A. (2023) hCG Trends after mifepristone and misoprostol for undesired pregnancy of unknown location. ***Contraception***. DOI: 10.1016/j.contraception.2023.1100

22. Tsai, YT., **Fulcher, I. R.**, Li, T., Sukums, F., Hedt-Gauthier, B.. (2023) Predicting facility-based delivery in Zanzibar: the vulnerability of machine learning algorithms to adversarial attacks. ***Heliyon***. DOI: 10.1016/j.heliyon.2023.e16244.

23. Suliman, S., Matias, W. R., **Fulcher, I. R.**, ..., Ivers, L. C. (2023). Evaluation of the Access Bio CareStart™ rapid SARS-CoV-2 antigen test in asymptomatic individuals tested at a community mass-testing program in Western Massachusetts. ***Scientific Reports***. DOI: 10.1038/s41598-022-25266-3.

24. Croke, K., Gage, A. **Fulcher, I. R.**, ..., Kruk, M. (2022) Service delivery reform for maternal and newborn health in Kakamega County, Kenya: study protocol for a prospective impact evaluation and implementation science study. ***BMC Public Health***. DOI: 10.1186/s12889-022-13578-y

25. Fredriksson, A. **Fulcher, I. R.**, ..., Hedt-Gauthier, B. (2022) Machine learning for maternal health: Predicting delivery location in a community health worker program in Zanzibar. ***Frontiers in Digital Health***. DOI: 10.3389/fdgth.2022.855236

26. Heres, C.K., Rindos, N.B., **Fulcher, I. R.**, ..., Donnellan, N.M. (2022) Opioid use after laparoscopic surgery for endometriosis and pelvic pain. ***Journal of Minimally Invasive Gynecology***. DOI: 10.1016/j.jmig.2022.09.013.

27. Goldberg, A., **Fulcher, I. R.**, ..., Roncari, D. (2022) Mifepristone and misoprostol for undesired pregnancy of unknown location. ***Obstetrics & Gynecology***. DOI: 10.1097/AOG.0000000000004756.

28. van de Water, B. J., **Fulcher, I. R.**, ..., le Roux, K. (2022) Association of HIV infection and antiretroviral therapy with the occurrence of an unfavorable TB treatment outcome in a rural district hospital in Eastern Cape, South Africa: A retrospective cohort study. *PLOS One*. DOI: 10.1371/journal.pone.0266082.

29. Russell, A. L., Hentschel, E., **Fulcher, I. R.**, ... Wilson, K. (2022) Caregiver parenting practices, dietary diversity knowledge, and association with early childhood development outcomes among children aged 18-29 months in Zanzibar, Tanzania: A cross-sectional survey. *BMC Public Health*. DOI: 10.1186/s12889-022-13009-y.

30. Connolly, E., Boley, E.J., Fejfar, D.L., Varney, P.F., Aron, M.B., **Fulcher, I.R.**, ... & Hedt-Gauthier, B. (2021). Childhood immunization during the COVID-19 pandemic: experiences in Haiti, Lesotho, Liberia, and Malawi. *Bulletin of the World Health Organization*. DOI: 10.2471/BLT.21.286774

31. Gilbert, A.L., **Fulcher, I.R.**, Cottrill, A.A., Janiak, E. (2021) The financial burden of antiquated laws: The case of Massachusetts' parental involvement law for abortion. *Women's Health Reports*. DOI: 10.1089/whr.2021.0002.

32. Aranda, Z., **Fulcher, I. R.**, Hedt-Gauthier, B., Mugunga, J.C., Binde, T. (2021). COVID-19 and maternal and perinatal outcomes. *The Lancet Global Health (Correspondence)*. DOI: 10.1016/S2214-109X(21)00297-7.

33. Janiak, E., Braaten, K. P., Cottrill, A. A., **Fulcher, I. R.**, Goldberg, A. B., Agénor, M. (2021). Gender diversity among aspiration-abortion patients. *Contraception*. DOI: 10.1016/j.contraception.2021.01.013.

34. Tchetgen Tchetgen, E. J., **Fulcher, I. R.**, Shpitser, I. (2020). Auto-g-computation of causal effects on a network. *Journal of the American Statistical Association*. DOI: 10.1080/01621459.2020.1811098.

35. Cottrill, A.A., **Fulcher, I.R.**, Goldberg, A.B., Sabino, J., Fortin, J., Janiak, E. (2020) Time trends in Massachusetss adolescents' post-abortion contraceptive uptake. *Journal of Adolescent Health*. DOI: 10.1016/j.jadohealth.2020.05.048.

36. Rindos, N.B., **Fulcher, I. R.**, Donellan, N.M. (2020). Pain and quality of life following laparoscopic excision of endometriosis. *The Journal of Minimally Invasive Gynecology*. DOI: 10.1016/j.jmig.2020.03.013.

37. Janiak, E., **Fulcher, I. R.**, ..., Goldberg, A. (2019). Impact of Massachusetts' parental involvement law on procedural timing among adolescents seeking abortion. *Obstetrics & Gynecology*. doi: 10.1097/AOG.3190.

HONORS & AWARDS

STAT Wunderkind	2023
Statistical Partnerships Among Academe, Industry, and Government (SPAIG) Award	2022
Harvard Data Science Initiative Fellowship	2019
Barry R. and Irene Tilenius Bloom Fellowship	2018
Outstanding Poster Award at Atlantic Causal Inference Conference	2018
Harvard University Distinction in Teaching	2017
Harvard T.H. Chan School of Public Health Rose Traveling Fellowship	2017
Maternal Health Task Force Travel Award	2017
Statistics in Epidemiology Young Investigator Award	2017
McGill University Dean's Honour List	2012
Golden Key International Honour Society	2010, 2011, 2012

INVITED TALKS

"Using machine learning and routine clinical data to develop prediction models for diabetes in pregnancy."
17th Biennial Meeting of the Diabetes in Pregnancy Study Group of North America, Falls Church, VA (October 2023).

"Improving maternal health with data-driven digital care systems"
Design of Medical Devices Conference, Minneapolis, MN (April 2023).

"Identification and estimation of indirect effects robust to unmeasured confounding"
University of Wisconsin-Madison Statistics Seminar, Madison, WI (March 2022).

"Extending synthetic control methods to evaluate the effectiveness of global maternal health programs"
Computational and Methodological Statistics, King's College London, UK (December 2021).

"Using routinely collected data to quantify the impact of COVID-19: proceed, but with caution"
IQSS Applied Statistics Working Group, Cambridge, MA (April 2021).

"Identification and estimation of indirect effects robust to unmeasured confounding"
Society for Epidemiologic Research, Online (December 2020).

"Using routine health systems data for data-driven COVID-19 response"
Elsevier Seminar Series, Virtual (November 2020).

"Improving the delivery of healthcare to pregnant women in sub-Saharan Africa with statistics and data science"
Gettysburg College Mathematics Colloquium, Gettysburg, PA (October 2020).

"Using routine health systems data for data-driven COVID-19 response"
Massachusetts Consortium for Pathogen Readiness, Virtual (September 2020).

"Estimation of natural indirect effects robust to unmeasured confounding and mediator measurement error"
Joint Statistical Meetings, Online (August 2020).

"Supporting data-driven COVID-19 responses in low and middle income countries"
Coronavirus Visualization Team, Virtual (August 2020).

"Bayesian auto-g-computation of network causal effects: incarceration and infection in a high risk network"
ENAR Spring Meeting, Online (March 2020).

"Auto-g-computation of network causal effects: incarceration and infection in a high risk network"
University of Massachusetts Amherst Statistics Seminar, Amherst, MA (December 2019).

"Improving the delivery of healthcare to pregnant women in sub-Saharan Africa with statistics and data science"
Colby College Mathematics and Statistics Colloquium, Waterville, ME (December 2019).

"Bayesian auto-g-computation of network causal effects: incarceration and infection in a high risk network"
Joint Statistical Meetings, Denver, CO (July 2019).

"Bayesian auto-g-computation of network causal effects: incarceration and infection in a high risk network"

New England Statistical Society, Hartford, CT (May 2019).

"Auto-g-computation of causal effects on a sexual and injection-drug use network"
University of Pennsylvania Center for Causal Inference Seminar, Philadelphia, PA (October 2018).

CAMPUS TALKS

"Building a digital health platform for equitable pregnancy care"
Grand Valley State University, Allendale, MI (April 2023).

"Missing data and missed infections: Investigating racial and ethnic disparities in SARS-CoV-2 testing and infection rates in Holyoke, Massachusetts."
The Mongan Institute Research in Progress Seminar, Boston, MA (May 2022).

"A community-academic partnership for COVID-19 response: lessons from Holyoke, MA"
Harvard Medical School, Global and Community Health Course, Boston, MA (March 2022).

"Identification and estimation of indirect effects robust to unmeasured confounding"
Department of Biostatistics Causal Inference and Machine Learning Working Group, Boston, MA (May 2021).

"Using routine health systems data for data-driven COVID-19 response"
Department of Global Health and Social Medicine Seminar Series, Boston, MA (September 2020).

"Auto-g-computation of causal effects on a sexual and injection-drug use network"
Department of Biostatistics HIV Working Group, Boston, MA (October 2018).

"Safer Deliveries: Empowering women to plan for delivery through the use of integrated mobile technology"
Women and Health Initiative, Boston, MA (September 2017).

CONFERENCE PARTICIPATION

SESSIONS ORGANIZED

"Local responses to a global pandemic: experiences from a collaborative partnership spanning nine countries"
Global Symposium on Health Services Research, Bogota, Colombia (2022).

"Causal Inference for Policy Evaluation: Methods and Applications"
Society for Epidemiologic Research, Chicago, IL (2022).

PANELS

"Innovation at lightning speed: platforms and partnerships"
Mayo Clinic Platform Conference, Scottsdale, AZ (2023).

CONTRIBUTED PAPERS

"The generalized front-door formula for estimation of indirect causal effects of a confounded treatment"
ENAR Spring Meeting, Atlanta, GA (2018).

"Data for decision-making in digital health programs"

Global Digital Health Forum, Washington, DC (2017).

"Mediation analysis for censored survival data under an accelerated failure time model"
    Joint Statistical Meetings, Baltimore, MD (2017). ***Statistics in Epidemiology Young Investigator Award***

"Mediation analysis for censored survival data under an accelerated failure time model"
    ENAR Spring Meeting, Austin, TX (2016).

POSTERS

"Utilizing health systems data to respond to COVID-19: experiences from a collaborative partnership spanning nine countries"
    The 8th Annual Stanford Global Health Research Convening, Palo Alto, CA (2022).

"Bayesian auto-g-computation of network causal effects: incarceration and infection in a high risk network"
    21st Meeting of New Researchers in Statistics and Probability, Fort Collins, CO (2019).

"Estimation of natural indirect effects robust to unmeasured confounding and mediator measurement error"
    University of Florida Winter Workshop, Gainesville, FL (2019). ***Travel Award***

"Nonparametric identification and robust estimation of indirect causal effects in the presence of exposure-outcome confounding"
    Atlantic Causal Inference Conference, Pittsburgh, PA (2018). ***Outstanding Poster Award***

"Auto-g-computation of causal effects on a sexual and injection-drug use network"
    Harvard Data Science Conference, Cambridge, MA (2018).

"Working towards safer deliveries in Zanzibar, Tanzania"
    Harvard Chan School Future Health Campaign Celebration, Boston, MA (2018).

"The generalized front-door formula for identification of partial causal effects"
    ENAR Spring Meeting, Washington, DC (2017).

TEACHING EXPERIENCE

Partners In Health	**Boston, MA**
Instructor, Cross-Site COVID-19 Writing Workshop	January 2022
Instructor, COVID-19 Surveillance Training Course	March 2021
Global Initiative for Neuropsychiatric Genetics Education in Research	**Addis Ababa, Ethiopia**
Teaching Fellow, Interactive Biostatistics Workshop	November 2019
Harvard T.H. Chan School of Public Health	**Boston, MA**
Instructor, Biostatistics Preparatory Course: Methods and Computing in R	Summer 2018
Instructor, Stata Orientation for Incoming Graduate Students	Summer 2016, 2017, 2018
Head* Teaching Assistant, Core Principles of Biostatistics and Epidemiology	Fall 2015, 2016*, 2017*
Teaching Assistant, Quantitative Methods in Program Evaluation	Spring 2017
Teaching Assistant, Methods for Monitoring and Evaluation	Spring 2016

University of Global Health Equity   **Kigali, Rwanda**
Teaching Assistant, Program Monitoring, Evaluation, and Research Methods   Spring 2017, 2018

D-tree International   **Zanzibar, Tanzania**
Instructor, Data Analysis and Stata Software Training Course   Summer 2017

RESEARCH CONSULTING

D-tree International   May 2017 – Current
Support organization-wide monitoring & evaluation planning for digital health programs in sub-Saharan Africa. Led research efforts and impact evaluation for two large-scale digital maternal health platforms in Tanzania.

Planned Parenthood League of Massachusetts   August 2017 – Current
Design and lead research studies to investigate sociodemographic disparities in access to reproductive health services utilizing retrospective electronic health record data and prospective study designs.

Massachusetts General Hospital Center for Global Health   June 2019 – July 2022
Led analysis of seroepidemiological study and routine COVID-19 testing data from Holyoke, Massachusetts to investigate racial and ethnic disparities in SARS-CoV-2 ifection, hospitalization, and death.

Partners In Health   April 2019 – July 2022
Coordinated and led numerous research projects across eight Partners In Health sites in Haiti, Lesotho, Liberia, Malawi, Mexico, Rwanda, Peru, and Sierra Leone to improve COVID-19 response.

Magee-Womens Hospital of UPMC   April 2018 – April 2019
Led analysis on study investigating pain following laparoscopy in endometriosis patients.

RESEARCH SUPPORT & FUNDING

CURRENT

NIH/NICHD R21 (Janiak)
06/2021-05/2023
Role: Co-Investigator
Birth Control to Improve Birth Spacing (BIBS)

Society for Family Planning (Janiak)
06/2022-05/2023
Role: Statistician
Abortion Access for Marginalized Young People after Roe: A Mixed-Methods Study

COMPLETED

Gates Foundation (Croke)
06/2021-07/2022
Role: Statistician
The Service Delivery Redesign for Maternal Health Evaluation: Kakamega County

Canadian Institutes of Health Research (Hedt-Gauthier & Law)
06/2020-05/2021
Role: Co-Investigator
Utilizing health systems data to respond to COVID-19 in seven resource poor countries

Harvard Data Science Initiative (Fulcher)
09/2020-08/2022
Role: Fellow

PROFESSIONAL SERVICE

PEER REVIEW

Ad Hoc Reviewer: *Biometrics, Biometrika, Biostatistics, Journal of American Statistical Association, Statistics in Medicine, Journal of Causal Inference, Statistical Methods in Medical Research, Lifetime Data Analysis, Review of Economics and Statistics, Epidemiology, International Journal of Epidemiology, PLOS Global Health, Annals of Global Health, BMJ Open, BMC Pregnancy and Childbirth*

Pre-Publication Support Service (PREPSS) Peer Reviewer   November 2020 - Present
Provide manuscript development support to researchers from around the globe to address authorship disparities

LEADERSHIP

Co-chair, Causal Inference Session, Society for Epidemiological Research   2022
Abstract Reviewer, American Public Health Association   2022
Abstract Reviewer, Society for Epidemiological Research   2022

UNIVERSITY ACTIVITY

Coordinator, DGHE/DGHSM Joint Working Group, Harvard Medical School   2021, 2022
Mentor, Pipelines into Biostatistics Summer Program, Harvard T.H. Chan School of Public Health   2018
Student Committee Chair, Department of Biostatistics, Harvard T.H. Chan School of Public Health   2018
Organizer, HIV Working Group, Department of Biostatistics, Harvard T.H. Chan School of Public Health   2017