Shira Mitchell
Statistician
sam942@mail.harvard.edu

Positions

2018-Present   New York City Mayor's Office of Data Analytics

2016-2018   Mathematica Policy Research

2014-2016   Postdoctoral Fellow, Columbia University

Statistical consultant

2011-Present   Human Rights Data Analysis Group (HRDAG)

2017-Present   Airwars

2018-Present   Data for Progress

Education

2009-2014   PhD in Biostatistics, Harvard University

2005-2009   BA in Mathematics (minor in Computer Science), Harvard University

Teaching

2007-2014   Teaching Assistant and Tutor, Harvard University
Courses: graph theory and combinatorics, algorithms, regression, longitudinal data analysis, econometrics, statistical inference, and probability.

Experience

MRP: multilevel regression and poststratification (often done via Bayesian inference)
SAE: small area estimation (often done via MRP)
MSE: multiple systems estimation (also called capture-recapture)

Collaborations are with US government agencies and US-based organizations unless otherwise specified.

2011-Present   Human Rights Data Analysis Group (HRDAG)
Developed Bayesian models for population size estimation using MSE. Applied methods to estimate the number of deaths in armed conflicts.

2017-Present   Airwars, a journalistic transparency project, London, UK
Produced statistical graphics of reported civilian casualties from Coalition airstrikes in Iraq and Syria.

2014-2018   Millennium Villages Project (MVP)
Designed and implemented a 10-country impact evaluation of the MVP, a 10-year economic development project in Africa.

2016-2018   Department of Labor (DOL)
Produced guidance (text, videos, tools) on survey sampling and analysis for child labor research.

2017-2018   Food and Nutrition Service (FNS)
Used a matched-comparison method to estimate impact of direct certification with Medicaid for free / reduced-price meals.

2018   Department of Defense (DOD)
Developed MRP to estimate TRICARE acceptance rates in hospital service areas.

2018   Internal Revenue Service (IRS)
Validated methods to identify low-income communities for designation of Qualified Opportunity Zones, using data from the American Community Survey (ACS).

2016-2017   Center of Medicare & Medicaid Services (CMS)
Analyzed clinician and staff survey data from the Comprehensive Primary Care (CPC) initiative, accounting for sampling design and nonresponse. Developed a Bayesian varying-treatment effects model for CPC's impact on Medicare costs.

2017   Center of Medicare & Medicaid Services (CMS)
Wrote a brief on SAE for health care quality measures for Medicaid enrollees.

2017   Institute of Education Sciences (IES)
Wrote a brief on (mis)use of p-values in impact evaluations.

2016   National Law Center on Homelessness & Poverty
Conducted a literature review on public costs of providing housing to the homeless.

2009, 2012-2013   Management and Development for Health - Dar es Salaam, Tanzania
Data management and analysis for HIV patient care, including estimating the impact of quality of care on maternal mortality among HIV-positive pregnant women.

2010   Ministry of Health - Lilongwe, Malawi
Developed lot quality assurance sampling methods to assess data quality in HIV clinics.

Academic Papers

2018 Mitchell, S., E. Potash, S. Barocas. "Prediction-Based Decisions and Fairness: A Catalogue of Choices, Assumptions, and Definitions." https://arxiv.org/abs/1811.07867

2018 Mitchell, S., A. Gelman, R. Ross, J. Chen, S. Bari, U. Kim Huynh, M. Harris, S.E. Sachs, E.A. Stuart, A. Feller, S. Makela, A.M. Zaslavsky, L. McClellan, S. Ohemeng-Dapaah, P. Namakula, C. Palm, and J.D. Sachs. "The Millennium Villages Project: A Retrospective Observational End-Line Evaluation." *The Lancet Global Health*, May 2018, Volume 6, Issue 5, e500 - e513.

2015 Mitchell, S., A. Ozonoff, A. M. Zaslavsky, K. Lum, and B.A. Coull. "Population Size Estimation with Inactive Lists: Hierarchical Mixture Models and Missing Data with Application to Armed Conflict Data." *Annals of Applied Statistics*, revision requested.

2015 Exner, N., S. Mitchell, and M. Pagano. "The Use of the Finite Population Correction in Survey Design for National Disease Surveillance." Working paper.

2013 Mitchell, S.A. Ozonoff, A.M. Zaslavsky, B. Hedt-Gauthier, K. Lum, and B.A. Coull. "A Comparison of Marginal and Conditional Models for Capture-Recapture Data with Application to Human Rights Violations Data." *Biometrics*, vol. 69, no. 4, December 2013, pp. 1022-1032.

2012 Hedt-Gauthier, B.L., L. Tenthani, S. Mitchell, F.M. Chimbwandira, S. Makombe, Z. Chirwa, E.J. Schouten, M. Pagano, and A. Jahn. "Improving Data Quality and Supervision of Antiretroviral Therapy Sites in Malawi: An Application of Lot Quality Assurance Sampling." *BMC Health Services Research*, vol. 12, no. 196, 2012.

2012 Mitchell, S., and M. Pagano. "Pooled Testing for Effective Estimation of the Prevalence of Schistosoma Mansoni." *American Journal of Tropical Medicine and Hygiene*, vol. 87, no. 5, 2012, pp. 850-861.

2012 Mitchell, S., and M. Pagano. "Effective Classification of the Prevalence of Schistosoma Mansoni." *Tropical Medicine International Health*, vol. 17, no. 12, December 2012, pp. 1470-1477.

2007 Gravano, A., S. Bensus, J. Hirschberg, S. Mitchell, and I. Vovsha. "Classification of Discourse Functions of Affirmative Words in Spoken Dialogue." *Proceedings of Interspeech*, August 2007, pp. 1613-1616.

Authored Media Articles

2018 Mitchell, S. "Worries Grow Census Data Could Be Used to Target the Undocumented." *The Indypendent*, May 2018, https://indypendent.org/2018/05/census-data-could-be-used-to-target-the-undocumented/.

Invited Talks

2019 Statistics Department Seminar, Columbia University, New York, NY
Prediction-based decisions and fairness: choices, assumptions, and definitions

2018 Rosenkranz Global Health Policy Symposium at Stanford University, Stanford, CA
The Millennium Villages Project: a retrospective, observational, endline evaluation

2018 The Math and Democracy Seminar, New York University (NYU), New York, NY
Prediction-based decisions and fairness: choices, assumptions, and definitions

2018 Google AI, Cambridge, MA
Prediction-based decisions and fairness: choices, assumptions, and definitions

2018 Joint Statistical Meetings, Vancouver, Canada
The Millennium Villages Project: a retrospective, observational, endline evaluation

2018 Data Analytics Networking Night, New York, NY
The Millennium Villages Project: a retrospective, observational, endline evaluation

2018 Program in Global Surgery and Social Change, Harvard Medical School, Boston, MA
The Millennium Villages Project: a retrospective, observational, endline evaluation

2018 Bayesian Statistics for the Social Sciences, Columbia University, New York, NY
The Millennium Villages Project: a retrospective, observational, endline evaluation

2018 Keynote Address at the Global Health & Innovation Conference, Yale University, New Haven, CT
with S.E. Sachs and J.D. Sachs
Lessons from the Millennium Villages Health System

2018 Department of Computer Science, Princeton University, Princeton, NJ
Fairness and Causality

2017 Goldman School of Public Policy at University of California, Berkeley, Berkeley, CA
The Error of Our Ways: Making Policy Decisions Under Uncertainty

2017 Department of Public Policy, Tel Aviv University, Tel Aviv, Israel
Evaluating the Fight Against Extreme Poverty: The Millennium Villages Project

2016 Department of Mathematics and Statistics, Georgetown University, Washington D.C.
Causal Inference with Small Samples and Incomplete Baseline for the Millennium Villages Project

2016 Department of Biostatistics, Johns Hopkins, Baltimore, MD
Causal Inference with Small Samples and Incomplete Baseline for the Millennium Villages Project

2015 Department of Mathematics, Bucknell University, Lewisburg, PA
Causal Inference with Small Samples and Incomplete Baseline for the Millennium Villages Project

2015 Seminar for the Study of Development Strategies, Columbia University, New York, NY
Causal Inference with Small Samples and Incomplete Baseline for the Millennium Villages Project

2014 Joint Statistical Meetings, Boston, MA
Population Size Estimation with Inactive Lists: Hierarchical Mixture Models and Missing Data with Application to Armed Conflict Data

2014 Conference of the ASA Section on Statistical Learning and Data Mining, Durham, NC
Population Size Estimation with Inactive Lists: Hierarchical Mixture Models and Missing Data with Application to Armed Conflict Data

2013 Global Maternal Health Conference, Arusha, Tanzania
Does the Quality of Clinical Care Impact Maternal Mortality Among HIV-Positive Pregnant Women in HIV Care and Treatment Clinics in Dar es Salaam?

Skills

Proficient in R, Stan, Git/GitHub, LaTeX, Markdown, command line
Experience with AWS, SQL, STATA, SAS, Shiny, HTML, CSS, JavaScript
Languages: Hebrew (fluent), Spanish (elementary proficiency)

References

Andrew Gelman
Professor of Statistics
Columbia University
212-851-2142
gelman@stat.columbia.edu

Joseph K Blitzstein
Professor of the Practice in Statistics
Harvard University
617-496-2985
blitzstein@stat.harvard.edu

Jeffrey D Sachs
Professor of Sustainable Development
Columbia University

sachs@ei.columbia.edu

Alan M Zaslavsky
Professor of Health Care Policy
Harvard University
617-432-2441
zaslavsky@hcp.med.harvard.edu

Mariel Finucane
Senior Statistician
Mathematica Policy Research
mfinucane@mathematica-mpr.com