Dennis M. Feehan

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Current position

Assistant Professor (January 2016 - present)
Department of Demography
University of California, Berkeley

Previous positions

Research Scientist (Postdoc; Fall/Winter 2015)
Facebook
Menlo Park, California

Education

Ph.D. Demography, Princeton University (2015).
Dissertation: *Network reporting methods.*
Committee: Matthew J. Salganik (chair); Noreen Goldman; Scott Lynch; Doug Massey
General exams: Demographic Methods; Mortality; and
Mathematical and Statistical Methods in Population Health

A.B., Mathematics, Harvard University (2002).

Working papers

Feehan, D. M. and Borges, G. M. (2019). Estimating adult death rates from sibling histories: A network approach. *arXiv:1906.12000 [stat]* (Accepted at *Demography); draft available from https://arxiv.org/abs/1906.12000)*

Feehan, D. and Mahmud, A. (2020). Quantifying interpersonal contact in the United States during the spread of COVID-19: First results from the Berkeley Interpersonal Contact Study. *medRxiv*, page 2020.04.13.20064014 (revise and resubmit at *Nature Communications; draft available from https://www.medrxiv.org/content/10.1101/2020.04.13.20064014v2)*

Feehan, D. M. and Wrigley-Field, E. How do populations aggregate? (revise and resubmit at *Demographic Research)*

Wrigley-Field, E. and Feehan, D. M. In a stationary population, the average lifespan of the living is a length-biased life expectancy (revise and resubmit at *Demography)*

Yildirim, U. and Feehan, D. M. (2020). Inequality and Fairness: A Networked Experiment. Technical report, SocArXiv (draft available from `https://osf.io/preprints/socarxiv/at536/`)

Peer-reviewed publications

Feehan, D. M. and Cobb, C. (2019). Using an Online Sample to Estimate the Size of an Offline Population. *Demography*, 56(6):2377–2392

Feehan, D. M. (2018b). Separating the Signal From the Noise: Evidence for Deceleration in Old-Age Death Rates. *Demography*, 55(6):2025–2044

Feehan, D. M., Mahy, M., and Salganik, M. J. (2017). The network survival method for estimating adult mortality: Evidence from a survey experiment in Rwanda. *Demography*, 54(4):1503–1528

Feehan, D. M. and Salganik, M. J. (2016a). Generalizing the Network Scale-Up Method: A New Estimator for the Size of Hidden Populations. *Sociological Methodology*, 46(1):153–186 (available from `http://arxiv.org/abs/1404.4009`.)

- ASA Outstanding Article in Mathematical Sociology Award (co-winner, 2018)

Feehan, D. M., Umubyeyi, A., Mahy, M., Hladik, W., and Salganik, M. J. (2016). Quantity Versus Quality: A Survey Experiment to Improve the Network Scale-up Method. *American Journal of Epidemiology*, page kwv287

Lozano, R., Soliz, P., Gakidou, E., Abbott-Klafter, J., Feehan, D., Vidal, C., Ortiz, J., and Murray, C. (2006). Benchmarking the performance of Mexican states with effective coverage. *The Lancet*, 368(9548):1729—1741

Gakidou, E., Lozano, R., González-Pier, E., Abbott-Klafter, J., Barofsky, J., Bryson-Cahn, C., Feehan, D., Lee, D., Hernandez-Llamas, H., and Murray, C. (2006). Assessing the effect of the 2001-2006 Mexican Health Reform: An interim report card. *The Lancet*, 368:1920—1935

Murray, C., Lopez, A., Chin, B., Feehan, D., and Hill, K. (2007a). Estimation of potential global pandemic influenza mortality on the basis of vital registry data from the 1918-–20 pandemic: A quantitative analysis. *The Lancet*, 368(9554):2211—2218

Murray, C., Lopez, A., Feehan, D., Peter, S., and Yang, G. (2007b). Validation of the symptom pattern method for analyzing verbal autopsy data. *PLoS Medicine*, 4(11)

Open-Source Software

Feehan, D. M. and Salganik, M. J. (2014b). Networkreporting: Tools for analyzing network reporting data (Available from CRAN:
`http://cran.r-project.org/web/packages/networkreporting/index.html`)

Feehan, D. M. and Salganik, M. J. (2016b). Surveybootstrap: Tools for the Bootstrap with Survey Data (Available from CRAN:
`http://cran.r-project.org/web/packages/networkreporting/index.html`)

Feehan, D. M. (2018a). Mortfit: Tools for fitting mortality hazard models (Available from github:
`https://github.com/dfeehan/mortfit`)

Feehan, D. M. (2020). Siblingsurvival: Estimating adult death rates using from sibling history data (Available from github:
`https://github.com/dfeehan/siblingsurvival`)

Works in progress

"Network reports for estimating adult mortality: validation in Brazil" (Joint with Matthew Salganik.) I use the network reporting estimator that I develop in my dissertation to estimate adult mortality rates among 25,000 survey respondents in 27 Brazilian cities. Since the cities have high quality vital registration data, I am able to compare the network reporting estimates to a gold standard in each city, resulting in 27 separate validation studies from a wide range of socioeconomic conditions.

"A new estimator for the size of weak-tie networks: Evidence from a network scale-up study in Vietnam" (Joint with Abu Abdul-Quader, Nga Nguyen, Ali Safarnejad, and Vo Hai Son.) We introduce a new method for estimating the size of weak-tie personal networks from a conventional sample survey. Our approach requires fewer assumptions and less prior information than the widely-used existing estimator. We derive our approach statistically and provide a first empirical test using original data collected in a household social network survey of people living in Hanoi, Vietnam.

Talks and Conference Presentations

"Using an online sample to estimate the size of an offline population," presentation at BAY-SICCS (the Bay Area Summer Institute in Computational Social Science), June 2020

"BICS: The Berkeley Interpersonal Contact Study," lighting talk at UC Berkeley Population Center Brown Bag, Spring 2020.

I co-organized the IUSSP Expert Group Meeting on Population Data for the 21st Century at the UNFPA in New York, December 2019.

"Using sampled social network data to estiamte adult death rates: Evidence from Brazil," presentation at Joint Statistical Meetings, Denver, August 2019.

"Using an online sample to estimate the size of an offline population," presentation at UCLA Summer Institute in Computational Social Science, June 2019

"How do populations aggregate?" talk at Formal Demography Workshop, Berkeley, Summer 2019.

"How do populations aggregate?" talk at Population Association of America meeting, Austin, TX, April 2019.

"Using sampled social network data to estimate adult death rates: evidence from Brazil," talk at Population Association of America meeting, Austin, TX, April 2019.

"Using an online sample to learn about an offline population: network reporting estimates of internet adoption around the world," presentation at University of Michigan, April 2019.

"Using sampled social network data to estimate adult death rates," presentation at Ohio State, January 2019.

"Using sampled social network data to estimate adult death rates," presentation at IUSSP/MPIDR Workshop on Mortality Monitoring in the Era of the SDGs, Rostock, Germany, December 2018..

"Estimating death rates from network reports," invited presentation at US Centers for Disease Control, Atlanta (given remotely), September 2018.

"Estimating the size of hidden populations using the network scale-up method," presentation at RSF Summer Instituate on Migration Research Methods, Berkeley, Summer 2018.

"Network reporting methods and aggregate relational data," presentation at UCNets Conference, Summer 2018.

"Aggregate relational data and the network scale-up method," presentation at the Sunbelt 2018 conference.

"Estimating adult mortality from sibling histories: A network approach," presentation at Formal Demography Workshop, Berkeley 2018.

"Estimating internet adoption around the world using a sample of Facebook users," 2018 PAA pre-conference workshop "Demographic Research in the Digital Age," Denver.

- Keynote address and tutorial

"Estimating adult death rates from sibling histories: A network approach," presentation at Population Association of America 2018 conference, Denver.

"Estimating internet adoption around the world using a sample of Facebook users," presentation at Population Association of America 2018 conference, Denver.

"Using sampled social network data to estimate the size of hidden populations," presentation at UC Berkeley Sociology Seminar, 2018.

"Using sampled social network data to estimate adult death rates," presentation at Center for Statistics and the Social Sciences seminar, University of Washington, 2017.

"Using sampled social network data to estimate adult death rates," presentation at Duke University DUPRI Seminar, 2017.

"Estimating death rates using survey reports about social networks," presentation at the University of Wisconsin, Madison, 2017.

"Estimating the size of hidden populations using the network scale-up method," presentation at US State Department's Bureau of Intelligence and Research, 2017.

"Estimating the size of key populations at risk of HIV in Brazil using the network scale-up method," presentation at Population Association of America conference, Chicago, 2017.

Co-organizer (with Emilio Zagheni) of SocInfo 2016 workshop "Web, Social Media, and Cellphone Data for Demographic Research."

"Estimating internet adoption around the world using a sample of Facebook users," presentation at International Conference on Compuational Social Science, Cologne, Germany 2017.

"Generalizing the network scale-up method," presentation at Population Association of America conference, Washington, D.C, 2016.

"Using sampled social network data to estimate the size of hidden populations," presentation at RAIN Seminar, Stanford, 2016.

"Network reporting methods," presentation at the Workshop on Incomplete Network Data, Sandia National Lab, March 2016.

"Quantity vs. Quality: A Survey Experiment to Improve the Network Scale-up Method," presentation at the American Sociological Association, Chicago, August 2015.

"Using sampled social network data to estimate the size of hidden populations," presentation at the Joint Statistical Meetings, Seattle, August 2015.

"Using sampled social network data to estimate the size of hidden populations," presentation at the Guttmacher Institute, New York, August 2015.

"Using sampled social network data to estimate the size of hidden populations (including deaths)," presentation at Centers for Disease Control, Division of Global HIV/AIDS (DGHA), March 2015.

"Social networks and surveys," presentation at RAPIDD Workshop on Globalization and the spatial scale of disease spread and elimination: opportunities and challenges of existing and novel data-streams, Princeton, February 2015.

"Network reporting methods for estimating adult mortality," Center for the Study of Complex Systems, U. of Michigan, January 2015.

"Network reporting methods for estimating adult mortality," Departments of Sociology and Statistics, UCLA, December 2014.

"Network reporting methods for estimating adult mortality," Department of Demography, Berkeley, November 2014.

"Network reporting methods for estimating adult mortality," presented at Disease Group, Department of Ecology and Evolutionary Biology, Princeton, November 2014.

"An experimental framework for continual improvement in survey research," presented at Population Association of America conference, Boston, 2014.

"How should we measure mortality at the oldest ages?" presented at Population Association of America conference, Boston, 2014.

Discussant for session "Digital records for Demographic Research", Population Association of America conference, Boston, 2014.

"Social network methods for estimating adult mortality: evidence from Brazil and Rwanda," presented at Notestein Lecture Series, Office of Population Research, Princeton University, 2014.

"Network reporting methods for estimating adult mortality: evidence from Brazil and Rwanda," presented at Center for the Study of Democratic Policy Networks Workshop, Princeton University, 2014.

"Social network methods for measuring adult mortality: evidence from Rwanda," presentation at American Sociological Association meeting, New York, 2013.

"Social network methods for measuring adult mortality: evidence from Brazil," presentation at Population Association of America conference, New Orleans, 2013.

"Social network methods for measuring adult mortality: evidence from Rwanda," presentation at Chaire Quetelet conference, Louvain, Belgium, December, 2012.

"Social network methods for measuring adult mortality: evidence from Rwanda," presentation at Population Association of America conference, San Francisco, CA, 2012.

Discussant for session on Adult mortality at Population Association of America conference, San Francicso, CA, 2012.

"Some generalizations of the network scale-up method," presentation at UNAIDS meeting, New York, New York, March 2012.

"Social network methods for measuring adult mortality: evidence from Rwanda," presentation at Union for African Population Studies conference, Ougadougou, Burkina Faso, 2011.

"Network scale-up estimates for hidden populations," presentation at VIII Congresso Brasileiro de Epidemiologia, Sao Paulo, Brazil, November, 2011.

"How plausible are small-area estimates of fertility in sub-Saharan Africa," presentation at Population Association of America conference, Washington, D.C., 2010.

"How should we choose models of old-age mortality rates?" poster at Population Association of America conference, Washington, D.C., 2010.

Reviewer: Journals

American Journal of Sociology, Annals of Applied Statistics, BMC Public Health, Cadernas de Saude Publica, Demography, Demographic Research, Epidemiology, International Journal of Epidemiology, Journal of Ethnic and Migration Studies, Journal of Survey Statistics and Methodology, JMIR Public Health and Surveillance, PLoS One, PNAS, Management Science, Nature Medicine, Population Development Review, Population Research and Policy Review, Sexually Transmitted Infections, Social Forces, Social Networks, Sociological Methodology, Sociological Methods and Research, Vienna Population Yearbook, International Journal of Epidemiology

Reviewer: Conferences

IC2S2 2017; SocInfo 2019

Work experience

Research Scientist (earlier, Core Data Science Intern), **Facebook** (Menlo Park, CA; summer 2014 and fall/winter 2015). I used Facebook's data about 1.3 billion users to study migration, social networks, and online survey research, in addition to other problems at the intersection of sociology, social networks and statistics.

Visiting student, **Microsoft Research** (New York, NY; 2014). I visited the lab every week to attend seminars and meet with researchers in MSR's New York office.

Researcher, **Institute for Health Metrics and Evaluation** (Seattle, WA; 2007-2008). I focused on statistical strategies for analyzing verbal autopsy data and on some of the methodological issues involved in the ongoing update of the Global Burden of Disease Study. I also supervised two research assistants.

Post Bachelor Fellow, **Harvard Initiative for Global Health** (Cambridge, MA; 2005-2007). I was selected in a competitive application process. The fellowship involved classwork in public health and statistical methodology, as well as participation in research projects focusing on health system metrics in the developing world. Part of my work was conducted on Pemba Island, and in Dar Es Salaam, Tanzania.

Software engineer, **SmarterLiving** and **Actifunds** (Cambridge, MA; summer 2000 and 2001). As an undergraduate, I spent two summers as a software engineer for start-ups. I worked on a mixture of designing back-end systems, database interfaces, and web scrapers; most of the work was in Perl, with some C.

Honors and awards

Hellman Fellows Award, 2020

American Sociological Association Outstanding Article in Mathematical Sociology Award, 2018

Charles F. Westoff Prize in Demography, 2016

Princeton Center for Health and Wellbeing Global Health Grand Challenge award for graduate research funding

Princeton Institute for International and Regional Studies dissertation support award

NIH grant for graduate study

Harvard College Scholarship

Presidential Scholar Finalist

Teaching

UC Berkeley, Assistant Professor

- *Demography 180: Social Networks*, Spring 2017-2019 - undergraduate lecture class in social networks (`http://dennisfeehan.org/teaching/2018sp_demog180.html`).
- *Demography 280: Social Networks*, Fall 2020; Spring 2016-2019 - graduate seminar in social networks (originally called Demography 260) (`http://www.dennisfeehan.org/teaching/201601_demog260.html`).
- *Demography 260: Field Methods and Research Design*, Fall 2019 - graduate seminar covering applied research design (`http://dennisfeehan.org/teaching/2019fa_demog260.html`).
- *Letters & Science 88: Social Networks*, Fall 2016 - undergraduate data science connector class (`http://www.dennisfeehan.org/teaching/2016fa_ls88.html`).
- *Letters & Science 88: Broken down by age and sex*, Fall 2018 - undergraduate data science connector class (`http://dennisfeehan.org/teaching/2018fa_ls88.html`).

Princeton University, Preceptor

- *Sociology 504: Social Statistics*, Spring 2009 - the second class in the Sociology Department's graduate statistics sequence, which covered statistical models and graphics with examples, exercises, and homeworks in R
- *Introduction to R*, Spring 2009 - co-taught a day-long departmental introduction to R with Matthew J. Salganik
- *Economics/Sociology 572: Demographic Methods*, Spring 2010 - the Office of Population Research's graduate-level methods class, covering life-table methods, stable population theory, methods for direct and indirect estimation, and survival analysis
- *Introduction to Demographic Methods*, Summer 2012 and 2011 - the Office of Population Research's demography 'boot camp' for incoming graduate students

Harvard University, Teaching Fellow

- *CS50: Introduction to Computer Science I (two years)* the first course in computer science for majors; we covered the fundamentals of programming, basic algorithms and their analysis, and computer architecture. I taught a section, held office hours, led review sessions, and graded homeworks and exams. All of the problems sets and exams were in C and Assembler. I was awarded a Certificate of Distinction in Teaching as a result of my outstanding student evaluations.

- *CS51: Introduction to Computer Science II (Summer)* - the second class in the introductory computer science sequence. We covered design and analysis of more advanced algorithms, and introductory functional and object oriented programming languages. The homeworks and exams were in LISP, Java, and C++. At the end of the class, the students wrote most of a garbage-collected LISP interpreter.
- *Introduction to Probability and Combinatorics* - an Extension School class in the mathematics of probability and combinatorics. I led sections, held office hours, and graded homeworks and exams.