

Gail E. Potter

Curriculum Vitae

Statistics Department
California Polytechnic State University
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EDUCATION

University of Washington (2005-2010)

PhD, Statistics, December 2010

- Track in Statistical Demography ([Center for Statistics and the Social Sciences](#))
- Completed Qualifying Examinations in Statistical Theory and Applied Statistics

Oberlin College (1993-1997)

B.A. Mathematics, May 1997 (Cumulative GPA: **3.7**; Major GPA: **3.8**)

RESEARCH INTERESTS

Applications of statistics to social science and public health problems, social network analysis, longitudinal data analysis, stochastic modeling, epidemic models, statistical demography, data analysis

EMPLOYMENT

Assistant Professor, 2012-present. Teach courses in statistics, probability, and computing, develop and maintain a program of applied and methodological statistics research, develop and supervise undergraduate senior projects, perform statistical consulting, and perform service such as organizing department seminars and assisting with hiring new faculty members.

Fred Hutchinson Cancer Research Center, Vaccine and Infectious Disease Division, Seattle, WA
Post-doctoral Research Fellow, 12/10–8/12; Research Assistant, 9/08–11/10. Under supervision of Dr. Ira M. Longini, Jr. and Dr. M. Elizabeth Halloran, developed statistical models for influenza transmission through networks of face-to-face social contacts. As a member of the interdisciplinary [Center for Statistics and Quantitative Infectious Diseases](#) (CSQUID), collaborated with epidemiologists, biostatisticians, and computer programmers on studies analyzing disease transmission.

Institut de Recherche pour le Développement (IRD), Niakhar, Senegal

Statistical Advisor funded by external grant, 7/09 – 8/09

In collaboration with Jonathan Sugimoto (PhD, Epidemiology, University of Washington), IRD, and PATH, advised researchers on design and implementation of a social contact survey administered in conjunction with an influenza vaccine trial.

University of Pennsylvania Population Studies Center, Mchinji Malawi

Research Intern with the *Malawi Longitudinal Study of Families and Health*, 6/08 – 8/08

Managed a team of data entry specialists during survey implementation in Malawi, Africa. Supervised data entry, merged databases in STATA, performed consistency checks, supervised data cleaning, and coordinated communication between the data entry team, the interview supervisors, and the qualitative

researchers. Advocated for employee needs with the project manager and organized social events to support employee morale during fieldwork in a cross-cultural research community.

University of Washington, Seattle, WA

Supervised independent study with Dr. Mark S. Handcock, summer 2006 and 9/07 – 5/08

Studied the methodology used to estimate HIV/AIDS prevalence by the Joint United Nations Programme on HIV/AIDS (UNAIDS). Analyzed economic resource exchange networks in a Malawian village.

Boulder Community Hospital, Boulder, CO

Unit Coordinator/Secretary, 8/03 to 6/05. Managed the flow of patients in the surgery recovery room, served as point of contact for patient care providers in various departments, logged surgery cases electronically, and multi-tasked numerous secretarial duties in an emotionally charged environment. Created an Excel workbook to automate the daily staffing assignments and ensure fair staffing distribution. I worked the same job in the pre-operative unit for surgery from 8/03 to 8/04.

Baxter Hemoglobin Therapeutics, Boulder, CO

Receptionist/Documentation Assistant, 11/02 to 9/03. Implemented an electronic system to track employee training, designed and maintained Access databases to track documents, designed and led engaging and creative training sessions on Quality Assurance procedures and software for individuals and groups of up to 90 employees, assisted with writing and proofreading Standard Operating procedures, greeted visitors, answered phones, and performed other miscellaneous reception and office duties.

The Urban Institute, Washington, DC

Research Assistant for Drs. Jeff Passel, Rebecca Clark, and Linda Giannarelli. 6/98 to 6/99.

Performed data analysis supporting child welfare and immigration policy studies. Duties included extensive SAS programming, exploratory data analysis, imputing variables, implementing prediction programs, testing survey questionnaires, and others.

PUBLICATIONS

Gail E Potter, Timo Smieszek, and Kerstin Sailer. [Modelling workplace contact networks: the effects of organizational structure, architecture, and reporting errors on epidemic predictions](#), (2015) to appear in *Network Science*.

Gail E. Potter and Niel Hens. [A penalized likelihood approach to estimate within-household contact networks from egocentric data](#), (2013) *Journal of the Royal Statistical Society, Series C (Applied Statistics)*, **62** (4), p. 629-648.

Gail E. Potter, Mark S. Handcock, Ira M. Longini, Jr., and M. Elizabeth Halloran. [Estimating Within-School Contact Networks to Understand Influenza Transmission](#), (2012) *The Annals of Applied Statistics*, **6** (1), 1-26.

Gail E. Potter, Mark S. Handcock, Ira M. Longini, Jr., and M. Elizabeth Halloran. [Estimating Within-Household Contact Networks from Egocentric Data](#), (2011) *The Annals of Applied Statistics*, **5** (3), 1816-1838.

Gail E. Potter and Mark S. Handcock, [A Description of Within-Family Resource Exchange Networks in a Malawian Village](#), (2010) *Demographic Research*, **23**, 117-152

Yang Yang, Jonathan D. Sugimoto, M. Elizabeth Halloran, Nicole E. Basta, Dennis L. Chao, Laura Matrajt, **Gail Potter**, Eben Kenah, Ira M. Longini, Jr. [The Transmissibility and Control of Pandemic Influenza A \(H1N1\) Virus](#). *Science* 30 October 2009: **326** (5953), 729 – 733

MANUSCRIPTS IN PREPARATION

Gail E. Potter, Jonathan D. Sugimoto, M. Elizabeth Halloran, Ira M. Longini, Jr. and Jimmy Wong, *A social network model for infectious disease transmission in Senegal*. We are analyzing contact surveys administered in rural Senegal to understand the properties of the face-to-face social contact network there and implications for disease transmission.

Jimmy Doi, **Gail E. Potter**, Jimmy Wong, Irvin Alcaraz, and Peter Chi, *Web-based Shiny applications for statistical learning*, **currently under revision**. We are developing web-based applications using the R Shiny package to illustrate different statistical concepts at a variety of levels, from introductory to graduate level. We are writing a paper to share this [collection of apps](#) publicly and describe the utility of Shiny as a freely available, accessible tool for creating statistical demonstrations.

Nele Goeyvaerts, Niel Hens, and **Gail E. Potter**, *Modeling Household Contact Networks in Belgium*. We are analyzing Belgian data to estimate face-to-face contact networks within households.

STUDENT RESEARCH PROJECTS

Boudewijn Aasman (2015), Simulating the NBA playoffs using Logistic Regression and Random Forests.

Irvin Alcaraz (2015), Web Applications through RStudio's Shiny package.

Kelly Johnson (2015), Using Shiny to Visualize Terrorism Data.

Helen Totterdell (2015), Developing Applets for Science Courses: a Data Science Capstone Project.

Jessica Watson (2015), A Statistical Analysis of Implicit Race Attitudes as Predictors of Vote in the 2008 U.S. Presidential Election.

Jimmy Wong (2015) “Analysis of a social network in Niakhar, Senegal” undergraduate research project.

Henry Bongiovi (2014), [Simulating Influenza Transmission with Network Data](#), senior research project.

Henry Bongiovi (2014), “Simulating Influenza Transmission with Real Network Data,” oral presentation at the useR! Conference, Los Angeles, California.

Ciani Sparks (2013), “[Is Obesity Socially Contagious?](#),” senior research project.

PRESENTATIONS

Web application teaching tools for statistics using Shiny and R, useR! Conference, Aalborg Denmark, July 2015 (oral presentation)

Estimating workplace contact networks, MIDAS Meeting, Austin Texas, May 2013 (poster presentation)

Estimating social contact networks to improve influenza simulation models, Biology Department Seminar, California Polytechnic State University, November 2012 (oral presentation)

Estimating workplace contact networks from egocentric data, *Joint Statistical Meetings*, San Diego, CA, August 2012 (oral presentation)

Modeling Within-School Contact Networks to Understand Influenza Transmission, Epidemics Conference, Boston, MA, November 2011 (oral presentation)

[Modeling Within-School Contact Networks to Understand Influenza Transmission](#), (School Disease Transmission: Has the time come for coordination between monitors and modelers?), October, 2011 (webinar)

Modeling a Within-School Contact Network to Understand Influenza Transmission, *Joint Statistical Meetings*, Miami, FL, August 2011 (oral presentation)

Modeling a Within-School Contact Network to Understand Influenza Transmission, *Models of Infectious Disease Agent Study (MIDAS) Conference*, Atlanta, GA, June 2011 (oral presentation)

Estimating Within-Household Contact Networks from Egocentric Data, *SIMID Workshop on Infectious Disease Modeling and Economic Evaluation of Vaccines*, Antwerp, Belgium, April 2010 (oral presentation)

Estimating Within-Household Contact Networks from Survey Data, *Models of Infectious Disease Agent Study (MIDAS) Conference*, Chicago, IL, October 2009 (oral presentation)

Estimation of direct contact networks from field survey and outbreak investigation data, *Models of Infectious Disease Agent Study (MIDAS) Conference*, Atlanta, GA, June 2009 (oral presentation)

TEACHING

California Polytechnic State University, San Luis Obispo, CA

Instructor, Statistical Methods for Engineers. Calculus-based statistics and probability course for engineers.

Instructor, [Statistical Computing with R](#), Spring 2013, Spring 2014, Fall 2014. This is a 4-unit computing course for undergraduate statistics majors covering data structures, data manipulation, bootstrapping, statistical analysis, optimization, and simulation studies to evaluate performance of statistical methods.

Instructor, Statistics II, Winter 2014 and Winter, 2015. A second course in statistics for statistics and mathematics majors.

Instructor, Statistical Methods, Fall 2013. Introduction to statistical methods for life science graduate students.

Instructor, Probability and Statistics for Engineers and Scientists, Winter 2013. Calculus-based probability and statistics course for engineering majors.

Instructor, Statistics for the Life Sciences, Fall 2012, Winter 2013, Fall 2013, Spring 2014, Fall 2014. Introductory statistics for life science undergraduate students.

University of Washington, Seattle, WA

Instructor, [Introduction to R for Social Scientists](#), Winter 2009, 2010, 2011, and 2012
Introductory course in R for social science graduate students. Created a course website, wrote new lecture notes, and designed interactive and engaging lectures.

Instructor, [Center for Statistics and the Social Sciences Math Camp](#), Summer 2008, 2009, 2010, 2011.
One-week intensive review of undergraduate mathematics to graduate students in diverse disciplines, including social welfare, sociology, political science, and psychology. Curriculum includes calculus, linear algebra, probability, and statistics.

Mathematics Specialist, NSF-funded [GK-12 Program in Mathematics](#), 8/07 – 6/08
Assisted classroom teachers in a public elementary school with mathematics education by introducing intuitive and exploratory methods.

Teaching Assistant, Structural Equation Models, Fall 2006
This is a specialized methods course for social science graduate students covering latent variable models, factor analysis, and growth models.

Teaching Assistant, Statistics Section, Summer Transition Program, summer 2006
One-month residential program for incoming freshmen who are first-generation college students, minority students, or could otherwise benefit from additional support to succeed in college.

Teaching Assistant, Case-Based Social Statistics, Spring 2006
This course covers statistical methods for the social sciences, and is required for undergraduate sociology honors students.

U.S. Peace Corps, Nepal

English and Mathematics Teacher, 6/99 to 9/01

Completed an intensive three-month training program in language, culture, and pedagogy. Taught English and mathematics in Nepali in a rural public school. Created and ran a girls club to support intellectual and creative development. Trained new Peace Corps Volunteers and performed site development for Peace Corps. Served on the Peace Corps Women in Development Committee and the Peer Support Network. Successfully integrated into Nepali village life and culture, while facing challenges of life in a developing country: numerous health hazards, political instability, and growing violence.

U.S. Peace Corps, Guinea

Mathematics Teacher, 7/97 to 11/97

Completed an intensive three-month training program (in Thies, Senegal), in language, culture, and pedagogy. Lived with Senegalese host family. Taught high school mathematics in French.

GRANTS AND CONTRACTS

U01-GM070749 Halloran (PI) 05/01/09 - 04/30/14

National Institutes of Health - National Institute of General Medical Sciences MIDAS Grant

Containing Bioterrorist and Emerging Infectious Diseases

This grant funded course release time for me during 2012-2013 to work on development of social network methods for epidemic models. The overall objective of this grant is to develop, validate, and implement mathematical and statistical models for the transmission and within-host dynamics of naturally occurring infectious diseases and bioterrorism agents. These models will be used to assess the effectiveness and efficacy of various interventions to aid the distribution and allocation of resources in response to infectious disease outbreaks.

Cal Poly Research, Scholarly, and Creative Activities Grant (awarded, Fall 2014)

This seed grant supports a collaborative project with Cal Poly biology faculty members and staff in preparing an external grant proposal to collect data and develop new statistical methods to model within-species and between-species transfer of various strains of *E. coli* bacteria. The seed grant includes collection and analysis of pilot data as well as course release time.

CONSULTING

Statistical consulting for Dr. David Vazquez (Summer, 2014). Dr. Vazquez is a chiropractor who developed a digital-analog method to measure positional displacement between pre- and post- intervention x-rays by chiropractors. Inconsistent positional placement of the subject may confound the evaluation of intervention effectiveness (measured by comparing pre- to post-intervention x-rays). Dr. Vazquez designed a randomized, blinded study to assess validity of his method, and I measured validity through intra-class correlations, tolerance intervals, and Bland-Altman plots.

Statistical consulting for Dr. Sarah Ringold (Winter, 2009) Dr. Ringold studies juvenile idiopathic arthritis. We used factor analysis to develop a scale to measure disease activity by combining information from several clinical measurements.

SERVICE

- Reviewer for *Journal of the Royal Society Interface*, *PLoS One*, *Biometrics*, *Epidemics*, *Epidemiology and Infection*
- Co-facilitator of Cal Poly Statistics Department Seminars, 2012-present
- Graduate Student Representative, 2008-2009
- Member, UW Social Network Modeling Group, 2007-Present
- Lead Teaching Assistant, Department of Statistics, 9/06-9/07
- Research Assistant for the Statistics Learning Initiative, 1/07 – 6/07
- Department of Statistics Fun Committee Member, 2006-2007
- Member, National Science Foundation, Vertical Integration of Research and Education in the Mathematical Sciences (VIGRE) Undergraduate Research Committee, 2006-07

AWARDS & HONORS

- Thomas Francis Jr. Global Health Travel Scholarship, 2009, awarded to undertake fieldwork in Niakhar, Senegal
- Dorothy M. Gilford teaching award, 2008-2009, awarded for outstanding performance as a teaching assistant
- National Science Foundation, Graduate Teaching Fellowship, 2007-2008
Awarded to graduate students with strong mathematical ability, teaching skills, and cultural sensitivity. Fellows serve as math specialists in the Seattle public schools.
- National Science Foundation, Vertical Integration of Research and Education in the Mathematical Sciences (VIGRE) Fellowship, 2005-2007
- Achievement Rewards for College Scientists (ARCS) Fellowship, 2005-2007
Awarded for academic excellence and promise in a scientific discipline.
- Hubert M. Blalock Fellowship, 2005
Awarded by University of Washington's Center for Statistics and the Social Science to incoming students who are considered promising candidates for interdisciplinary research.

- University of Colorado Continuing Education Scholarship, 2004
- Phi Beta Kappa Honor Society, elected 1997
- Oberlin co-winner of the William Putnam Mathematics Competition, 1995
- National Merit Scholarship Finalist, 1993