Harvard Medical School Curriculum Vitae

Date Prepared:	May 7, 2020
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Education

2005	B.S.	Statistics	The George Washington University
2007	M.A.	Biostatistics	University of California, Berkeley
2011	Ph.D.	Biostatistics	University of California, Berkeley

Postdoctoral Training

9/11-8/13	NSF Mathematical Sciences Postdoctoral Research Fellow	Biostatistics	Johns Hopkins Bloomberg School of Public Health

Faculty Academic Appointments

9/13-2/16	Assistant Professor of Health Care Policy (Biostatistics)	Health Care Policy	Harvard Medical School
3/16-	Associate Professor of Health Care Policy (Biostatistics)	Health Care Policy	Harvard Medical School

Major Administrative Leadership Positions

Local

2015-	Co-Director	Health Policy Data Science Lab
2018	Conference Organizer	Machine Learning for Causal Inference Workshop, Harvard Data Science Initiative Conference

Regional

2012	Conference Organizer	Atlantic Causal Inference Conference
2014	Conference Organizer	New England Statistics Symposium

National

2017-2018	Secretary/Treasurer	American Statistical Association, Biometrics Section
2019-2021	Chair-Elect, Chair, Past Chair	American Statistical Association, Biometrics Section

International

2015	Conference Organizer	International Conference on Health Policy Statistics
2016	Co-Chair	3rd IEEE International Conference on Data Science and Advanced Analytics, Health Data Science Special Sessions
2019	Conference Organizer	Statistical Analysis of Large Administrative Health Databases: Emerging Challenges and Strategies Banff International Research Station 5-Day Workshop

Committee Service
Local

2007-2010	Biostatistics Graduate Student Association	University of California, Berkeley *Founder & President*
2008-2011	Recruitment and Diversity Services Student Ambassador Program	University of California, Berkeley *Member*
2010-2011	Admissions Committee, Biostatistics MA and PhD Program	University of California, Berkeley *Member*
2010-2011	School of Public Health Student Government	University of California, Berkeley *Member*
2015-	Committee on Higher Degrees in Health Policy	Harvard University *Member*
2016	Admissions Committee, Summer Program in Biostatistics and Computational Biology	Harvard Chan School of Public Health *Member*
2016-2017	Statistics Faculty Search Committee, Department of Health Care Policy	Harvard Medical School *Member*
2016-	Curriculum Development Board, Essentials of Medicine, Health Policy – Part II	Harvard Medical School *Member*
2016-	Admissions Committee, Health Policy PhD Program	Harvard University *Member*
2018, 2019	Harvard Data Science Initiative Postdoctoral Fellow Program	Harvard University *First Round Reviewer*
2018-2021	Faculty Council	Harvard Medical School *Elected Preclinical Member*
2018-2020	Foundry Planning Committee	Harvard Medical School *Member*

National

2012	Informal Committee of Junior Statisticians	American Statistical Association *Founder & Member*
2013-2014	Advisory Group on Statistics and Computer Science for Big Data	American Statistical Association *Member*
2014-2016	Committee on Meetings	American Statistical Association *Member*
2015	Thomas R. Ten Have Award Committee	Atlantic Causal Inference Conference *Member*
2017	Student Travel Award Committee	American Statistical Association, Health Policy Statistics Section *Member*
2018	Program Committee	Machine Learning for Healthcare Conference *Member*
2018	Senior Advisory Committee	3rd Annual Population Health Science Research Workshop *Member*
2019	David P. Byar Young Investigator Award Committee	American Statistical Association, Biometrics Section *Member*

2019	Program Committee	Eastern North American Region of the International Biometric Society *Member*
2019	Scientific Committee	Frontier of AI-Assisted Care Scientific Symposium, Stanford University *Member*
2019	Planning Committee	Social Science Modeling for Big Data in the World of Machine Learning Workshop, National Academy of Sciences, Engineering, and Medicine *Member*
2020, 2021	David P. Byar Young Investigator Award Committee	American Statistical Association, Biometrics Section *Chair*
2020	Annual Research Meeting Disparities and Health Equity Review Committee	AcademyHealth *Member*

International

2015	Student Travel Award Committee	International Conference on Health Policy Statistics *Member*
2015-	Subcommittee on High-Dimensional Data Analysis	STRATOS Initiative *Member*
2018	Student Travel Award Committee	International Conference on Health Policy Statistics *Member*
2018-2019	Bernie J. O'Brien New Investigator Award Committee	International Society of Pharmacoeconomics and Outcomes Research *Member*
2019-2020	Awards Council	International Society of Pharmacoeconomics and Outcomes Research *Member*

Professional Societies

2009-	American Statistical Association, *Member*
	June 2013: White House Office of Science and Technology Policy*, Liason*
2015-	AcademyHealth, *Member*
2016-	International Society for Pharmacoeconomics and Outcomes Research, *Member*
2017-	International Health Economics Association, *Member*

Grant Review Activities

2016-2017	Mathematics and Statistics Discovery Grant Program	Natural Sciences and Engineering Research Council of Canada (NSERC) *Reviewer*
2017	Methodology and Measurement in the Behavioral and Social Sciences	National Institutes of Health *Reviewer*

	Special Emphasis Panel	
2018	Understanding Mortality Outcomes Special Emphasis Panel	National Institutes of Health *Reviewer*
2018	Aggregating and Mining Existing Data Sets Special Emphasis Panel	National Institutes of Health *Reviewer*
2019	Career Development and Fellowship Training Programs Grants (NST-2 Study Section)	National Institute of Neurological Disorders and Stroke *Reviewer*
2019	NIH Director's New Innovator Award Program 2020	National Institutes of Health *Reviewer*
2020	Understanding Mortality Outcomes / Aggregating and Mining Existing Data Sets Special Emphasis Panel	National Institutes of Health *Reviewer*

Editorial Activities

Adhoc Reviewer

American Economic Journal: Economic Policy
American Journal of Epidemiology
Annals of Applied Statistics
Biometrics
Biometrika
Circulation: Cardiovascular Quality and Outcomes
Computational Statistics and Data Analysis
Epidemiologic Methods
Epidemiology
Health Affairs
Health Services and Outcomes Research Methodology
Health Services Research
Lifetime Data Analysis
Medical Care
Medical Decision Making
JAMA
JAMA Psychiatry
Journal of the American Statistical Association (Theory & Methods)
Pharmacoepidemiology and Drug Safety
Statistical Methods in Medical Research
Statistics in Medicine

Other Editorial Roles

2013-18	Associate Editor	International Journal of Biostatistics
2015-18	Associate Editor	Journal of Causal Inference
2015-18	Associate Editor	Journal of the American Statistical Association (Theory & Methods)
2016-18	Associate Editor	Epidemiologic Methods

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2016-18	Associate Editor	Biostatistics	
2017-18	Editorial Board	Special Issue on Statistical Inference in the 21st Century: A World Beyond p<0.05, The American Statistician	
2019-	Co-Editor	Biostatistics	

Honors and Prizes

2001-2005	Presidential Scholarship	The George Washington University	
2001-2005	Alumni Scholarship	The George Washington University	
2001-2005	Honors Program	The George Washington University	
2006-2011	Division of Biostatistics Scholarships	University of California, Berkeley, School of Public Health	
2007-2008	Scholarship	Casper Mills Scholarship Foundation	Meritorious achievement for disadvantaged students
2007-2011	Scholarship for Disadvantaged Students	U.S. Department of Health and Human Services & University of California, Berkeley, School of Public Health	Meritorious achievement for disadvantaged students
2009	Student Paper Travel Award	American Statistical Association, Statistics in Epidemiology Section	To attend the Joint Statistical Meetings
2009	Russell M. Grossman Endowment Award	University of California, Berkeley, School of Public Health	Doctoral candidates advanced to candidacy
2010	Young Investigator Award	American Statistical Association, Statistics in Epidemiology Section	
2010	Gertrude M. Cox Scholarship in Statistics	American Statistical Association	Honors exceptional female statistics students
2010-2011	Mayhew and Helen Derryberry Fellowship	University of California, Berkeley School of Public Health	Supports distinguished public health students
2011	Editor's Choice Article	*Environmental and Molecular Mutagenesis* Journal	
2011	Chin-Long Chiang Biostatistics Student of the Year	University of California, Berkeley, School of Public Health, Division of Biostatistics	Recognizes innovative research and contributions to the biostatistics program

2011	Evelyn Fix Memorial Medal	University of California, Berkeley, Department of Statistics	Awarded to the Ph.D. student with greatest promise in statistical research applications in biology and health
2011	Recent Alumni Achievement Award	The George Washington University	Honors alumni with notable accomplishments and future potential
2011-2013	NSF Mathematical Sciences Postdoctoral Research Fellowship	National Science Foundation	Supports leaders in the mathematical sciences by facilitating their participation in postdoctoral research
2012	Delta Omega Scholarship	Johns Hopkins Bloomberg School of Public Health	Recognizes outstanding research
2012	Young Investigator Award	International Conference on Advances in Interdisciplinary Statistics and Combinatorics	
2013	Editor's Choice Article	*American Journal of Epidemiology*	
2014	Reviewer of the Year	*American Journal of Epidemiology*	
2014	Best Reviewer Award	*Pharmacoepidemiology and Drug Safety*	
2015	Certificate of Excellence in Tutoring	Harvard Medical School	Recognizes excellence in small-group teaching based on student evaluations
2015	Editor's Choice Article	*Gastrointestinal Endoscopy*	
2016	AcademyHealth New Investigator	AcademyHealth	Recognizes six new investigators for innovative research
2017	Article of the Year	*American Journal of Epidemiology*	
2017-2022	NIH Director's New Innovator Award	National Institutes of Health	Supports exceptionally creative early career investigators who propose innovative high-impact

			projects ($2.5M total costs)
2018	Bernie J. O'Brien New Investigator Award	International Society of Pharmacoeconomics and Outcomes Research	Recognizes exceptional promise in the awardee's emerging body of scholarly work in health economics and outcomes
2019	Excellence in Mentoring Young Mentor Award	Harvard Medical School	
2019	Finalist, Annual Health Care Research Award	National Institute for Health Care Management Foundation	
2020	HPSS Mid-Career Award	American Statistical Association, Health Policy Statistics Section (HPSS)	Recognizes leaders in health care policy and health services research who have made outstanding contributions through methodological or applied work
2020	CCI Mid-Career Award	Penn-Rutgers Center for Causal Inference (CCI)	Recognizes notable achievements in the development and application of innovative causal inference methods
2020	Fellow	American Statistical Association	Recognizes an established reputation in the field and outstanding contributions to statistics. Fellow designation is limited to 1/3 of 1% of membership each year.

Report of Funded Projects
Funding Information
Current

2017-2022   Machine Learning for Health Outcomes and Quality of Care in Low-Income Populations
NIH/1DP2MD012722
Principal Investigator (Rose)
This NIH Director's New Innovator Award will support the PI to develop a novel machine learning framework for the generalizability of experimental and quasi-experimental studies, providing population health scientists with robust methodology to assess the effects of health interventions and exposures. Health outcomes and quality of care in low-income populations lag behind other groups, and the impact of health insurance on these disparities

among low-income individuals is currently unknown. A major goal of this proposal is to examine the role of insurance coverage on health outcomes in low-income populations with rigorous new tools in partially randomized data.

2017-2020   Healthcare Markets and Regulation Lab
Laura and John Arnold Foundation
Co-Principal Investigator, Methods Core (Hatfield/Rose)
The methodological research of the Methods Core is designed to strengthen the robustness, validity, and rigor of health policy research. There are numerous methods challenges for which no "off-the-shelf" solutions exist, particularly for evaluations of policy impacts using difference-in-difference designs. Methods Core papers will address these shortcomings and provide practical, statistically valid, and causally appropriate approaches to health services researchers engaged in evaluation studies. Dr. Rose will develop nonparametric machine learning methods for 1) difference-in-difference parameter estimation and 2) the creation of synthetic controls.

2017-2021   Impact of Telemedicine on Medicare Beneficiaries with Mental Illness
NIH/1R01MH112829
Co-Investigator (Mehrotra)
Telemental health is one potential solution to the mental health care access problem. The uptake of telemental health has been very uneven geographically, and what explains this variation is also largely unknown. Dr. Rose will focus on developing statistical methods to (1) explain why there is geographic variation in uptake using robust statistical machine learning and (2) assess whether communities with greater telemental health penetration have experienced improvements in care for patients with mental illness.

2019-2023   Telemedicine for Treatment of Opioid Use Disorder
NIH/1R01DA048533
Co-Investigator (Huskamp/Mehrotra)
Many patients with opioid use disorder have great difficulty accessing substance use disorder treatment. Telemedicine is one potential solution, and many states and the Congress are considering laws and regulations to encourage greater use. In this project, our goal is to understand how telemedicine is being used for patients, what drives the variation in use, whether it is associated with better care. Dr. Rose will develop and apply machine learning methods for these aims.

2019-2020   Estimating Work-Related Functional Capacity Among Older Americans
Harvard Medical School Dean's Innovation Pilot Award in Healthy Aging
Co-Investigator (Maestas)
This project will collect new survey data from a nationally representative sample of Americans that measures their functional capacity to work across eight functional domains relevant to jobs found in the U.S. labor market. Using these data, we will develop measures of individual work capacity that characterize feasible job sets and potential earnings.

Past
2011-2013   Sequential Decision Theory: Dynamic Regimes
NSF DMS/1103901
Principal Investigator (Rose)

The Mathematical Sciences Postdoctoral Research Fellowship "supports leaders in the mathematical sciences by facilitating their participation in postdoctoral research." When studying clinical questions in observational data, it is often beneficial to define treatment "rules" (i.e., dynamic regimes) in order to identify optimal outcomes after an intervention or interventions. The project focused on statistical methodology for dynamic regimes.

2014 Assessing the Impact of Chronic Disease on Prosperity with Robust Estimation
William F. Milton Fund
Principal Investigator (Rose)
The examination of chronic diseases in resource-limited settings has received less research attention, and, therefore, the impact of chronic disease on prosperity outcomes, such as poverty, has not yet been determined. Due to a lack of health-systems focus on chronic disease, there is a preventable load of premature mortality from chronic disease. Dr. Rose used statistical learning methods for a complex sampling design to analyze novel data on chronic disease and poverty in Bangladesh.

2014-2015 Evaluation of Multistage Antimicrobial Treatment Strategies in Pneumonia
University of Utah
Principal Investigator (Rose)
This research focused on the application and development of new statistical methodology in observational data with multiple treatment interventions with dynamic regimes. Estimating causal effects in non-experimental studies is complex, but modern causal inference provides a theoretical foundation to guide selection of analytic techniques that account for time-varying exposures and confounders.

2014-2017 Project 3: Quantitative Evaluation of Arkansas Payment Improvement Initiative
John and Laura Arnold Foundation
Project Principal Investigator (Rose)
Much of the innovation in payment is occurring at the state level. Some rely on global payments and others on bundled payments for selected episodes. Evidence about the impact of state level reforms is lacking. Our analyses had two aims: 1. To assess the impact of the Arkansas payment model on spending in commercial beneficiaries. 2. To assess the dynamics of spending and outcome changes by principle accountable providers among Medicaid beneficiaries. Dr. Rose's role as Project PI was to direct the quantitative evaluations of the Arkansas Payment Improvement Initiative for different episode types.

2015-2016 Improving Sampling Techniques for Medicare Advantage Plan Payment Methodology with Machine Learning
NIH/NIA-HSPH/5P30AG024409-11
Principal Investigator (Rose)
This pilot study was a first step toward improving risk adjustment in Medicare Advantage plans. The specific aims included developing innovative and tailored machine learning-based matching methods in order to create an improved sample of subjects for estimating Medicare risk adjustment, drawn from standard Medicare data sources and assessing the impact of this new methodology on risk adjustment scores in existing formulas.

2015-2020 Bayesian Methods for Comparative Effectiveness Research with Observational Data
NIH/1R01GM111339

Co-Investigator (Normand)

Health information growth has created unprecedented opportunities to evaluate treatment effectiveness in large and broadly representative patient populations but where the benefits of treatments may vary across population subgroups. We will develop novel statistical methods for estimating causal effects that (a) account for uncertainty in the selection of subgroups and for selection of measured confounders; and (b) accommodate unmeasured confounders that moderate treatment effects, in settings where the number of confounders is large and where no randomization has occurred. To enable reproducible research, we will develop and disseminate SAS macros and R functions.

2016   Improving Medicare Advantage Plan Payment Risk Adjustment with Machine Learning Techniques
AcademyHealth/2016.997.005
Principal Investigator (Rose)
This pilot study funded under the AcademyHealth New Investigator Small Grant Program is a second step toward improving risk adjustment in Medicare Advantage plans. The specific aims included developing ensemble machine learning methods to estimate risk-adjustment functions and evaluate their performance.

2017-2018   Improving Health Care System Performance: Computational Health Economics with Normative Data for Payment Calibration
Harvard Data Science Initiative
Principal Investigator (Rose)
In the conventional framework for designing health plan payment models, the regulator chooses variables to be used as risk adjustors, the weights, and other policy parameters, but the data from which estimates are derived are taken as given. This approach implicitly assumes the observed spending patterns are optimal. We proposed using the data itself as a policy tool along with developing new machine learning methodology for risk adjustment.

2013-2014   Modifiable Risk and Protective Factors for Suicidal Behaviors in the US Army
NIMH/U01MH087981
Co-Investigator (Ursano)
This multi-site study sought to assess factors that help protect servicemembers' mental health or put it at risk, in the largest study of mental health risk and resilience conducted in military personnel. Dr. Rose's role was to develop and apply new semiparametric machine learning methods to examine several adverse outcomes.

2013-2014   National Implementation of Medicare Advantage & Prescription Drug CAHPS Survey
RAND/9920120015
Co-Investigator (Zaslavsky/Elliott)
The broad focus of the Consumer Assessment of Healthcare Providers and Systems (CAHPS) surveys is to collect and evaluate health care experiences. Dr. Rose's role was to develop and apply statistical methods for various questions relating to health status, claims, costs and other topics in the CAHPS data.

2013-2014   An Evaluation of Multipayer, Medical Episode-based Payment Reform in Arkansas
RWJF/71402
Co-Investigator (Chernew)

The Arkansas state payment reform model holds providers accountable for the costs and quality of care provided in specific acute clinical episodes, rather than through global payment. The primary objective of this project was to use qualitative methods and early data/ reports from Arkansas to provide insight about the operation and impact of the state's initiative. Investigators also laid the groundwork for future econometric evaluations by identifying and assessing the suitability of various control populations.

2014-2017   Measuring and Improving Colonoscopy Quality Using Natural Language Processing
NIH/NCI/R01CA168959
Co-Investigator (Mehrotra)
Our proposal centered on measuring, understanding, and improving colonoscopy quality. This was one of the largest assessments of the variation in adenoma detection rates and spanned different geographic regions, payment systems, and practice settings. We also sought to understand why there is variation in quality. It is assumed, but not proven, that providing feedback to physicians on colonoscopy quality will improve care.

2014-2015   Project 2: Evaluating ACOs and Improving ACO Regulation
John and Laura Arnold Foundation
Co-Investigator (McWilliams)
In order to move away from fee-for-service payment, which has contributed to fragmented and overly expensive health care system, CMS has established the Accountable Care Organization program. The specific aims of this evaluation included estimating the impact of ACOs on spending and how that impact varies by ACO design features.

2014-2017   Mental Health Coverage and Payment in Private Health Plans
NIH/NIMH/2R01MH094290
Co-Investigator (McGuire)
This project proposed to conduct fundamental economic research on the patterns of health care use by persons with mental illness in order to establish the evidence base for sound choices about structuring health insurance markets in the Exchanges. We assessed the magnitude of the selection problem among likely Exchange participants, identifying and evaluate options for correcting incentives to health plans to provide efficient and fair coverage for persons with mental illness.

2014-2017   Project 6: Risk Adjustment Redesign
John and Laura Arnold Foundation
Co-Investigator (McGuire)
Plan payments in Medicare Advantage and in the new Affordable Care Act Exchanges, as well as budgets assigned in new global payment models such as ACOs, must be adjusted for variation in the health status of enrollees. Existing regression risk adjustment methodologies have evolved over time to now rely on more than 100 diagnostic indicators with complex algorithms to define risk scores for individuals. This project proposed a transformative redesign of the practice of risk adjustment used for paying health plans in health insurance markets, including Exchanges and Medicare Advantage.

2017   Evaluation of the Oncology Care Model
Center for Medicare and Medicaid Services
Co-Investigator (Keating)

CMS is launching the Oncology Care Model demonstration project, with a goal of improving the effectiveness and efficiency of specialty care. The team aimed to assess the impact of the program on utilization, spending, quality, and patient- and provider-reported experiences. Dr. Rose created new algorithms for classification of lung cancer severity.

Report of Local Teaching and Training
Teaching of Students in Courses

2009	Introduction to Marginal Structural Models Epidemiology and Biostatistics graduate students	University of California, Berkeley Co-Instructor Two 2 hr sessions per week for 15 weeks
2014-	Health Policy Methods Seminar 20 Health Policy PhD students	Harvard Medical School Co-Instructor One 1 hr session per month
2015	HC750: Health Care Policy 140 medical students/8-10 per tutorial ***Perfect 1.0 instructor rating on course evaluations***	Harvard Medical School Tutorial Leader Eight 1 hr sessions over 4 weeks
2015-	HP3080A/B: Research Seminar in Health Policy Health Policy PhD students	Harvard University Instructor Two 1.5 hr sessions per year
2016	PWY120: Essentials of the Profession I 140 medical students/8-10 per small group/40 per mid-size group	Harvard Medical School Small Group Leader Six 2 hr sessions over 3 weeks Mid-Size Group Leader Two 2 hr sessions
2016	BIO260: Introduction to Data Science	Harvard School of Public Health Guest Lecturer One 1 hr session
2018	Machine Learning and Bayesian Approaches to Data Science in Medicine HMS PhD and medical students	Harvard Medical School/Harvard Catalyst Co-Instructor One 6.5 hour course
2018	Reproducibility and Open Science HMS students, fellows, and faculty	Dana-Farber Cancer Institute Guest Lecturer One 1 hr session

Formally Supervised Trainees

2014   Andrew Mirelman, MPH, PhD in International Health, Johns Hopkins University
         Published manuscript in *Health Policy and Planning*.
         Now: Technical Officer, World Health Organization

2014-17   Sarah Anoke, PhD in Biostatistics, Harvard T.H. Chan School of Public Health
           Oral exam and dissertation committee member.
           Now: Data Engineering Fellow, Insight Data Science

2014-18   Caitlin Carroll, PhD Candidate in Health Policy, Harvard University
           Supervised research projects on the Arkansas Payment Improvement Initiative. Published
           manuscript in the *Journal of Health Economics*.
           Now: Assistant Professor of Health Policy and Management, University of Minnesota

2015-16   Megan Schuler, PhD, Marshall J. Seidman Fellow in Health Care Policy, Harvard University
           Supervised research project on targeted learning. Published manuscript in the *American
           Journal of Epidemiology*.
             • 2017 *American Journal of Epidemiology* Article of the Year.
           Now: Health Policy Researcher, RAND (Boston)

2015-19   Savannah Bergquist, PhD Candidate in Health Policy, Harvard University
           Advisor and dissertation committee chair; Supervised research projects on risk adjustment
           redesign, machine learning, and Medicare. Published manuscripts in *Biostatistics*, *Health
           Services Research* (2), *Proceedings of Machine Learning Research*, *JCO Clinical Cancer
           Informatics*, and *Journal of Health Economics*.
             • 2017 Harvard Graduate Society Research Fellowship.
             • 2018 ICHPS Student Travel Award.
             • 2019 Joan P. Curhan Citizenship Award.
           Now: Postdoctoral Fellow, UC Berkeley Haas School of Business

2015-18   Anthony Rosellini, PhD, NIH K01 Mentored Research Scientist, Harvard Medical School
           Co-advisor; Supervised research project on ensembling for predicting PTSD after natural
           disasters. Published manuscript in the *Journal of Psychiatric Research*.
           Now: Research Assistant Professor, Boston University

2016   Ian Nason, MSc in International Health Policy, London School of Economics
           Summer visitor working on risk for cardiovascular events using machine learning.

2016   Kriti Lall, Undergraduate, Harvard University
           Supervised independent study.

2016   Jarvis Miller, Visiting Summer Undergraduate, Rice University
           Supervised summer project on ensembling for diabetes prediction in African Americans.
           Now: Data Scientist, Spotify

2016   Kimberlyn Bailey, Visiting Summer Undergraduate, SUNY Oswego
           Supervised summer project on ensembling for diabetes prediction in African Americans.
           Now: Post-Baccalaureate IRTA Fellow, NIH

2016   Valerie Santiago González, Visiting Summer Undergraduate, University of Puerto Rico
           Supervised summer project on ensembling for diabetes prediction in African Americans.
           Now: Software Developer, CEGsoft

2016-17   Tai Cai, PhD in Biostatistics, Harvard T.H. Chan School of Public Health
           Dissertation committee member; Co-supervised research project on hospital profiling.
           Now: Data Scientist, BitSight Technologies

2016-17   Akritee Shrestha, SM in Biostatistics, Harvard T.H. Chan School of Public Health
           Thesis advisor; Supervised research project on ensembling for mental health risk adjustment.
           Published manuscript in *Health Services Research*.
           Now: Data Science Manager, Wayfair (Boston)

2016-17   Yingrui Yang, SM in Biostatistics, Harvard T.H. Chan School of Public Health
           Supervised research project on semiparametric estimation methods.
           Now: Data Scientist, Ancestry

2016-20   Alex McDowell, PhD Student in Health Policy, Harvard University
           Advisor and dissertation committee chair; Supervising research projects on gender minority
           health. Published manuscripts in *LGBT Health* and *JAMA Psychiatry*.
           • 2017 Harvard Summer Predissertation Fellowship.
           July 2020: Postdoctoral Fellow, Mongan Institute at Massachusetts General Hospital

2017   Aaron Sonabend, PhD Student in Biostatistics, Harvard T.H. Chan School of Public Health
           Supervised independent study on statistical learning.

2017   Alicia Dominguez, Visiting Summer Undergraduate, University of New Mexico
           Supervised summer project on ensembling for global health policy.
           Now: Master's Student in Biostatistics, University of Michigan

2017   Bonnie Lin, Visiting Summer Undergraduate, Amherst College
           Supervised summer project on ensembling for global health policy.

2017   Julia Thome, Visiting Summer Undergraduate, Cornell College (IA)
           Supervised summer project on ensembling for global health policy.
           • 2017 National SACNAS travel scholarship for our summer research.
           • 2017 SACNAS Best Undergraduate Presentation in Statistics Award.
           Now: PhD Student in Biostatistics, Vanderbilt University

2017   Tyler Vu, Visiting Summer Undergraduate, California State University, Fullerton
           Supervised summer project on ensembling for global health policy.
           Now: PhD Student in Biostatistics, UCSD

2017-18   Samrachana Adhikari, PhD, Postdoctoral Fellow in Statistics, Harvard Medical School
           Secondary Advisor; Supervised research project on classification for multiple unordered
           treatments and co-authored methods project for instrumental variables. Published manuscript
           in *Journal of the American Statistical Association*. Manuscript revise and resubmit with
           Statistical Methods in Medical Research.
           Now: Assistant Professor of Biostatistics, NYU

2017-   Christoph Kurz, PhD Student in Medical Research, Ludwig Maximilians University

Co-supervising research project on statistical machine learning for synthetic controls.

2017-   Irina Degtiar, PhD Student in Biostatistics, Harvard T.H. Chan School of Public Health
Supervising research project on generalizability of randomized and observational data.

2018-   Anna Zink, PhD Student in Health Policy, Harvard University
Supervising projects in risk adjustment and algorithmic fairness. Published manuscript in *Biometrics*. Manuscript under review at *Journal of Health Economics*.
- 2019 NSF Graduate Research Fellowship Program Awardee.

2018-   Toyya Pujol-Mitchell, PhD Student in Industrial Engineering (Statistics), Georgia Tech
Dissertation Committee Member. Supervising project on double robust methods for difference-in-differences designs.
Fall 2020: Assistant Professor of Healthcare Engineering, Purdue University

2018-19 Augustine (Austin) Denteh, PhD, Postdoctoral Fellow, Harvard Medical School
Advisor; Supervised research project on econometric methods for effect heterogeneity.
Now: Assistant Professor of Economics, Tulane University

2018-19 Maimuna (Maia) Majumder, PhD, Postdoctoral Fellow, Harvard Medical School
Advisor; Supervised research projects on generalizability and novel data sources.
Now: Instructor of Computational Health Informatics, Boston Children's Hospital & Harvard

2019-   Nhung Nghiem, PhD, Senior Research Fellow, University of Otago, Wellington
Advisory Team Member; Co-supervising project in computational health economics and health equity in New Zealand.

2019-   Noémie Sportiche, PhD Student in Health Policy, Harvard University
Advising on research projects in health economics and housing policy.

Local Invited Presentations

2009   Causal Inference for Case-Control Studies / Departmental Seminar
Genentech, Inc, South San Francisco, CA

2009   Improving Phase I Decision-Making Using Alternative Dose-Escalation / Departmental Seminar
Genentech, Inc, South San Francisco, CA

2012   Targeted Learning: Causal Inference and Prediction / Departmental Seminar
Welch Center, Johns Hopkins Bloomberg School of Public Health, Baltimore, MD

2012   Causal Inference for Case-Control Studies / Departmental Seminar
Johns Hopkins University, Causal Inference Group, Baltimore, MD

2014   A Speedy Tour of Estimators for Causal Inference / Departmental Seminar
Harvard University, Health Economics Methods Seminar, Boston, MA

2015   Rethinking Plan Payment Risk Adjustment with Machine Learning / Departmental Seminar

Harvard University, Institute for Quantitative Social Sciences, Cambridge, MA
Harvard University, Health Economics Methods Seminar, Boston, MA

2016 Robust Machine Learning for Variable Importance in Health Spending / Departmental Seminar
Harvard University, Health Economics Methods Seminar, Boston, MA

2016 Machine Learning for Biostatistics and Health Policy / Invited Presentation
Harvard T.H. Chan School of Public Health, Pipelines into Biostatistics, Boston, MA

2016 Statistical Learning for Global Public Health / Departmental Seminar
Harvard T.H. Chan School of Public Health, Quality and Responsiveness Seminar, Boston, MA

2016 Health Policy Data Science / Invited Presentation
Harvard Medical School, Health Care Policy Advisory Council, Boston, MA

2017 Data Science & Medicine / Invited Presentation
Talks@12, Harvard Medical School, Boston, MA

2018 Machine Learning for Health Care / Invited Presentation
Harvard T.H. Chan School of Public Health, Summer Program in Biostatistics, Boston, MA

2018 Data, Generalizability, and Fairness / Invited Workshop Keynote
Harvard University, Harvard Data Science Initiative Conference, Cambridge, MA

2019 8th Kolokotrones Symposium on Data Science / Invited Panelist
Harvard T.H. Chan School of Public Health, Boston, MA

Report of Regional, National and International Invited Teaching and Presentations
Invited Presentations and Courses
Regional
2006 Fighting Liver Cancer / Departmental Seminar
San Francisco Department of Public Health, San Francisco, CA

2012 Interdisciplinary Methods for Prediction and Confidence Sets / Departmental Seminar
The George Washington University, Department of Statistics, Washington, DC

2015 Machine Learning for Effect Estimation in International Health / Departmental Seminar
Yale University, Quantitative Research Methods Workshop, New Haven, CT

2016 A Robust Machine Learning Method for Variable Importance in Health Spending / Departmental Seminar
Brown University, Statistics Seminar, Providence, RI

2019 Machine Learning for Health Services / Departmental Seminar
Brown University, Health Services Research Seminar, Providence, RI

National

2009   Causal Inference in Nested Case-Control Studies / Contributed Presentation
Joint Statistical Meetings, Washington, DC

2010   Variable Importance in a Kaiser Permanente Database / Contributed Presentation
Joint Statistical Meetings, Vancouver, BC

2010   Learning from Data: Super Learning and TMLE / Invited Presentation
75th Anniversary Symposium, The George Washington University, Department of Statistics,
Washington, DC

2011   Causal Inference for Case-Control Studies and Two-Stage Designs / Invited Presentation
Annual Meeting of the Western North American Region of the International Biometric Society,
San Luis Obispo, CA

2011   Statistical Methods for Causal Inference / 3-day Short Course
The Forum for Collaborative HIV Research, Washington, DC

2012   Predicting Mortality in an Elderly Population Using Machine Learning / Topic-Contributed
Presentation
Annual Meeting of the Eastern North American Region of the International Biometric Society,
Washington, DC

2012   Constructing Confidence Sets for the Optimal Treatment Regime / Invited Presentation
Joint Statistical Meetings, San Diego, CA

2012   Targeted Learning: Causal Inference for Observational & Experimental Data / 1-day Short Course
Joint Statistical Meetings, San Diego, CA

2012   Big Data, Causal Modeling, and Robust Estimation / Invited Workshop Presentation
New York University Center for Interdisciplinary Studies in Security & Privacy, New York, NY

2012   Causal Inference in HIV Research / Departmental Seminar
University of California, San Francisco Center for AIDS Prevention, San Francisco, CA

2012   Targeted Learning in Aging Populations: Insight into Electronic Medical Records / Departmental
Seminars
Stanford Medical School, Prevention Research Center, Stanford, CA
National Institute of Environmental Health Sciences, Research Triangle Park, NC
National Institutes of Health, Stadtman Intramural Research Program, Bethesda, MD

2013   Robust Estimation for 'When to Initiate Treatment' in HIV-Infected Persons / Departmental
Seminars
University of Washington, Department of Biostatistics, Seattle, WA
Johns Hopkins Bloomberg School of Public Health, Department of Biostatistics, Baltimore, MD
The George Washington University, Dept. of Epidemiology & Biostatistics, Washington, DC
National Cancer Institute, Division of Cancer Epidemiology & Genetics, Bethesda, MD
Harvard Medical School, Department of Health Care Policy, Boston, MA

2013   Robust Estimation and Prediction for Cancer Research / Departmental Seminar
Cancer Prevention Institute of California, Fremont, CA

2014   Machine Learning Methods for Prediction / Departmental Seminar
University of Utah School of Medicine, Department of Internal Medicine, Salt Lake City, UT

2014   Targeted Learning: Causal Inference for Observational & Experimental Data / 1-day Short Course
University of Utah School of Medicine, Department of Internal Medicine, Salt Lake City, UT

2014   Targeted Learning in Semiparametric Models / Seminar
University of Pennsylvania, Semiparametric Research Group, Philadelphia, PA

2014   Machine Learning for Effect Estimation in International Health / Topic-Contributed Presentation
Joint Statistical Meetings, Boston, MA

2015   Targeted Learning: Causal Inference for Observational & Experimental Data / 1-day Short Course
Atlantic Causal Inference Conference, Philadelphia, PA

2015   Machine Learning for Plan Payment Risk Adjustment / Topic-Contributed Presentation
Joint Statistical Meetings, Seattle, WA

2015   Health Policy Data Science / Invited Webinar Presentation
U.S. Department of Veterans Affairs, Big Data Scientist Training Program, Washington, DC

2015   Methods for Multiple Treatment Comparisons / 1-day Short Course
MDEpiNet Annual Meeting, Silver Spring, MD

2016   Ensembles for Health Care Economics Research / Departmental Seminar
Fred Hutchinson Cancer Research Center, Data Science Seminar, Seattle WA

2016   Machine Learning and Biostatistics for Public Health / Invited Presentation
Annual SACNAS National Conference, Long Beach, CA

2016   Targeted Learning / 1-day Short Course
Columbia University, Department of Statistics, New York, NY

2017   Statistical Machine Learning for Variable Selection / 2-day Short Course
Causal Inference Methods for PCOR using Observational Data, Washington DC

2017   Computational Health Economics for Identification of Unprofitable Health Care Enrollees /
Invited Presentation
Annual Meeting of the Eastern North American Region of the International Biometric Society,
Washington, DC

2017   Computational Health Economics and Health Outcomes / Invited Presentation
Machine Learning in Healthcare Summit: Industry Applications, Boston, MA

2017   Medicare Risk Adjustment with Systematically Missing Data / Invited Presentation
AcademyHealth Annual Research Meeting, New Orleans, LA

2017   Computational Health Economics for Health Care Spending / Invited Presentation
Joint Statistical Meetings, Baltimore, MD

2018   Robust Estimation for Multiple Unordered Treatments / Invited Presentation
Annual Meeting of the Eastern North American Region of the International Biometric Society,
Atlanta, GA

2018   Machine Learning for Health Economics / Invited Webinar Presentation
AcademyHealth Health Economics Interest Group, Washington, DC

2018   The Future is Now: Machine Learning and Policy / Invited Presentation
12th Annual DIA/FDA Statistics Forum, Bethesda, MD

2018   Computational Health Economics and Clinical Informatics in Mental Health / Invited Presentation
7th Annual Thomas R. Ten Have Symposium on Statistics in Mental Health, Chicago, IL

2018   Ensembles for Prediction and Causal Effect Estimation / Invited Presentation
AcademyHealth Annual Research Meeting, Seattle, WA

2018   Machine Learning for Health Care Policy / Invited Webinar Presentation
WebENAR, Eastern North American Region of the International Biometric Society, Reston, VA

2018   Ullrich et al., "Battling Antibiotic Resistance: Using Machine Prediction to Improve Prescribing" /
Invited Discussant Presentation
10th Annual Health Economics Workshop, Baltimore, MD

2018   Nontraditional Data Sources and Health Decision-Making / Invited Discussant Presentation
3rd Annual Population Health Science Research Workshop, Boston, MA

2018   Computational Health Economics and Outcomes Research / Invited Presentation
3rd Seattle Symposium on Health Care Data Analytics, Seattle, WA

2018   Promise of AI and Telemedicine to Expand Care to New Populations / Invited Panel Presentation
Artificial Intelligence & Robotics in Medicine Conference, Yale Law School, New Haven, CT

2019   What Your Electronic Health Data Won't Tell You…But I Will / Department Seminar
Johns Hopkins Bloomberg School of Public Health, Department of Biostatistics, Baltimore, MD

2019   Covariate Selection and Algorithmic Fairness for Continuous Outcomes in Health Plan Risk
Adjustment / Invited Presentation
Annual Meeting of the Eastern North American Region of the International Biometric Society,
Philadelphia, PA

2019   Does Machine Learning Help Us Understand Medical Device Safety / Invited Keynote

12th Annual FDA/AdvaMed Medical Devices and Diagnostics Statistical Issues Conference, Washington, DC

2019   Machine Learning in Epidemiology / Invited Short Course
Albert Einstein College of Medicine, Department of Epidemiology & Population Health, Brooklyn, NY

2019   Fair Regression for Health Care Spending / Invited Presentation
AcademyHealth Annual Research Meeting, Washington, DC

2019   Risk Adjustment: Benchmarking & Fairness / Invited Presentation
Joint Statistical Meetings, Denver, CO

2019   These Aren't the Electronic Health Data You're Looking For / Invited Discussant Presentation
Joint Statistical Meetings, Denver, CO

2019   Computational Health Economics and Outcomes / Invited Short Course
UCSF, Department of Epidemiology & Biostatistics, San Francisco, CA

2019   Electronic Health Data: Too Important to Be a Toy Example / Invited Presentation
2019-2020 Student-Invited Speaker, Department of Biostatistics, University of Washington, Seattle, WA

2019   Toward Standards for Machine Learning Research in Health Care & Policy / Invited Presentation
Social Science Modeling for Big Data in the World of Machine Learning Workshop, National Academies of Sciences, Washington, DC

2020   Simplifying Risk Adjustment for Interpretability and Fairness / Invited Presentation
Joint Statistical Meetings, Philadelphia, PA

2020   TBD / Invited Discussant
Sixth Seattle Symposium in Biostatistics, Seattle, WA

International
2007   Childhood Overweight in Asian Populations / Invited Presentation
International Society for Behavioral Nutrition & Physical Activity Meeting, Oslo, Norway

2011   On the Probability of Success of an IVF Program and the DAIFI Study / Invited Workshop
Université Paris Descartes, Applied Mathematics Department, Paris, France

2012   Constructing Confidence Sets for the Optimal Treatment Regime / Invited Presentation
International Conference on Advances in Interdisciplinary Statistics & Combinatorics, Greensboro, NC

2014   Machine Learning and PTSD / Invited Presentation
WHO World Mental Health Annual Meeting, Cambridge, MA

2015   A Machine Learning Framework for Plan Payment Risk Adjustment / Invited Presentation

International Conference on Health Policy Statistics, Providence, RI

2016   Robust Machine Learning for Variable Importance in Health Spending / Departmental Seminar
McGill University, Biostatistics Seminar, Montreal, Quebec, Canada

2016   Ensembles for Health Economics Research / Invited Presentation
International Society for Pharmacoeconomics and Outcomes Research Meeting, Washington, DC

2016   Targeted Statistical Learning for Health Care Spending / Invited Presentation
Royal Statistical Society International Conference, Manchester, UK

2017   Real-World Evidence – Integrated Datasets / Invited Presentation
International Society for Pharmacoeconomics and Outcomes Research Meeting, Boston, MA

2017   Targeted Learning / Invited Short Course
Channel Network Conference of the International Biometric Society, Hasselt, Belgium

2017   Improving Health Care System Performance: Computational Health Economics with Normative
Data / Invited Presentation
World Congress of the International Health Economics Association, Boston, MA

2018   Treatment Effect Heterogeneity in Cardiac Stents / Invited Presentation
International Conference on Health Policy Statistics, Charleston, SC

2018   Ensembles for Disease Stage Classification in Electronic Medical Records / Invited Presentation
International Society for Pharmacoeconomics and Outcomes Research Meeting, Baltimore, MD

2018   CancerCLAS: A Generalizable Algorithm for Classifying Cancer Types? / Invited Presentation
Joint Statistical Meetings, Vancouver, BC, Canada

2019   Modern Data Science for Risk Adjustment / Invited Presentation
International Risk Adjustment Network Conference, Portland, ME

2019   Machine Learning for Health Economics and Outcomes: Prediction and Causal Inference / Invited
Webinar Presentation
International Society for Pharmacoeconomics and Outcomes Research, Lawrenceville, NJ

2020   Missing Diagnoses, Uncovering Hidden Groups, and Going Beyond 'Encounters' to Assess Health
/ Invited Presentation
International Conference on Health Policy Statistics, San Diego, CA

2020   TBD / Invited Keynote
ACM Conference on Health, Inference, and Learning, Toronto, ON, Canada

Report of Education of Patients and Service to the Community
Activities
2012   Science, Medicine, Math, Young Professionals, and Time Wealth / Invited Presentation
4th Annual Women & Philanthropy Forum, Washington, DC

| 2014- | Biostatistics Careers / Invited Panel |
| 2016 | Summer Institute for Training in Biostatistics, Boston University, Boston, MA |

| 2018 | Machine Learning and Careers / Invited Panel |
| | Women in Data Science Conference, Cambridge, MA |

| 2018 | Summer Opportunities in Biostatistics / Invited Discussant |
| | StatFest, Amherst, MA |

Report of Scholarship   *Trainee author   +Senior author

1. Berger V, **Rose S**. Ensuring the comparability of comparison groups: is randomization enough. *Controlled Clinical Trials* 2004; 25(5):515-24.

2. Cokus S, **Rose S,** Haynor D, Gronbech-Jensen N, Pellegrini M. Modeling the network of cell cycle transcription factors in the years *Saccaromyces cerevisiae. BMC Bioinformatics* 2006; 7:381.

3. **Rose S,** van der Laan MJ. Simple optimal weighing of cases and controls in case-control studies. *International Journal of Biostatistics* 2008; 4(1):Article 19.

4. **Rose S,** van der Laan MJ. Why match? Investigating matched case-control study designs with causal effect estimation. *International Journal of Biostatistics* 2009; 5(1):Article 1.

5. Huen K, Barcellos L, Beckman K, **Rose S,** Eskenazi B, Holland N. Effects of PON polymorphisms and haplotypes on melcular phenotype in Mexican-American mothers and children. *Environmental and Molecular Mutagenesis* 2011; 52(2):105-16.

6. Li H, Grigoryan H, Funk W, Lu S, **Rose S,** William E., Rappaport S. Profiling Cys34 adducts of human serum albumin by fixed-step selected reaction monitoring. *Molecular & Cellular Proteomics* 2011; 10(3):M110.004606.

7. **Rose S,** van der Laan MJ. A targeted maximum likelihood estimator for two-stage designs. *International Journal of Biostatistics* 2011; 7(1):Article 17.

8. Snowden J, **Rose S**, Mortimer K. Implementation of G-Computation on a simulated data set: Demonstration of a causal inference technique. *American Journal of Epidemiology* 2011; 173(7):731-8.

9. **Rose S**, Snowden J, Mortimer K. Rose et al. respond to "G-computation and standardization in epidemiology." *American Journal of Epidemiology* 2011; 173(7):743-4.

10. Wang H, **Rose S**, van der Laan MJ. Finding quantitative trait loci genes with collaborative targeted maximum likelihood learning. *Statistics and Probability Letters* 2011; 81(7):792-6.

11. **Rose S**. Mortality risk score prediction in an elderly population using machine learning. *American Journal of Epidemiology* 2013; 177(5):443-52.

12. van Loo HM, Cai T, Gruber MJ, Li J, de Jonge P, Petukhova M, **Rose S**, Sampson NA, Schoevers RA, Wardenaar KJ, Wilcox MA, Al-Hamzawi AO, Andrade LH, Bromet EJ, Bunting B, Fayyad J,

Florescu SE, Gureje O, Hu C, Huang Y, Levinson D, Medina-Mora ME, Nakane Y, Posada-Villa J, Scott KM, Xavier M, Zarkov Z, Kessler RC. Major depressive disorder subtypes to predict long-term course and severity. *Depression and Anxiety* 2014; 31(9):765-77.

13. Wardnaar K, van Loo H, Cai T, Fava M, Gruber M, Li J, de Jonge P, Nierenberg A, Petukhova M, **Rose S**, Sampson N, Schoevers R, Wilcox M, Alonso J, Bromet E, Bunting M, Florescu S, Fukao A, Gureje O, Hu C, Huang Y, Karam A, Levinson D, Medina Mora M, Posada-Villa J, Scott K, Taib N, Viana M, Xavier M, Zarkov Z, Kessler RC. The effects of comorbidity in defining major depression subtypes associated with long-term course and severity. *Psychological Medicine* 2014; 44(15):3289-302.

14. Kessler RC, **Rose S**, Koenen K, Karam E, Stang P, Stein D, Heeringa S, Hill E, Liberzon I, McLaughlin K, McLean S, Pennell B, Petukhova M, Rosellini A, Ruscio A, Shahly V, Shalev A, Silove D, van Ommeren M, Zaslavsky A, Angermeyer M, Bromet E, Caldas de Almeida J, de Girolamo G, de Jonge P, Demyttenaere K, Florescu S, Gureje O, Haro J, Hinkov H, Kawakami N, Kovess-Masfety V, Lee S, Medina-Mora M, Murphy S, Navarro-Mateu F, Piazza M, Posada-Villa J, Scott K, Torres Y, Viana M. How well can post-traumatic stress disorder be predicted from pre-trauma risk factors? An exploratory study in the WHO World Mental Health Surveys. *World Psychiatry* 2014; 13(3):265-74.

15. Wang H, Zhang Z, **Rose S**, van der Laan M. A novel targeted learning method for quantitative trait loci mapping. *Genetics* 2014; 198(4):1369-76.

16. **Rose S**, van der Laan MJ. A double robust approach to causal effects in case-control studies. *American Journal of Epidemiology* 2014; 179(6):663-9.

17. **Rose S**, van der Laan MJ. Rose et al. respond to "Some advantages of RERI – towards better estimators of additive interaction." *American Journal of Epidemiology* 2014; 179(6):672-3.

18. Song Z, **Rose S**, Gelb Safran D, Landon BE, Chernew ME. Changes in health care spending and quality 4 years into global payment. *New England Journal of Medicine* 2014; 371(18):1704-14.

19. Kessler RC, Warner C, Ivany C, Petukhova M, **Rose S**, Bromet E, Brown M, Cai T, Colpe L, Cox K, Fullerton C, Gilman S, Gruber M, Heeringa S, Lewandowski-Romps L, Li J, Millikan-Bell A, Naifeh J, Nock M, Rosellini A, Sampson N, Schoenbaum M, Stein B, Wessely S, Zaslavsky A, Ursano R. Predicting suicides after psychiatric hospitalizations in US Army soldiers. *JAMA Psychiatry* 2015; 72(1):49-57.

20. Marcondes F, Dean K, Schoen R, Leffler D, **Rose S**, Morris M, Mehrotra A. The impact of exclusion criteria on a physician's adenoma detection rate. *Gastrointestinal Endoscopy* 2015; 82(4):668-75.

21. Abdul-Baki H, Schoen R, Dean K, **Rose S**, Leffler D, Kuganeswaran E, Morris M, Carrell D, Mehrotra A. Public reporting of colonoscopy quality is associated with an increase in endoscopist adenoma detection rate. *Gastrointestinal Endoscopy* 2015; 82(4):676-82.

22. **Rose S**, Shi J, McGuire TG, Normand SL. Matching and imputation methods for risk adjustment in the Health Insurance Marketplaces. *Statistics in Biosciences* 2015; Advance online publication. doi:10.1007/s12561-015-9135-7.

23. **Rose S**. Targeted learning for pre-analysis plans in public health and health policy research.

Observational Studies 2015; 1:294-306.

24. **<u>Rose S</u>**. A machine learning framework for plan payment risk adjustment. *Health Services Research* 2016; 51(6):2358-74.

25. **<u>Rose S</u>**, Zaslavsky A, McWilliams JM. Variation in accountable care organization spending and sensitivity to risk adjustment: Implications for benchmarking. *Health Affairs* 2016; 35(3):440-8.

26. Mirelman A*, **<u>Rose S</u>**, Khan J, Ahmed S, Peters D, Niessen L, A. Trujillo. The relationship between noncommunicable disease occurrence and poverty: Evidence from demographic surveillance in Matlab, Bangladesh. *Health Policy and Planning* 2016; 31(6):785-92.

27. Montz E, Layton T, Busch A, Ellis R, **<u>Rose S</u>**, McGuire T. Risk-adjustment simulation: Plans may have incentives to distort mental health and substance use coverage. *Health Affairs* 2016; 35(6):1022-28.

28. Spertus J, Normand SL, Rolf R, Cioffi M, Lovett A, **<u>Rose S</u>+**. Assessing hospital performance following percutaneous coronary intervention with big data. *Circulation: Cardiovascular Quality and Outcomes* 2016; 9:659-69.

29. Schuler M*, **<u>Rose S</u>+**. Targeted maximum likelihood estimation for causal inference in observational studies. *American Journal of Epidemiology* 2017; 185(1):65-73.

30. Song Z, **<u>Rose S</u>**, Chernew M, Gelb Safran D. Lower versus higher income populations in the Alternative Quality Contract: Improved quality and similar spending. *Health Affairs* 2017; 36(1):74-82.

31. **<u>Rose S</u>**, Bergquist S*, Layton T. Computational health economics for identification of unprofitable health care enrollees. *Biostatistics* 2017; 18(4):682-94.

32. Carrell S, Schoen R, Leffler D, Morris M, **<u>Rose S</u>**, Baer A, Crockett S, Gourevitch R, Dean K, Mehrotra A. Challenges in adapting existing clinical natural language processing systems to multiple, diverse healthcare settings. *Journal of the American Medical Informatics Association* 2017; 25(5):986-91.

33. Mehrotra A, Huskamp H, Souza J, Uscher-Pines L, **<u>Rose S</u>**, Landon B, Jena A, Busch A. Use of telemental health among rural Medicare beneficiaries with mental illness. *Health Affairs* 2017; 36(5):909-17.

34. Barnett M, Song Z, **<u>Rose S</u>**, Bitton A, Chernew M, Landon B. Insurance transitions and changes in physician and emergency department utilization: An observational study. *Journal of General Internal Medicine* 2017; 32(10):1146-55.

35. Bergquist S*, Brooks G, Keating N, Landrum MB, **<u>Rose S</u>+**. Classifying lung cancer severity with ensemble machine learning in health care claims data. *Proceedings of Machine Learning Research* 2017; 68:25-38. (Peer-reviewed conference publication; 34% acceptance rate)

36. Sinaiko A, Layton T, **<u>Rose S</u>**, McGuire T. Implications of family risk pooling for individual health insurance markets. *Health Services and Outcomes Research Methodology* 2017; 17(3):219-36.

37. Shrestha A*, Bergquist S*, Montz E, **<u>Rose S</u>+**. Mental health risk adjustment formulas with clinical categories and machine learning. *Health Services Research* 2018; 53(S1):3189-3206.

38. Rosellini AJ*, Dussaillant F, Zubizarreta J, Kessler R, **Rose S+**. Predicting posttraumatic stress disorder following a natural disaster. *Journal of Psychiatric Research* 2018; 96:15-22.

39. Lee C, Haneuse S, Wang H, **Rose S**, Spellman S, Verneris M, Hsu K, Fleischhauser K, Lee S, Abdi R. Prediction of acute graft-versus-host disease following hematopoietic cell transplantation. *PLoS ONE* 2018; 13(1):e0190610.

40. Mateen F, McKenzie E, **Rose S+**. Medical schools in fragile states: Implications for delivery of care. *Health Services Research* 2018; 53(3):1335-1348.

41. Mehrotra A, Morris M, Gourevitch R, Carrell D, Leffler D, **Rose S**, Greer J, Crockett S, Baer A, Schoen R. Physician characteristics associated with higher adenoma detection rate. *Gastrointestinal Endoscopy* 2018; 87(3):778-86.

42. Gourevitch R, **Rose S**, Crockett S, Morris M, Carrell D, Greer J, Pai R, Schoen R, Mehrotra A. Variation in pathologist classification of colorectal adenomas and serrated polyps. *American Journal of Gastroenterology* 2018; 113:431-39.

43. Crockett S, Gourevitch R, Morris M, Carrell D, **Rose S**, Greer J, Schoen R, Mehrotra A. Endoscopist factors that influence serrated polyp detection: A multi-center study. *Endoscopy* 2018; 50(10):984-92.

44. **Rose S**. Robust machine learning variable importance analyses of medical conditions for health care spending. *Health Services Research* 2018; 53(5):3836-54.

45. Carroll C*, Chernew M, Fendrick AM, Thompson JW, **Rose S+**. Effects of episode-based payment on health care spending and utilization: Evidence from perinatal care in Arkansas. *Journal of Health Economics* 2018; 61:47-62.

46. Gilstrap L, Mehrotra A, Bai B, **Rose S**, Blair R, Chernew M. National rates of timely initiation and intensification of antidiabetic therapy among patients with commercial insurance. *Diabetes Care* 2018; 41(8):1776-82.

47. Barnett M, Song Z, Bitton A, **Rose S**, Landon B. Gatekeeping and patterns of outpatient care post-health care reform. *American Journal of Managed Care* 2018; 24(10):e312-18.

48. **Rose S**. Machine learning for prediction in electronic health data. *JAMA Network Open* 2018; 1(4):e181404.

49. Bergquist S*, McGuire T, Layton T, **Rose S+**. Sample selection for Medicare risk adjustment due to systematically missing data. *Health Services Research* 2018; 53(6):4204-23.

50. Huskamp H, Busch A, Souza J, Uscher-Pines L, **Rose S**, Wilcock A, Landon B, Mehrotra A. How is telemedicine being used for opioid and other substance use disorder treatment? *Health Affairs* 2018; 37(12):1940-47.

51. Nakamura M, Toomey S, Zaslavsky A, Petty C, Lin C, Savova G, **Rose S**, Brittan M, Lin J, Bryant M, Ashrafzadeh S, Schuster M. Potential impact of clinical data on adjustment of pediatric readmission rates. *Academic Pediatrics* 2019; 19(5):589-98.

52. Ezaz G, Leffler D, Beach S, Schoen R, Crockett S, Gourevitch R, **Rose S**, Morris M, Carrell D, Greer J, Mehrotra A. Association between endoscopy personality and rate of adenoma detection. *Clinical Gastroenterology and Hepatology* 2019; 17(8):1571-79.

53. **Rose S**, Normand SL. Double robust estimation for multiple unordered treatments and clustered observations: Evaluating drug-eluting coronary artery stents. *Biometrics* 2019; 75(1):289-96.

54. **Rose S**, McGuire T. Limitations of p-values and R-squared for stepwise regression building: A fairness demonstration in health policy risk adjustment. *The American Statistician* 2019; 73(S1):152-6.

55. Brooks G, Bergquist S*, Landrum M, **Rose S**, Keating N. Classifying lung cancer stage from health care claims: A comparison of multiple analytic approaches. *JCO Clinical Cancer Informatics* 2019; Advance online publication. doi:10.1200/CCI.18.00156.

56. Bergquist S*, Layton T, McGuire T, **Rose S+**. Data transformations to improve the performance of health plan payment methods. *Journal of Health Economics* 2019; 66:195-207.

57. **Rose S**. Considerations for outcome-dependent biased sampling in health databases. *Statistics in Medicine* 2019; 38(22):4213-5.

58. Wilcock A, **Rose S**, Busch A, Huskamp H, Uscher-Pines L, Landon B, Mehrotra A. Association between broadband internet availability and telemedicine use. *JAMA Internal Medicine* 2019; 179(11):1580-2.

59. McDowell A*, Progovac A, Cook B, **Rose S+**. Estimating the health status of privately insured gender minority children and adults. *LGBT Health* 2019; 6(6):289-96.

60. Blakely T, Lynch J, Simons K, Bentley R, **Rose S+**. Reflection on modern methods: When worlds collide – prediction, machine learning and causal inference. *International Journal of Epidemiology* 2019; Advance online publication. doi:10.1093/ije/dyz132.

61. Adhikari S*, **Rose S**, Normand SL. Nonparametric Bayesian instrumental variable analysis: Evaluating heterogeneous treatment effects of arterial access sites for opening blocked blood vessels. *Journal of the American Statistical Association* 2019; Advance online publication. doi:10.1080/01621459.2019.1688663.

62. Zink A*, **Rose S+**. Fair regression for health care spending. *Biometrics* 2019; Advance online publication. doi:10.1111/biom.13206.

63. **Rose S**, Rizopoulos D. Machine learning for causal inference in Biostatistics. *Biostatistics* 2020; 21(2):336-8.

64. Chen J, Chernew M, Fendrick AM, Thompson J, **Rose S**. Impact of an episode-based payment initiative by commercial payers in Arkansas on procedure volume: An observational study. *Journal of General Internal Medicine* 2020; 35(2):578-85.

65. **Rose S**. Intersections of machine learning and epidemiological methods for health services research. *International Journal of Epidemiology* 2020; Advance online publication. doi:10.1093/ije/dyaa035.

66. McDowell A*, Raifman J, Progovac A, **Rose S+**. Association of nondiscrimination policies with mental health among gender minority individuals. *JAMA Psychiatry* 2020; Advance online publication. doi: 10.1001/jamapsychiatry.2020.0770.

Research Publications without Named Authorship:
1. Lewandowski-Romps L, Peterson C, Berglund P, Collins S, Cox K, Hauret K, Jones B, Kessler R, Mitchell C, Park N, Schoenbaum M, Stein M, Ursano R, Heeringa S, Army STARRS Collaborators*. Risk factors for accident death in the U.S. Army, 2004-2009. *American Journal of Preventive Medicine* 2014; 47(6):745-53 (*member of the investigative team cited in the appendix of the manuscript).

2. Street A, Gilman S, Rosellini A, Stein M, Bromet E, Cox K, Colpe L, Fullerton C, Gruber M, Heeringa S, Lewandowski-Romps L, Little R, Naifeh J, Nock M, Sampson N, Schoenbaum M, Ursano R, Zaslavsky A, Kessler R, Army STARRS Collaborators*. Understanding the elevated suicide risk of female soldiers during deployments. *Psychological Medicine* 2015; 45(4):717-26 (*member of the investigative team cited in the appendix of the manuscript).

Book Chapters
1. **Rose S**. Targeted learning for variable importance. In Buhlman, Drineas, Kane, van der Laan, eds. *Handbook of Big Data*. Chapman & Hall, 2016.

2. Kunz L, **Rose S**, Spiegelman D, Normand SL. An overview of approaches for causal inference. In Gatsonis, Morton, eds. *Methods in Comparative Effectiveness Research*. Chapman & Hall, 2017.

3. Ellis R, Martins B, **Rose S**. Risk adjustment for health plan payment. In McGuire, van Kleef, eds. *Risk Adjustment, Risk Sharing and Premium Regulation in Health Insurance Markets: Theory and Practice*. Elsevier Publishing, 2018.

4. Kessler R, **Rose S**, Stang P, Zaslavsky A. Data mining to predict PTSD onset in the wake of trauma exposure. In Koenen, Stein, Karam, eds. *Trauma and Posttraumatic Stress Disorder: Global Perspectives from the WHO Mental Health Surveys*. Cambridge University Press, 2018.

Books
1. van der Laan MJ, **Rose S**. *Targeted Learning: Causal Inference for Observational and Experimental Data*. New York, Springer, 2011.

2. van der Laan MJ, **Rose S**. *Targeted Learning in Data Science: Causal Inference for Complex Longitudinal Studies*. New York, Springer, 2018.

Professional educational materials or reports, in print or other media:
1. van der Laan MJ, **Rose S**. Statistics ready for a revolution: Next generation of statisticians must build tools for massive data sets. *Amstat News*, 399:38-39, 2010.

2. **Rose S**. Big data and the future. *Significance*, 9(4):47-48, 2012.

3. **Rose S**. Statisticians' place in big data. *Amstat News*, 428:28, 2013.

4. **Rose S**. Computational hurdles for big data statistics in health care policy. *Statistics Views*, 2014. statisticsviews.com/details/feature/5891321/Computational-Hurdles-in-Big-Data-Statistics-for-Health-Care-Policy.html

5. Rudin C, Dunson D, Irizarry R, Ji H, Laber E, Leek J, McCormick T, **Rose S**, Schafer C, van der Laan MJ, Wasserman L, Xue L; A Working Group of the American Statistical Association. *Discovery with Data: Leveraging Statistics and Computer Science to Transform Science and Society.* American Statistical Association Report for White House Big Data Research and Development Initiative, 2014.

6. **Rose S**, Dunson D, McCormick T, Rudin C. Statistical Discovery with Big Data. *FierceBigData*, 2014.

7. **Rose S**. Navigating Big Data Careers with a Statistics PhD. *Simply Statistics*, 2015. simplystatistics.org/2015/02/18/navigating-big-data-careers-with-a-statistics-phd/

8. **Rose S.** Targeted Learning R Packages for Causal Inference and Machine Leaning. *Revolution Analytics*, 2015. blog.revolutionanalytics.com/2015/03/targeted-learning-r-packages-for-causal-inference-and-machine-learning.html

9. **Rose S**. A Conversation with Elizabeth A. Stuart. *Health Services and Outcomes Research Methodology*, 2016.

10. **Rose S**. Machine learning for clinical decision-making: pay attention to what you don't see. *STAT*, 2019. statnews.com/2019/12/12/machine-learning-clinical-decision-making-limitations/