

## Harvard Medical School Curriculum Vitae

**Date Prepared:** April 13, 2019  
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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
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### 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	3 <sup>rd</sup> 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 <i>Founder &amp; President</i>
2008-2011	Recruitment and Diversity Services Student Ambassador Program	University of California, Berkeley <i>Member</i>
2010-2011	Admissions Committee, Biostatistics MA and PhD Program	University of California, Berkeley <i>Member</i>
2010-2011	School of Public Health Student Government	University of California, Berkeley <i>Member</i>
2015-	Committee on Higher Degrees in Health Policy	Harvard University <i>Member</i>
2016	Admissions Committee, Summer Program in Biostatistics and Computational Biology	Harvard Chan School of Public Health <i>Member</i>
2016-2017	Statistics Faculty Search Committee, Department of Health Care Policy	Harvard Medical School <i>Member</i>
2016-	Curriculum Development Board, Essentials of Medicine, Health Policy – Part II	Harvard Medical School <i>Member</i>
2016-	Admissions Committee, Health Policy PhD Program	Harvard University <i>Member</i>
2018, 2019	Harvard Data Science Initiative Postdoctoral Fellow Program	Harvard University <i>First Round Reviewer</i>
2018-2021	Faculty Council	Harvard Medical School <i>Elected Preclinical Member</i>
2018-2019	Foundry Planning Committee	Harvard Medical School <i>Member</i>

### National

2012	Informal Committee of Junior Statisticians	American Statistical Association <i>Founder &amp; Member</i>
2013-2014	Advisory Group on Statistics and Computer Science for Big Data	American Statistical Association <i>Member</i>
2014-2016	Committee on Meetings	American Statistical Association <i>Member</i>
2015	Thomas R. Ten Have Award Committee	Atlantic Causal Inference Conference <i>Member</i>
2017	Student Travel Award Committee	Joint Statistical Meetings, Health Policy Statistics Section <i>Member</i>
2018	Program Committee	Machine Learning for Healthcare Conference <i>Member</i>
2018	Senior Advisory Committee	3 <sup>rd</sup> Annual Population Health Science Research Workshop <i>Member</i>
2019	Program Committee	Eastern North American Region of the International Biometric Society <i>Member</i>

## International

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

## Professional Societies

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

## Grant Review Activities

2016-2017	Mathematics and Statistics Discovery Grant Program	Natural Sciences and Engineering Research Council of Canada (NSERC) <i>Reviewer</i>
2017	Methodology and Measurement in the Behavioral and Social Sciences Special Emphasis Panel	National Institutes of Health <i>Reviewer</i>
2018	Understanding Mortality Outcomes Special Emphasis Panel	National Institutes of Health <i>Reviewer</i>
2018	Aggregating and Mining Existing Data Sets Special Emphasis Panel	National Institutes of Health <i>Reviewer</i>

## 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 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
2016-18	Associate Editor	Biostatistics
2017-18	Editorial Board	Special Issue on Statistical Inference in the 21 <sup>st</sup> 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	<i>Environmental and Molecular Mutagenesis</i> 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	<i>American Journal of Epidemiology</i>	
2014	Reviewer of the Year	<i>American Journal of Epidemiology</i>	
2014	Best Reviewer Award	<i>Pharmacoepidemiology and Drug Safety</i>	

2015	Certificate of Excellence in Tutoring	Harvard Medical School	Recognizes excellence in small-group teaching based on student evaluations
2015	Editor's Choice Article	<i>Gastrointestinal Endoscopy</i>	
2016	AcademyHealth New Investigator	AcademyHealth	Recognizes six new investigators for innovative research
2017	Article of the Year	<i>American Journal of Epidemiology</i>	
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	

## **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.
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- 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.
- 2015-2019    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.
- 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.
- 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 will develop new statistical 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 focuses 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 will have 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. This program evaluation will involve the development of new statistical methods including techniques for the creation of synthetic controls.
- 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 is a first step toward improving risk adjustment in Medicare Advantage plans. The specific aims include developing innovative and tailored machine learning-based matching methods in order to draw 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.
- 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 including 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 adjusters, 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 propose 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 seeks 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 is to use qualitative methods and early data/reports from Arkansas to provide insight about the operation and impact of the state's initiative. Investigators will also lay the groundwork for future econometric evaluations by identifying and assessing the suitability of various control populations.
- 2013-2017    Measuring and Improving Colonoscopy Quality Using Natural Language Processing  
NIH/NCI/R01CA168959  
Co-Investigator (Mehrotra)  
Our proposal centers on measuring, understanding, and improving colonoscopy quality. This will be one of the largest assessments of the variation in adenoma detection rates and will span different geographic regions, payment systems, and practice settings. We also seek 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 (Chernew)  
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 include 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 proposes 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 plan to assess 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 (Chernew)  
 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 proposes 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 aims to assess the impact of the program on utilization, spending, quality, and patient- and provider-reported experiences. Dr. Rose developed 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 <i>Perfect 1.0 instructor rating on course evaluations</i>	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: Research Fellow, Centre for Health Economics, University of York.
- 2014-17 Sarah Anoke, PhD in Biostatistics, Harvard T.H. Chan School of Public Health  
Oral exam and dissertation committee member.  
Now: Senior Data Scientist, Netflix
- 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*.  
Fall 2019: 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 for our paper.
Now: Health Policy Researcher, RAND (Boston)
- 2015-19 Savannah Bergquist, PhD Candidate in Health Policy, Harvard University  
Advisor and dissertation committee chair; Supervising research projects on risk adjustment  
redesign, machine learning, and Medicare. Published manuscripts in *Biostatistics*, *Health  
Services Research* (2), and *Proceedings of Machine Learning Research*. Manuscript revise and  
resubmit with *Journal of Health Economics*.  
  - University-wide 2017 Harvard Graduate Society Research Fellowship.

- ICHPS 2018 Student Travel Award for risk adjustment redesign dissertation paper.  
Summer 2019: Postdoctoral Fellow, UC Berkeley Haas School of Business
- 2015-19 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: PhD Student in Statistics, University of Michigan
- 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- Alex McDowell, PhD Student in Health Policy, Harvard University  
Advisor and dissertation committee chair; Supervising research projects on gender minority health. Manuscript revise and resubmit with *LGBT Health*.
  - University-wide 2017 Harvard Summer Predissertation Fellowship.
- 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.
  - National SACNAS 2017 travel scholarship for our summer research.
  - Best Undergraduate Presentation in Statistics Award at SACNAS 2017.
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. Manuscript revise and resubmit with *Journal of the American Statistical Association*. Manuscript under review.  
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 algorithmic fairness for health policy. Manuscript under review.
  - NSF Graduate Research Fellowship Program Awardee 2019
- 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.
- 2018-19 Augustine (Austin) Denteh, PhD, Postdoctoral Fellow, Harvard Medical School  
Advisor; Supervising research project on econometric methods for effect heterogeneity.  
Summer 2019: Assistant Professor of Economics, Tulane University
- 2018- Maimuna (Maia) Majumder, PhD, Postdoctoral Fellow, Harvard Medical School  
Advisor; Supervising research projects on generalizability and novel data sources.

### 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 / Workshop Keynote Presentation  
Harvard University, Harvard Data Science Initiative Conference, Cambridge, 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

**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  
75<sup>th</sup> 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  
12<sup>th</sup> Annual DIA/FDA Statistics Forum, Bethesda, MD
- 2018 Computational Health Economics and Clinical Informatics in Mental Health / Invited Presentation  
7<sup>th</sup> 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  
10<sup>th</sup> Annual Health Economics Workshop, Baltimore, MD
- 2018 Nontraditional Data Sources and Health Decision-Making / Invited Discussant Presentation  
3<sup>rd</sup> Annual Population Health Science Research Workshop, Boston, MA
- 2018 Computational Health Economics and Outcomes Research / Invited Presentation  
3<sup>rd</sup> 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 TBD / Invited Keynote Presentation  
12<sup>th</sup> Annual FDA/AdvaMed Medical Devices and Diagnostics Statistical Issues Conference, Washington, DC
- 2019 TBD / Invited Short Course  
Albert Einstein College of Medicine, Department of Epidemiology & Population Health, Brooklyn, NY
- 2019 TBD / Invited Presentation  
AcademyHealth Annual Research Meeting, Washington, DC
- 2019 Park et al., “Improving Plan Payment Risk Adjustment with Machine Learning: Accounting for Service-Level Propensity Scores to Reduce Service-Level Selection / Invited Discussant Presentation  
8<sup>th</sup> Annual Conference of the American Society of Health Economists
- 2019 TBD / Invited Presentation  
Joint Statistical Meetings, Denver, CO
- 2019 TBD / Invited Discussant Presentation  
Joint Statistical Meetings, Denver, CO

**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 TBD / Invited Presentation  
International Risk Adjustment Network Conference, Portland, ME

### **Report of Education of Patients and Service to the Community**

#### *Activities*

- 2012 Science, Medicine, Math, Young Professionals, and Time Wealth / Invited Presentation  
4<sup>th</sup> 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 yeast *Saccharomyces 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. Wardenaar 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. **Rose S**. A machine learning framework for plan payment risk adjustment. *Health Services Research* 2016; 51(6):2358-74.
25. **Rose S**, 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\*, **Rose S**, 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, **Rose S**, 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, **Rose S**+. Assessing hospital performance following percutaneous coronary intervention with big data. *Circulation: Cardiovascular Quality and*

*Outcomes* 2016; 9:659-69.

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

30. Song Z, **Rose S**, 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. Carrell S, Schoen R, Leffler D, Morris M, **Rose S**, 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.

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

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

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

36. Bergquist S\*, Brooks G, Keating N, Landrum MB, **Rose S+**. 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)

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

38. Rosellini AJ\*, Dussailant 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**, Normand SL. Double robust estimation for multiple unordered treatments and clustered observations: Evaluating drug-eluting coronary artery stents. *Biometrics* 2018; Advance online publication. doi:10.1111/biom.12927.

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

50. 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* 2018; Advance online publication. doi:10.1016/j.cgh.2018.10.019.

51. 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.

52. Nakamura M, Toomey S, Zaslavsky A, Petty C, Lin C, Savova G, **Rose S**, Brittan M, Lin J, Bryant M, Ashrafzadeh S, Schuster M. Impact of clinical data on adjustment of pediatric readmission rates. *Academic Pediatrics* 2018; Advance online publication. doi:10.1016/j.acap.2018.09.006.

53. 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.

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; in press.

### Under Review

56. Bergquist S\*, Layton T, McGuire T, **Rose S±**. Intervening on the data to improve the performance of health plan payment methods. NBER Working Paper #24491. Revise and resubmit at *Journal of Health Economics*.
57. Adhikari S, **Rose S**, Normand SL. Nonparametric Bayesian instrumental variable analysis: Evaluating heterogeneous treatment effects of arterial access sites for opening blocked blood vessels. Preprint on arXiv:1804.08055. Revise and resubmit at *Journal of the American Statistical Association*.
58. **Rose S**. Intersections of epidemiologic methods and machine learning for health services research. Revise and resubmit at *International Journal of Epidemiology*.
59. Chen J, Chernew M, Fendrick AM, Thompson J, **Rose S**. The impact of episode-based payment on procedure volume varies across procedures. Revise and resubmit at *Journal of General Internal Medicine*.
60. McDowell A\*, Progovac A, Cook B, **Rose S±**. Estimating the health status of privately insured gender minority children and adults. Revise and resubmit at *LGBT Health*.
61. Wilcock A, **Rose S**, Busch A, Huskamp H, Uscher-Pines L, Landon B, Mehrotra A. Is broadband internet access a barrier to telemedicine use. Revise and resubmit.
62. Blakely T, Lynch J, Simons K, Bentley R, **Rose S±**. Reflection on modern methods: When worlds collide – prediction, machine learning and causal inference. Revise and resubmit at *International Journal of Epidemiology*.
63. Zink A\*, **Rose S±**. Fair regression for health care spending. Preprint on arXiv:1901.10566. Under review.
64. Adhikari S, Normand SL, Bloom J, Shahian D, **Rose S±**. Revisiting performance metrics for prediction with rare outcomes. Under review.
65. Normand SL, **Rose S**. What to ask when reviewing your quality report. Under review.

### **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.
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.
8. **Rose S**. Targeted Learning R Packages for Causal Inference and Machine Learning. *Revolution Analytics*, 2015.
9. **Rose S**. A Conversation with Elizabeth A. Stuart. *Health Services and Outcomes Research Methodology*, 2016.