

WORK EXPERIENCE

Principal, Putnam Data Sciences 2017–present
Provide statistical consulting and training in methodology for statistical causal inference and predictive modeling. Clients and collaborators include the U.S. Food and Drug Administration and researchers at Harvard University, Brown University, Stanford University, University of California at Berkeley, University of Utah, and Kaiser Permanente Division of Research.

Director of Biostatistics Center and Assistant Professor 2016–2017
Department of Population Medicine, Harvard Medical School and Harvard Pilgrim Healthcare Institute
Methodologic research interests include targeted learning for causal inference, methods for detecting safety signals in electronic health data, and applications of machine learning in predictive modeling and propensity score estimation. Applied work included an analysis of sepsis trends in the United States, evaluating vaccine safety with respect to risk of febrile seizure, and studying the effects of short vs. long course antibiotic use in patients with ventilator-acquired pneumonia. Conducted a successful faculty search culminating in a new hire at the Associate Professor level.

Senior Director, IMEDS-Methods Research 2014–2015
Reagan-Udall Foundation for the FDA
Developed and executed a research agenda aimed at improving methods for safety surveillance using large electronic healthcare databases. Focus areas include methods for addressing bias in observational studies, understanding sources of heterogeneity in observational studies using administrative data, and extracting lessons from activities of the Observational Medical Outcomes Partnership (OMOP) relevant to Mini-Sentinel. Oversight of communication and dissemination among a broad set of stakeholders from industry, academia, and the FDA.

Post-Doctoral Research Fellow, Harvard School of Public Health 2011–2014
Department of Epidemiology, Mentors: Miguel Hernán and James Robins
Investigated theoretical and computational issues surrounding data-adaptive estimation of weights for inverse probability weighting estimators in large longitudinal datasets. Development and comparison of data adaptive methodology for causal inference, including alternative double-robust estimators. Presented a critique of the Observational Medical Outcomes Partnership (OMOP) work on identifying adverse drug events in large observational datasets to Mini-Sentinel leadership at the U.S. Food and Drug Administration.

Technical Consultant, Ordinology Consulting 1989–2004
Technical editor for technical books and papers and database applications development for tracking system for foster children's medical records.

- Instructor**, Computer Information Systems Department, De Anza College 1992–1997
Programming in C, Introduction to Computing, Scientific Programming
- Research Assistant**, Computer Science Department, UC San Diego 1988–1989
Database management system interface development
- Teaching Assistant**, Computer Science Department, UC San Diego 1988–1989
Artificial Intelligence I and II, Comparative Study of Programming Languages, Combinatorics and Graph Theory
- Instructor**, Computer Science Department, UC San Diego 1988
Introduction to Programming Techniques
- Scientific Programmer**, Department of Applied Environmental Sciences, SAIC 1985–1987
Designed and implemented a Laboratory Information Management System, developed statistical analysis and plotting tools in SAS

EDUCATION

- Ph.D.*, Biostatistics, University of California, Berkeley 2011
Advisor: Mark J. van der Laan
Dissertation: *Collaborative Targeted Maximum Likelihood Estimation*
- M.P.H.*, Epidemiology and Biostatistics, University of California, Berkeley 2007
Master's Paper: *Survival Analysis: A Comparison of Clustering and Parametric Approaches*
- M.S.*, Computer Science, University of California, San Diego 1989
Master's Paper: *A Conceptual Framework for Temporal Databases*
- B.A.*, Chemistry, Northwestern University, Evanston, Illinois 1982

PUBLICATIONS

Peer Reviewed

1. D Martin, JJ Gagne, **S Gruber**, Rlzem, JC Nelson, MD Nguyen, R Ouellet Hellstrom, S Schneeweiss, S Toh, AM Walker. Sequential surveillance for drug safety in a regulatory environment. *Pharmacoepidemiology and Drug Safety* 2018 [in press].
2. SV Wang, Y Jin, B Fireman, **S Gruber**, M He, R Wyss, HJ Shin, Y Ma, S Keeton, S Karami, JM Major, S Schneeweiss, JJ Gagne. Relative performance of propensity score matching strategies for subgroup analyses. *Epidemiology* 2018; [in press].
3. C Rhee, R Dantes, L Epstein, DJ Murphy, CW Seymour, TJ Iwasyna, SS Kadri, DC Angus, RL Danner, AE Fiore, JA Jernigan, GS Martin, E Septimus, DK Warren, A Karcz, C Chan, JT Menchaca, R Wang, **S Gruber**, M Klompas. Incidence and Trends of Sepsis in US Hospitals Using Clinical vs Claims Data, 2009-2014. *Journal of the American Medical Association* 2017; 318 (13), 1241-1249.
4. C Ju, **S Gruber**, SD Lendle, A Chambaz, JM Franklin, R Weiss, S Schneeweiss, MJ van

- der Laan. Scalable Collaborative Targeted Learning for High-Dimensional Data. *Statistics in Medicine* 2017; <https://doi.org/10.1177/0962280217729845>.
5. M Klompas, L Li, JT Menchaca, **S Gruber**. Ultra-Short-Course Antibiotics for Patients With Suspected Ventilator-Associated Pneumonia but Minimal and Stable Ventilator Settings. *Clinical Infectious Disease* 2016; 64 (7), 870-876.
 6. **S Gruber**, A Chakravarty, SR Heckbert, M Levenson, D Martin, J Nelson, B Psaty, S Pinheiro, C Reich, S Schneeweiss, S Toh, A Walker. Design and Analysis Choices for Safety Surveillance Evaluations Need to be Tuned to the Specifics of the Hypothesized Drug-Outcome Association. *Pharmacoepidemiology and Drug Safety* 2016; 25 (9), 2315-2336.
 7. **S Gruber**, E Tchetgen Tchetgen. Limitations of empirical calibration of p-values using observational data. *Statistics in Medicine* 2016; 35 (22), 3869-3882.
 8. MJ van der Laan and **S Gruber**. One-Step Targeted Minimum Loss-based Estimation Based on Universal Least Favorable One-Dimensional Submodels. *The International Journal of Biostatistics* 2016; 12 (1), 351 - 378.
 9. **S Gruber**. Targeted Learning in Healthcare Research. *Big Data* 2016; 3(4), 211-218. DOI: 10.1089/big.2015.0025.
 10. **S Gruber**, RW Logan, I Jarrín, S Monge, MA Hernán. Ensemble learning of inverse probability weights for marginal structural modeling in large observational datasets. *Statistics in Medicine* 2015; 34 (1), 106-117.
 11. **S Gruber**. A Causal Perspective on OSIM2 Data Generation, with Implications for Simulation Study Design and Interpretation. *Journal of Causal Inference* 2015. ISSN (Online) 2193-3685, ISSN (Print) 2193-3677, DOI: 10.1515/jci-2014-0008.
 12. ME Schnitzer, JJ Lok, **S Gruber**. Variable Selection for Confounder Control, Flexible Modeling and Collaborative Targeted Minimum Loss-Based Estimation in Causal Inference. *The International Journal of Biostatistics* 2015; ISSN (Online) 1557-4679, ISSN (Print) 2194-573X, DOI: 10.1515/ijb-2015-0017.
 13. C Bell, A Chakravarty, **S Gruber**, S Heckbert, M Levenson, D Martin, J Nelson, S Pinheiro, B Psaty, C Reich, S Schneeweiss, A Shoaibi, S Toh, A Walker. Characteristics of study design and elements that may contribute to the success of electronic safety monitoring systems. *Pharmacoepidemiology and Drug Safety* 2014; 23 (11).
 14. M Petersen, J Schwab, **S Gruber**, N Blaser, M Schomaker, M van der Laan. Targeted maximum likelihood estimation for dynamic and static longitudinal marginal structural working models. *Journal of Causal Inference* 2014; 2(2), 147-185.
 15. N Krief, **S Gruber**, R Radice, R Grieve, JS Sekhon. Evaluating treatment effectiveness under model misspecification: a comparison of targeted maximum likelihood estimation with bias-corrected matching. *Statistical Methods in Medical Research* (2014) [Epub ahead of print].
 16. **S Gruber** and MJ van der Laan. An Application of Targeted Maximum Likelihood Estimation to the Meta-Analysis of Safety Data. *Biometrics* 2013; [doi: 10.1111/j.1541-0420.2012.01829.x].
 17. PB Ryan, MJ Schuemie, **S Gruber**, I Zorych, D Madigan. Empirical performance of the new user cohort design: Lessons for developing a risk identification and analysis system. *Drug Safety* (2013) 36 (Suppl 1):S59S72.
 18. **S Gruber** and MJ van der Laan. tmlle: An R Package for Targeted Maximum Likelihood Estimation. *Journal of Statistical Software* 2012; 51(13).

19. **S Gruber** and MJ van der Laan. Targeted Minimum Loss Based Estimation of a Causal Effect on an Outcome with Known Conditional Bounds. *The International Journal of Biostatistics* 2012; 8(1).
20. MJ van der Laan and **S Gruber**. Targeted Minimum Loss Based Estimation of Causal Effects of Multiple Time Point Interventions. *The International Journal of Biostatistics* 2012; 8(1).
21. **S Gruber** and MJ van der Laan. Targeted Minimum Loss Based Estimator that Outperforms a Given Estimator. *The International Journal of Biostatistics* 2012; 8(1), Article 11.
22. KE Porter*, **S Gruber***, MJ van der Laan, and JS Sekhon. The Relative Performance of Targeted Maximum Likelihood Estimators. *The International Journal of Biostatistics* 2011; 7(1), Article 31.
23. ML Petersen, KE Porter, **S Gruber**, Y Wang, MJ van der Laan. Diagnosing and Responding to Violations of the Positivity Assumption. *Statistical Methods in Medical Research*, 2010.
24. **S Gruber** and MJ van der Laan. A Targeted Maximum Likelihood Estimator of a Causal Effect on a Bounded Continuous Outcome. *The International Journal of Biostatistics* 2010; 6(1), Article 26.
25. MJ van der Laan and **S Gruber**. Collaborative Double Robust Targeted Maximum Likelihood Estimation. *The International Journal of Biostatistics* 2010; 6(1), Article 17.
26. **S Gruber** and MJ van der Laan. An Application of Collaborative Targeted Maximum Likelihood Estimation in Causal Inference and Genomics. *The International Journal of Biostatistics* 2010; 6(1), Article 18.
27. NL Fleischer, AM Weber, **S Gruber**, KZ Arambula, M Mascarenhas, JA Frasure, C Wang, SL Syme. Pathways to Health: A Framework for Health-Focused Research and Practice. *Emerging Themes in Epidemiology* 2006; 3:18.

Book Chapters

1. **S Gruber** and MJ van der Laan. Collaborative Targeted Maximum Likelihood Estimation to assess causal effects in observational studies . In KE Peace ed, *Biopharmaceutical Applied Statistics Symposium (BASS), Volume 2, Chapter 2. [in press], Springer, New York.*
2. **S Gruber**. Targeted Learning with Application to Health Care Research. In E Sejdic and TH Falk eds, *Biomedical Signal Processing in Big Data, [in press], CRC Press, Florida.*
3. **S Gruber** and MJ van der Laan. A Targeted Maximum Likelihood Estimator of a Causal Effect on a Bounded Continuous Outcome. In MJ van der Laan and S Rose, *Targeted Learning: Prediction and Causal Inference for Observational and Experimental Data, Chapter 7. 2011, Springer, New York.*
4. ML Petersen, KE Porter, **S Gruber**, Y Wang, and MJ van der Laan. Diagnosing and Responding to Violations in the Positivity Assumption. In MJ van der Laan and S Rose, *Targeted Learning: Prediction and Causal Inference for Observational and Experimental Data, Chapter 10. 2011, Springer, New York.*
5. **S Gruber** and MJ van der Laan. Collaborative Targeted Maximum Likelihood Estimation. In MJ van der Laan and S Rose, *Targeted Learning: Prediction and Causal Inference for Observational and Experimental Data, Chapter 19. 2011, Springer, New York.*
6. JS Sekhon, **S Gruber**, KE Porter and MJ van der Laan. Doubly Robust Estimators and the Neyman-Rubin Causal Model. In MJ van der Laan and S Rose, *Targeted Learning: Prediction and Causal Inference for Observational and Experimental Data, Chapter 21. 2011, Springer, New York.*

Non Peer-Reviewed

1. M Klompas and **S Gruber**. Reply to Boyer et al. *Clinical Infectious Diseases*. 2017 Jun 15;64(12):1803-4.
2. MA Baker, C Jankosky, K Yih, **S Gruber**, L Li, NM Cocoros, H Lipowicz, C Coronel-Moreno, S Feibelman, N Lin, CN McMahonill-Walraven, D Menschik, MS Selvan, N Selvam, RC Tilney, L Zichittella, GM Lee, A T Karai. Influenza Vaccines and Febrile Seizures in the 2013-2014 and 2014-2015 Influenza Seasons. Sentinel CBER/PRISM Surveillance Report, 2017.
3. **S Gruber** and MJ van der Laan. Consistent Causal Effect Estimation Under Dual Misspecification and Implications for Confounder Selection Procedures. *Statistical Methods in Medical Research* [epub ahead of print February, 2012].
4. **S Gruber** and MJ van der Laan. Targeted Maximum Likelihood Estimation: A Gentle Introduction. UC Berkeley Division of Biostatistics Working Paper Series. Working Paper 252 (2009).

Manuscripts Submitted and In Preparation

1. AM Weber, G Darmstadt, **S Gruber**, M Foeller, S Carmichael, D Stevenson, G Shaw. Prediction of early spontaneous preterm birth using multilevel data from nulliparous non-Hispanic black and white women.
2. **S Gruber**, D Krakower, JT Menchaca, K Hsu, R Hawrusik, JC Maro, NM Cocoros, BA Kruskal, IB Wilson, KH Mayer, M Klompas. Super Learning for Risk Prediction when the Outcome is Rare: Using Electronic Health Records to Identify Candidates for HIV Pre-Exposure Prophylaxis.
3. D Krakower, **S Gruber**, JT Menchaca, K Hsu, R Hawrusik, JC Maro, NM Cocoros, BA Kruskal, IB Wilson, KH Mayer, M Klompas. Using Electronic Health Records Data to Identify Candidates for HIV Preexposure Prophylaxis in Primary Care: Development and Validation of an Automated Prediction Algorithm.
4. BH Fireman, **S Gruber**, Z Zhang, R Wellman, JC Nelson, JM Franklin, R Izem, Y Zhao, on behalf of the FDA Sentinel working group. Evaluating the performance of propensity score-based methods in plausible Sentinel surveillance settings using simulation experiments.
5. K Yoshida, **S Gruber**, BH Fireman, S Toh. Comparison of Privacy-Protecting Analytic and Data-sharing Methods: A Simulation Study.

PRESENTATIONS, WEBINARS, WORKSHOPS, AND SHORT COURSES**Invited**

1. Beyond Logistic Regression: Machine Learning for Propensity Score Estimation. *FDA CDER Office of Biostatistics Division of Biometrics VII*, Silver Spring, Maryland, January, 2018.
2. A Discussion of P-Value Calibration. *FDA Office of Surveillance and Epidemiology Sentinel Webinar*, Silver Spring, Maryland, January, 2018.
3. Performance of Different Propensity Score Methods in Simulated Cohort Studies with Time-to-Event Outcomes. *The 2018 International Conference on Health Policy Statistics*, Charleston, SC, January, 2018.
4. An Introduction to Super Learning for Prediction. *Takeda Pharmaceuticals, Inc.*, Boston, Massachusetts, June, 2017.

5. Using Electronic Health Records to Identify Candidates for HIV Pre-Exposure Prophylaxis: An Application of Super Learning to Risk Prediction when the Outcome is Rare. *Q-GRID Working Group Seminar Series*, Harvard TH Chan School of Public Health, Boston, Massachusetts, January, 2017.
6. Targeted Learning for data adaptive causal inference in observational and randomized studies. *2nd Seattle Symposium on Healthcare Data Analytics*, Seattle, WA, October, 2016.
7. Targeted Learning in Health Care Research. *Harvard T.H. Chan School-Takeda Symposium*, Boston, Massachusetts, September, 2016.
8. Considerations for Covariate Selection When Using TMLE. *Atlantic Causal Inference Conference*, New York, New York, May, 2016.
9. Keynote Panelist, Computer Power and Human Reason: From Calculation to Judgment. *31st International Conference on Pharmacoepidemiology and Therapeutic Risk Management*, Boston, Massachusetts, August, 2015.
10. Insights into the OMOP 2011-2012 Experiment and P-value Calibration. *FDA Office of Surveillance and Epidemiology Safety Seminar*, November, 2015.
11. An Overview of Targeted Maximum Likelihood Estimation. *Group Health Research Institute*, November, 2015.
12. An Introduction to Longitudinal TMLE. *University of Utah School of Medicine*, November, 2015.
13. IMEDS-Evaluation for Conducting Post-Market Safety Studies. *Big DiP USA 2015*, Boston, Massachusetts, September, 2015.
14. Computation and Big Healthcare Data (keynote panelist). *31st International Conference on Pharmacoepidemiology and Therapeutic Risk Management*, Boston, Massachusetts, August, 2015.
15. Big Data and Safety Surveillance: Are We Building a Bigger Haystack? *Drug Information Association (DIA) 51st Annual Meeting*, Washington, D.C., June, 2015.
16. Can P-Value Calibration Really Produce More Reliable Evidence for Safety Surveillance? *IMEDS Community Call Webinar*, November, 2015.
17. Recent Work of the Joint Mini-Sentinel/IMEDS Work Group. *Mini-Sentinel Investigator Meeting, US Food and Drug Administration*, November, 2014.
18. Gaps and Opportunities: Methodologic Challenges in Post-Market Safety Surveillance. *First Seattle Symposium on Healthcare Data Analytics*, Seattle, Washington, September, 2014.
19. Methods to Adjust for Treatment Switching that Disrupts Randomization in Clinical Trials. *Joint Statistical Meetings*, Boston, Massachusetts, August, 2014.
20. A Targeted Learning Approach to Mitigating Bias in Effect Estimates when Some Outcome Data are Missing. *SER Symposium*, Seattle, Washington, June, 2014.
21. Active Prescription Drug Safety Surveillance: Exploring OMOP 2011-2012 Experiments. *GNS Health Care*, Cambridge, Massachusetts, October, 2013.
22. Active Prescription Drug Safety Surveillance: Exploring OMOP 2011-2012 Experiments. *Division of Pharmacoepidemiology and Pharmacoeconomics, Harvard Medical School*, September, 2013.
23. Introduction to Targeted Learning. *Spiegelman Group, Department of Epidemiology, Harvard School of Public Health*, August, September, November, 2013. Boston, Massachusetts.

24. Collaborative Triple-Robust Targeted Loss-Based Estimation. *The Western North American Region of the International Biometric Society*, June, 2013. Los Angeles, California.
25. Efficient Semiparametric Modeling in Causal Inference. *Annual Meeting of the Statistical Society of Canada*, May, 2013. Edmonton, Canada.
26. Workshop on Targeted Maximum Likelihood Estimation. *Department of Epidemiology, Gillings School of Global Public Health, University of North Carolina at Chapel Hill*, February, 2013. Chapel Hill, North Carolina.
27. Methodological Advances in Causal Inference: Addressing Challenges in Comparative Effectiveness Research and Identification of Adverse Drug Effects. **S Gruber**. *Division of Pharmacoepidemiology and Pharmacoeconomics, Harvard Medical School*, October, 2012.
28. Developments in Causal Inference, Whats New and Whats Relevant for Health Economic Evaluation? R Grieve, R Radice, Z Sadique, N Krief, R Ramsahai, **S Gruber**. *Methods for Addressing Selection Bias in Health Economic Evaluation, The London School of Hygiene and Tropical Medicine*, (Short Course) July, 2012. London, England.
29. An Application of Targeted Maximum Likelihood Estimation to Health Economic Evaluation. **S Gruber**. *Centre for Statistical Methodology, The London School of Hygiene and Tropical Medicine*, July, 2012. London, England.
30. Collaborative Targeted Maximum Likelihood Estimation. **S Gruber** and MJ van der Laan. *State of the Art Methodology in Causal Analysis, WNAR 2011 IMS Annual Meeting*, June 20, 2011. San Luis Obispo, CA.
31. Targeted Maximum Likelihood Estimation for Estimating Causal Effects. **S Gruber** and MJ van der Laan. *Quantitative Sciences Research Seminar, Department of Medicine, Stanford University*, June 7, 2011. Palo Alto, CA.
32. Implications of the Collaborative Double Robustness Property of the Efficient Influence Curve for Nuisance Parameter Estimation. **S Gruber** and MJ van der Laan. *Causal Inference Group Meeting, Harvard School of Public Health*. January 19, 2011. Boston, MA.
33. Application of Targeted Maximum Likelihood Estimation to the Meta-Analysis of Randomized Clinical Trials Data, Safety and Efficacy. MJ van der Laan, R Neugebauer, **S Gruber** *Causal Inference Workshop, US Food and Drug Administration*, September, 2009. Silver Spring, MD.

Contributed

34. Automated Identification of Potential Candidates for HIV Pre-Exposure Prophylaxis using Electronic Health Record Data. *Brown Bag Series, Department of Population Medicine*, Boston, Massachusetts, March, 2017.
35. Extracting information from Observational Electronic Health and Claims Data to Enhance Post-Approval Medical Product Safety Surveillance. **S Gruber** and P Ryan. Roundtable Discussion, FDA-Industry Workshop, September, 2014. Washington, DC.
36. Ensemble learning of Inverse Probability Weights for Marginal Structural Modeling in Large Observational Datasets. **S Gruber**, RW Logan, I Jarrín, S Monge, MA Hernán *Eastern North American Region/International Biometric Society Spring Meeting (ENAR)*, March, 2014. Baltimore, MD.
37. Evaluating Treatment Effectiveness Under Model Misspecification: A Comparison of Targeted Maximum Likelihood Estimation with Bias-Corrected Matching. N Kreif, **S Gruber**, R Radice, R Grieve, and JS Sekhon. *Joint Statistical Meetings*, August, 2013. Montreal, Canada.

38. Investigating the Impact of OSIM2 Data Generation on Estimator Performance. **S Gruber**. *OMOP Stats working group meeting*, July, 2013. Webinar.
39. Targeted Maximum Likelihood Estimation with Known Conditional Bounds. **S Gruber** and MJ van der Laan. *Eastern North American Region/International Biometric Society Spring Meeting (ENAR)*, March, 2013. Orlando, FL.
40. Effect of propensity score adjustment on risk ratio estimates in OMOP cohort method analyses. **S Gruber** and J Robins. *OMOP Stats working group meeting*, October, 2012. Webinar.
41. Challenges in Data-Adaptive Estimation of Inverse Probability Weights for Causal Effect Estimation in Large Longitudinal Datasets. **S Gruber** and M Hernán. *Joint Statistical Meetings*, July, 2012. San Diego, CA.
42. Targeted Minimum Loss Based Estimation of Causal Effects of Multiple Timepoint Interventions. MJ van der Laan and **S Gruber**. *Eastern North American Region/International Biometric Society Spring Meeting (ENAR)*, April, 2012. Washington, DC.
43. Collaborative Targeted Maximum Likelihood Estimation of Causal Effects. **S Gruber** and MJ van der Laan. *Statistical Methods in Epidemiology Working Group, Harvard School of Public Health*, November, 2011. Boston, MA.
44. Software for Targeted Maximum Likelihood Estimation. **S Gruber** and MJ van der Laan. *Joint Statistical Meetings*, August, 2010. Vancouver, BC.
45. The Relative Performance of Collaborative Double Robust Targeted Maximum Likelihood Estimators. KE Porter, **S Gruber**, JS Sekhon, MJ van der Laan. *Joint Statistical Meetings*, August, 2010. Vancouver, BC.
46. Collaborative Targeted Maximum Likelihood Estimation of Causal Effect Parameters. **S Gruber** and MJ van der Laan. *Joint Statistical Meetings*, August, 2009. Washington, DC.

Poster Sessions

47. Investigating the Impact of OSIM2 Data Generation on Estimator Performance. **S Gruber**. *OMOP-IMEDS 2013 Symposium*, November, 2013. Bethesda, MD.
48. A Demonstration of Collaborative Targeted Maximum Likelihood Estimation. **S Gruber** and MJ van der Laan. *Atlantic Causal Inference Conference*, May, 2010. New York, NY.
49. The Relative Performance of Targeted Maximum Likelihood Estimators. KE Porter, **S Gruber**, JS Sekhon, MJ van der Laan. *Atlantic Causal Inference Conference*, May, 2010. New York, NY.
50. Collaborative Targeted Maximum Likelihood Estimation: An Application to Biomarker Discovery. **S Gruber** and MJ van der Laan. *Biomedical Computing at Stanford*, November, 2009. Stanford, CA.

STATISTICAL SOFTWARE

Design, implementation, documentation of statistical software for causal inference, developed in collaboration with Mark van der Laan

tmle.ISM: Software for targeted maximum likelihood estimation of causal effects of multiple time point interventions.

tmle: R package for targeted maximum likelihood estimation of a binary point treatment effect.

tmleLite: R package for targeted maximum likelihood estimation of an additive effect of a binary point treatment. Provides data-adaptive estimation using the *D/S/A* algorithm, influence curve-based inference.

ctmle: Software for collaborative targeted maximum likelihood estimation of an additive point treatment effect, incorporating collaborative data-adaptive nuisance parameter estimation, influence curve-based inference.

bias.pboot: Parametric bootstrap for diagnosing bias due to violations of the positivity assumption (with KE Porter, Y Wang, and M Petersen).

GRANTS, HONORS, AND AWARDS

U.S. Patent 8,996,445, *Collaborative targeted maximum likelihood learning*. March 31, 2015

Visiting Scientist, Department of Epidemiology
Harvard T.H. Chan School of Public Health 2014 - 2016

OMOP-IMEDS 2013 Symposium Best Poster Award 2013
Investigating the Impact of OSIM2 Data Generation on Estimator Performance

Association for Women in Mathematics-National Science Foundation Travel Award 2013

Visiting Scientist, Department of Health Services Research and Policy 2012
The London School of Hygiene and Tropical Medicine

Harvard School of Public Health Postdoctoral Association Travel Award 2012

Erich L. Lehmann Citation for an Outstanding Ph.D. Dissertation in Theoretical 2011
Statistics (interpreted broadly), Department of Statistics, UC Berkeley

The citation reads:

Susan Gruber is honored with this award because of her stellar contributions to the development of collaborative targeted maximum likelihood estimation for causal effect estimation, and integration of software development into the research to push and refine the methods to their fullest potential. Susan Gruber's thesis research also involved applications of the methods to HIV resistance, HIV-clinical trials, and safety analysis in collaboration with the FDA.

Russell M. Grossman Endowment Award, UC Berkeley 2011

France-Berkeley Fund Grant, Chambaz/van der Laan 2010-2011

Bears Breaking Boundaries Award for innovative proposal on neglected diseases 2006
and pathways to health (with N Fleischer, A Weber, K Arambula, M Mascarenhas, J Frasure, C Wang)

PROFESSIONAL ACTIVITIES

Editorial boards: *The International Journal of Biostatistics*, *Journal of Causal Inference*

Organizing committee member, *Atlantic Causal Inference Conference*, 2013, Cambridge, MA.

Session chair and organizer

- Drug safety surveillance: whats practical now, and where are we heading? Second Seattle Symposium on Healthcare Data Analytics, 2016, Seattle, WA.

- Perspectives from Causal Inference in the Era of Big (Healthcare) Data *32nd International Conference on Pharmacoepidemiology and Therapeutic Risk Management*, 2016, Dublin, Ireland.
- Novel Computational Approaches in Safety Surveillance, *Joint Statistical Meetings*, 2015, Seattle, WA.
- Fresh Perspectives in Causal Inference II, *Joint Statistical Meetings*, 2014, Boston, MA.
- The Role of Causal Inference in Policy and Regulatory Decision Making, *Atlantic Causal Inference Conference*, 2013, Cambridge, MA.
- Fresh Perspectives in Causal Inference, *Joint Statistical Meetings*, 2013, Montreal, Canada.

Session organizer

- What is the Role of Causal Inference in Analyses of Electronic Medical Databases? *Atlantic Causal Inference Conference*, 2016, New York, NY.
- Fresh Perspectives in Causal Inference III, *Joint Statistical Meetings*, 2015, Seattle, WA.

Session chair, *Eastern North American Region/International Biometric Society Spring Meeting (ENAR)*, March, 2013. Orlando, FL.

Reviewer

- Grants
 - Mathematics and Statistics Discovery Grant, *Natural Sciences and Engineering Research Council of Canada*, 2017
 - Patient Centered Outcomes Research Institute*, 2017
 - Faculty grant committee 2016-2017, *Department of Population Medicine, Harvard Medical School and Harvard Pilgrim Healthcare Institute*
 - Postdoctoral Fellowship Award, *Fonds Wetenschappelijk Onderzoek - Vlaanderen, FWO*, 2015
- Conferences
 - 32nd International Conference on Pharmacoepidemiology and Therapeutic Risk Management*, 2016
 - The Society for Epidemiologic Research Annual Meeting*, 2013
- Journals

<i>Agency for Healthcare Research and Quality</i>	<i>American Journal of Epidemiology</i>
<i>Biometrics</i>	<i>Journal of Biopharmaceutical Statistics</i>
<i>Biostatistics</i>	<i>Journal of Causal Inference</i>
<i>Biometrika</i>	<i>Journal of Clinical Epidemiology</i>
<i>Clinical Trials</i>	<i>Journal of Educational and Behavioral Statistics</i>
<i>eGems</i>	<i>Journal of the Royal Statistical Society</i>
<i>Epidemiology</i>	<i>Journal of Statistical Software</i>
<i>Epidemiologic Methods</i>	<i>Statistics and Probability Letters</i>
<i>International Journal of Biostatistics</i>	<i>Statistical Science</i>
<i>International Journal of Epidemiology</i>	<i>Statistics in Biosciences</i>
	<i>Teaching Statistics</i>

Memberships

American Statistical Association, Association for Women in Mathematics, International Society for Pharmacoepidemiology