Eric B. Laber

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(919) 513-7675

EDUCATION

- **University of Michigan (2006-2011), Ann Arbor, MI**
  - M.A., Statistics, May 2007
  - Ph.D., Statistics, May 2011
- **Duke University (2005-2006), Durham, NC**
  - Ph.D. Student, Institute for Statistics and Decision Sciences
- **UCLA (2002-2005), Los Angeles, CA**
  - B.S. Mathematics
  - Specialization in Computing
  - Summa Cum Laude

EXPERIENCE

- **Amazon.com, Inc., (2019-Present), Seattle, WA**
  - Faculty Scholar, Core Artificial Intelligence
- **North Carolina State University (2011-Present), Raleigh, NC**
  - Assistant Professor, Department of Statistics (2011-2016)
  - Associate Professor, Department of Statistics (2016-Present)
  - Director Research Translation and Engagement , College of Sciences, (2017-Present)
- **University of North Carolina (2016-Present), Chapel Hill**
  - Adjunct Associate Professor, Department of Biostatistics, (2016-Present)
- **University of Michigan (2008-2011), Ann Arbor, MI**
  - Research Assistant, Institute for Social Research
  - Directed by Susan A. Murphy
- **Journal of Sociological Methodology (2008-2010), Ann Arbor, MI**
  - Editor's assistant
  - Editor Yu Xie
- **University of Michigan (2008), Ann Arbor, MI**
  - Research Assistant, Department of Industrial and Operations Engineering
  - Directed by Judy Jin
- **Google, Inc., New York, NY**
  - Intern, Statistics Research Group
  - Directed by Diane Lambert

RESEARCH AREAS

Reinforcement learning; data-driven decision making; causal inference; statistical computing; optimization; empirical processes; bootstrap.

PUBLICATIONS

Peer Reviewed (asterisk indicates first author is student)

1. Griffin L., Lee, D., Jaisle, A., Carek, P.J., George, T.J., **Laber, E.B.**, Lok, B., Paskett, E., Krieger, J. (2019) "A user-centered design approach to designing a mobile health (mHealth) app for colorectal cancer screening." JMIR Human Factors, to appear.
2. Zhao, Y.Q., **Laber, E.B.** (2019) "Efficient augmentation and relaxation learning for treatment regimes using observational data," *Journal of Machine Learning Research*, to appear.
3. Luckett, D.*, **Laber, E.B.**, Kosorok, M.R. (2018). "Estimating dynamic treatment regimes in mobile health using V-learning," *Journal of the American Statistical Association*, to appear.
4. Li, Z.*, Meyer, N.*, **Laber, E.B.**, Brigantic, R. (2019). "Thompson Sampling for Pursuit Evasion Problems," AAAI-19 Workshop on Reinforcement Learning in Games.
5. Olby, N.J., Lim, J., Wagner, N., Zidan, N., Early, P.J., Mariani, C.L., Munana, K.R., **Laber, E.B.** (2019) "Time course and prognostic value of serum GFAP, pNFH, and S100B concentrations in dogs with complete spinal cord injury due to invertebral disc extrusion," *Journal of Internal Veterinary Medicine*, to appear.
6. Zhang, Y.*, **Laber, E.B.** (2019). "Discussion of 'Entropy Learning of Dynamic Treatment Regimes." *Statistical Sinica,* to appear.
7. Lewis, M., **Laber, E.B.**, Olby, N. (2018). "Predictors of response to 4-aminopyridine in a population of chronically paralyzed dogs," *Journal of Neurotrauma*, to appear.
8. Hu, W.*, **Laber, E.B.**, Stefanski, L.A. "Assessing Tuning Parameter Selection Variability in Penalized Regression," *Technometrics,* to appear. Selected for Technometrics invited paper session ASA/IMS SRC (2019).
9. Kosorok, M.R. and **Laber, E.B.** (2019) "Precision Medicine," *Annual Review of Statistics and Its Application*, to appear.
10. **Laber, E.B.**, Meyer, N.J., Reich, B.J., Pacifici, K.P., Collazo, J., Drake, J. (2018) "On-line estimation of an optimal treatment allocation strategy for the control of white-nose syndrome in bats," *JRSS C*, 67(4), 749–789 , (read before the RSS 03/14/2018).
11. **Laber, E.B.**, Wu, F., Munera, C., Lipkovich, I., Colucci, S., Ripa, S. (2018) "Identifying optimal dosage regimes under safety constraints: an application to long-term opiod treatment of chronic pain," *Statistics in Medicine*, 37, 1407–1418.
12. Hu, T.*, **Laber, E.B.**, Meyer, N.J., Pacifici, J. (2018) "Thompson sampling for large decision problems," acceptable after minor revision, *Biometrika.*
13. Rashid, N., Chen, J. Lawson, M.T., Luckett, D., Wang, L., **Laber, E.B.**, Liu, Y., Yeh, J.J., Zeng, D., Kosorok, M.R. (2018) "High dimensional precision medicine from patient-derived xenografts," (under review), invited discussion paper *Journal of the American Statistical Association.*
14. **Laber, E.B.**, Staicu, A.M., (2018) "Functional feature construction for personalized treatment regimes," *Journal of the American Statistical Association*, 113(523), 1219–1227.
15. **Laber, E.B.**, Shedden, K. (2017) "Comment: Statistical Significance and the Dichotomization of Evidence: The Relevance of the ASA Statement on Statistical Significance and p-values for Statisticians," *Journal of the American Statistical Association*, 112(519), 902–904.

16. Zhang, Y.*, **Laber, E.B.**, Davidian, M., Tsiatis, A.A. (2017) "Decision lists for optimal dynamic treatment regimes," *Journal of the American Statistical Association,* 113(524), 1541–1549.

17. Butler-Bente, E.*, **Laber, E.B.**, Kosorok, M.R. (2017) "Incorporating patient preferences into the estimation of optimal treatment regimes," *Biometrics*, 74(1), 18–26.

18. **Laber, E.B.** and Davidian, M. "Dynamic treatment regimes, past, present, and future: A conversation with experts." *Statistical Methods in Medical Research* 26.4 (2017): 1605-1610.

19. Kelleher, S.A., Dorfman, C.S., Vilardaga, J.C.P., Majestic, C., Winger, J., Gandhi, V., Nunez, C., Van Denburg, A., Shelby, Reed, S.D., Murphy, S.A., Davidian, M., **Laber, E.B.**, Kimmick, K.W., Westbrook, K.W., Abernathy, A.P., Keefe, F.J., Somers, T.J. (2017) "Optimizing delivery of a behavioral cancer pain intervention using a SMART," in press, *Contemporary Clinical Trials,* 57, 51-57.

20. Blau, S.R., David, L.M., Gorney, A.M., Dohse, C.S., Williams, K.D., Lim, J-H, Pfitzner, W.G., **Laber, E.B.**, Sawicki, G.S., Olby, N.J. (2017) "Quantifying Center of Pressure Variability in Chondrodystrophoid Dogs," *The Veterinary Journal,* 226, 26–31.

21. Fenn, J., **Laber, E.B.**, Williams, K., Rousse, C.A., Early, P.J., Mariani, C.J., Munana, K.R., Dedecker, S, Volk, H.A., Olby, N.J. (2016)"Evaluating associations between anesthetic variables and functional outcome in dogs with thoracolumbar intervertebral disc extrusion undergoing decompressive hemilaminectomy," *Journal of Veterinary Internal Medicine*, 31(3), 814-824.

22. Qian, G.*, **Laber, E.B.** (2016), Reich, B.R. "Discussion of Bayesian Nonparametric Estimation for Dynamic Treatment Regimes with Sequential Transition Times," invited discussion, *Journal of the American Statistical Association*, 111(515), 936–942.

23. Lizotte, D.J., **Laber, E.B.** (2016) "Non-deterministic fitted-Q for decision support," *Journal of Machine Learning Research*, 17(211), 1-28.

24. **Laber, E.B.**, Regh, T., Davidian, M., Kosorok, M.R., Tsiatis, A., Zeng, D., Zhao. Y. (2016) "Using pilot data to size a two-arm randomized trial to find a nearly optimal personalized treatment strategy," *Statistics in Medicine*, 35(8), 1245–1256.

25. Barberan, A., Dunn, R., Reich, B., Pacifici, K., **Laber, E.B.**, Menninger, H., Morton, J., Henley, J., Leff, J., Miller, S., and Fierer, N. (2015)"The ecology of microscopic life in household dust," *Proceedings of the Royal Society B*, 282(1814).

26. Linn, K.A.*, **Laber, E.B.**, Stefanski, L.A. (2017) "Interactive Q-learning for quantiles," *Journal of the American Statistical Association.*, 112 (518), 638-649.

27. Zhang, Y.*, **Laber, E.B.**, Tsiatis, A., Davidian, M. "Using decision lists to construct interpretable and parsimonious treatment regimes," *Biometrics*, 71(4), 895-904, (selected for ENAR Distinguished Paper Award).

28. **Laber, E.B.**, Zhao, Y. (2015) "Tree-based methods for optimal treatment allocation," *Biometrika*, 102(3), 501-514.

29. Lizotte, D.J., **Laber, E.B.** (2015) "Multi-objective Markov decision support systems," *Proceedings of Reinforcement Learning and Decision Making* (selected for oral presentation).

30. Zhang, Y.*, **Laber, E.B.** (2015) "Comment on adaptive resampling test for detecting the presence of significant predictors," *Journal of the American Statistical Association*, 110(512), 1451-1454.
31. Grantham, N.*, Reich, B., Pacifici, K., **Laber, E.B.**, Menninger, H.L., Henley, J.B., Leff, J.W., Barberan, A., Fierer, N., Dunn, R.R. (2015) "Fungi identify the geographic origin of dust samples," *PLOS One*, 10(4).
32. Zhao, Y., Zeng, D., **Laber, E.B.**, Kosorok, M. (2015) "New statistical learning methods for estimating optimal dynamic treatment regimes," *Journal of the American Statistical Association*, 110(510), 583-598.
33. Wu. F.*, **Laber, E.B.**, Lipkovich, I., and Severus, E. (2015) "Who will benefit from antidepressants in the acute treatment of bipolar depression? A reanalysis of the STEP-BD study by Sachs et al. 2007, using Q-learning," International Journal of Bipolar Disorders, 3(1), 1-11.
34. Song, R., Kosork, M., Zeng, D., Zhao, Y.Q., **Laber, E.B.**, Yuan, M. (2015) "On sparse representation for optimal individualized treatment selection with penalized outcome weighted learning," *Stat*, 4(1), 59-68.
35. Linn, K.A.*, **Laber, E.B.**, and Stefanski, L.A. (2015) "iqLearn: interactive Q-learning in R," *Journal of Statistical Software*, 64(1).
36. Zhao, Y., Zeng, D., **Laber, E.B.**, Kosorok, M. (2014) "Doubly Robust Learning for Estimating Individualized Treatment with Censored Data," *Biometrika*, 101(2), 151-168.
37. **Laber, E.B.**, Lizotte, D.J., Qian, M., Murphy, S.A., (2014) "Dynamic treatment regimes: Technical challenges and applications," *Electronic Journal of Statistics* (with discussion), 8(1), 1225-1272.

- **Laber, E.B.**, Lizotte, D.J., Qian, M., Murphy, S.A., (2014) "Rejoinder: Dynamic treatment regimes: Technical challenges and applications," *Electronic Journal of Statistics, 8(1), 1312-1321.*

38. **Laber, E.B.**, Linn, K.A., Stefanski, L.A. (2014) "Interactive model building for Q-learning," *Biometrika*, 101(4), 831-847.
39. **Laber, E.B.**, Lizotte, D.J., Ferguson, B. (2014) "Set-valued dynamic treatment regimes for competing outcomes," *Biometrics*, 70(1), 53-61.
40. Lim, J., Chanoit, A., Smith, D.T., **Laber, E.B.**, Olby, N.J. (2014) Potassium channel antagonists 4-aminopyridine and the t-butyl carbamate derivative of 4-AP improve hind limb function in chronically non-ambulatory dogs, a blinded, placebo-controlled trial, *PLOS ONE*, 9(12), 1-19.
41. **Laber, E.B.**, Davidian, M., Tsiatis, A., Holloway, S.T. (2014) "Discussion of Biomarkers to Optimize Patient Treatment Recommendations," *Biometrics*, 70(3), 707-710.
42. Huang, Y. and **Laber, E.B.** (2014) "Personalized evaluation of biomarker value: a cost-benefit perspective," *Statistics and Biosciences*, 8(1), 43-65.
43. Zhao, Y., and **Laber, E.B.** (2014) "Estimation of Optimal Dynamic Treatment Regimes," *Clinical Trials*, 11(4), 400-407.
44. Chakraborty, B., **Laber, E.B.**, and Zhao, Y. (2014) "Inference about the expected performance of a data-driven dynamic treatment regime," *Clinical Trials*, 11(4), 408-417.
45. Huang, Y., **Laber, E.B.**, Janes, H. (2014) "Characterizing expected benefits of biomarkers in treatment selection," *Biostatistics*, 16(2), 383-399.
46. Schulte, P.*, Tsiatis, A., **Laber, E.B.**, Davidian, M. (2014)"A Comparison and Q- and A-Learning," *Statistical Science*, 29(4), 640-661.

47. Shortreed, S.M., **Laber, E.B.**, Stroup, T.S., Pineau, J., Murphy, S.A., (2014) "Overcoming missing data in a sequential, multiple assignment, randomized clinical trial of patients with schizophrenia," *Statistics in Medicine*, 43(24), 4202-4214.
48. Zhang, B.*, Tsiatis, A., **Laber, E.B.**, Davidian, M. (2013) "Robust estimation of optimal dynamic treatment regimes for sequential treatment decision," *Biometrika*, 101(3), 681-694.
49. Vock, D.*, Tsiatis, A., Davidian, M., **Laber, E.B.**, Tsuang, W.M., Finland-Copeland, A., Palmer, S.M. (2013) "Estimating the causal effect of organ transplantation on the distribution of residual lifetime," *Biometrics,* 69 (4), 820-829.
50. Chakraborty, B., **Laber, E.B.**, Zhao, Y. (2013) "Inference for optimal dynamic treatment regimes using an adaptive m-out-of-n bootstrap scheme," *Biometrics,* 69 (4), 714-723.
51. Zhang, B.*, Tsiatis, A., **Laber, E.B.**, Davidian, M. (2012) "A robust method for estimating optimal treatment regimes," *Biometrics,* 68 (4), 1010-1018.
    - Zhang, B.*, Tsiatis, A., **Laber, E.B.**, Davidian, M. (2014) "Rejoinder: A robust method for estimating optimal treatment regimes," *Biometrics,* 71(1), 267-273.
52. Zhang, B.*, Tsiatis, A., Davidian, M., Zhang, M., **Laber, E.B.** (2012) "A classification perspective of optimal treatment regimes," *Stat*, 1 (1), 103-114.
53. **Laber, E.B.**, Murphy, S.A. (2011) "Adaptive confidence intervals for the test error in classification," *Journal of the American Statistical Association,* with discussion, 106 (495), 904-911.
    - **Laber, E.B.**, Murphy, S.A., (2011) "Rejoinder: Adaptive confidence intervals for the test error in classification," *Journal of the American Statistical Association,*106 (495), 940-945.
54. Shortreed, S.M., **Laber, E.B.**, Lizotte, D.J., Stroup, T.S., Pineau, J., Murphy, S.A. (2011) "Informing sequential clinical decision-making through reinforcement learning: an empirical study," *Machine Learning,* 84, 109-136.
55. **Laber, E.B.**, Murphy, S.A. (2008), "Small Sample Inference for Generalization Error in Classification Using the CUD Bound," Uncertainty in Artificial Intelligence, 2008. Machine Learning.

Book chapters and Misc.

1. Zu, Z.*, **Laber, E.B.**, Staicu, A. (2019). "Hierarchical Continuous Time Hidden Markov Model, with Application to Zero-Inflated Accelerometer Data." Statistical Modeling for Biomedical Research: Contemporary Topics and Voices in the Field, Emerging Topics of Statistics and Biostatistics Book Series, Springer.
2. Artman C.M.*, Zhen, L.*, **Laber, E.B.**, Johnston B.R. (2019). "Agent-Based Modeling of Illicit Networks and Conflict Economies. In: Interdisciplinary Collaboration Among the Intelligence Community, Academy, and Industry." Cambridge Scholars Publishing.
3. **Laber, E.B.** and Qian, M. (2019), "Generalization Error in Decision Making," Wiley StatsRef: Statistics Reference Online.
4. Clifton, J.*, **Laber, E.B.** (2019), "Artificial Intelligence in Statistics," Wiley StatsRef: Statistics Reference Online.

5. Desmarais, S. L., *Lowder, E. M., Dong, L., **Laber, E. B.** (2017). "Mental health characteristics among Wake County detainees." Final project report prepared for the Wake County Manager and Board of Commissioners, Raleigh, NC. Available at: https://tinyurl.com/yaj2caqx
6. Rose, E.*, **Laber, E.B.**, Davidian, M., Tsiatis, A.A. (2017) "Q-learning," Wiley StatsRef: Statistics Reference Online.
7. Davidian, M., Tsiatis, A.A., and **Laber, E.B.** (2016) "Optimal dynamic treatment regimes," Wiley StatsRef: Statistics Reference Online.
8. Davidian, M., **Laber, E.B.**, Tsiatis, A.A. (2016) "Dynamic treatment regimes," *Cancer Clinical Trials: Current and Controversial Issues in Design and Analysis*, book chapter, Taylor and Francis.
9. Shortreed, S., **Laber, E.B.**, Pineau, J., Murphy, S.A. (2015) "Imputing missing data from sequential multiple assignment randomized trials," *Adaptive Treatment Strategies in Practice: Planning Trials and Analyzing Data for Personalized Medicine*, book chapter, CRC Press.
10. Davidian, M., Tsiatis, A.A., **Laber, E.B.** (2015) "Value Search Estimators for Optimal Dynamic Treatment Regimes," *Adaptive Treatment Strategies in Practice: Planning Trials and Analyzing Data for Personalized Medicine*, book chapter, CRC Press.
11. Linn, K.A.*, **Laber, E.B.**, Stefanski, L.A. (2015) "Constrained estimation for competing outcomes," *Adaptive Treatment Strategies in Practice: Planning Trials and Analyzing Data for Personalized Medicine*, book chapter, CRC Press.
12. Wu. F.*, **Laber, E.B.**, Severus, E. (2014) "Introduction to SMARTs," *Bipolar Disorders*, book chapter, Oxford University Press.
13. **Laber, E.B.**, and Qian, M. (2014) "Evaluating personalized treatment regimes," *Methods in Comparative Effectiveness Research*, CRC Press.
14. **Laber, E.B.** (2013) "Book review: Linear Causal Modeling with Structural Equations by Stanley Mulaik," *Journal of the American Statistical Association.'*

In Progress

1. Luckett, D.J.*, **Laber, E.B.**, Kosorok, M.R. "Estimation and Optimization of Composite Outcomes," under review. Selected for Biometrics Travel Award JSM (2018).
2. **Laber, E.B.** and Qian, M. (2018) "Generalization Error," Wiley StatsRef: Statistics Reference Online.
3. Zu, X.*, **Laber, E.B.**, Staicu, A., Lascalles, X. "Modeling high-frequency activity data: lessons from the arthritic cat," under review.
4. Grantham, N.*,Reich, B.R., **Laber, E.B.**, Pacifici, K. Dunn, R. "Deep Spatial Learning for Forensic Geolocation," under review.
5. Ferguson, B.*, **Laber, E.B.**, Stefanski, L.A. "Quantile estimation in the presence of auxiliary information: an overview," invited revision.
6. Luckett, D.*, **Laber, E.B.**, Kosorok, M.R. "An application of outcome weighted learning to diagnostic medicine," under review.
7. Murphy, S.A., Deng, Y., **Laber, E.B.**, Maei, H., Sutton, R., Witkiewitz, K. "A batch, off-policy actor critic algorithm for optimizing the average reward," under review.
8. Holloway, S., **Laber, E.B.**, Linn, K.A., Zhang, B. "Dynamic treatment regimes in R using DynTxRegime," under revision.

9. **Laber, E.B.**, Murphy, S.A. "Adaptive Inference After Model Selection," invited revision.
10. Severus, E., **Laber, E.B.**, and Lipkovich, I. "Double-bind randomized placebo-controlled trials in the treatment of affective disorders," under revision.
11. Qian, G.*, Reich, B., **Laber, E.B.**, Bandyopadhyay, D. (2017) "A principled policy-optimized Bayesian nonparametric formulation of periodontal recall intervals," under review. Winner of ENAR distinguished paper award and the HPS Section of the ASA JSM student paper award.
12. Wang, L.*, **Laber, E.B.**, Witkiewitz, K. "Sufficient Markov Decision Processes," under review.

In Preparation

- Luckett, D.*, **Laber, E.B.**, Kosorok, M.R. "Outcome weighted learning and maximum likelihood."
- Pehlman, R.*, **Laber, E.B.**, Hill, M. "Assessing the strength of breathalyzer measurements in DUI cases in North Carolina."
- Pehlman, R.*, **Laber, E.B.**, Staicu, A.M. "Functional models for optimal treatment regimes with outcome-driven transition times."
- Wu, A.*, **Laber, E.B.** "Monte Carlo tree search methods for the control of emerging infectious disease."
- Ruan, S.*, **Laber, E.B.**, "Optimal treatment regimes under constraints."
- **Laber, E.B.**, Janes, H. "Uncertainty in the value of information added for treatment selection."
- Prescott, J.J., **Laber, E.B.**, "Prosecutorial Declination Behavior and Defendant Outcomes."
- **Laber, E.B.**, Meyer, N.J., Reich, B., Pacifici, J.K. "Dimension-reduction for spatio-temporal allocation problems."
- **Laber, E.B.** "Statistical inference and dynamic treatment regimes."
- Meyer, N.J, **Laber, E.B.**, Reich, B., Pacifici, J.K. "Estimation of an optimal spatio-temporal allocation strategy without a system dynamics model."
- Wu, F. **Laber, E.B.** "Adaptive projection intervals for non-smooth functionals."

Books

1. Tsiatis, A.A., Davidian, M., **Laber, E.B.**, Holloway, S. (2018) "An Introduction to Dynamic Treatment Regimes: Statistical Methods for Precision Medicine." Boca Raton: Chapman & Hall/CRC Press (under contract/in progress).
2. Staicu, A., **Laber, E.B.**, Park, S., Zhang, Y. (2019). "Functional Data Analysis: Methods and Applications." Boca Raton: Chapman & Hall/CRC Press (under contract/in progress).

INVITED PRESENTATIONS

1. Harvard University, April 2018
2. SAMSI, Precision Medicine, April 2018
3. Amazon.com, Core Artificial Intelligence, March 2018
4. Rice University, D2K Lab, February 2018
5. BigDIA, Houston, TX, December 2018
6. IMAP, University of MN, Keynote, October 2018

7. WHOA-PSI, St. Louis, MO, August 2018
8. IBSC, Melbourne, QC, August 2018
9. Joint Statistical Meetings, Vancouver, BC, August 2018.
10. Centre de recherches mathematiques, Montreal QC, July 2018.
11. Society for Epidemiologic Research, Baltimore, June 2018.
12. Atlanta Biostatistics Workshop, May 2018.
13. Charles C. Edison Lecture, Notre Dame University, April 2018.
14. Notre Dame, Department of Statistics, April 2018.
15. NCSU, Department of Statistics, April 2018.
16. NIAID, Bethesda MD, April 2018.
17. Royal Statistical Society, March, 2018.
18. Texas A&M, Department of Statistics, March, 2018.
19. Brown University, Department of Biostatistics, February, 2018.
20. University of California San Diego, Department of Biostatistics, February, 2018.
21. University of North Carolina at Chapel Hill, Department of Biostatistic, January, 2018.
22. University of Florida, School of Journalism, January, 2018.
23. Workshop on Precision Medicine, Keynote Speaker, Toulouse France, January, 2018.
24. University of South Carolina, Department of Statistics, December, 2017.
25. University of Chicago, Booth School of Business, October, 2017.
26. Temple University, Department of Biostatistics, November, 2017.
27. Conference on Causal Inference in Longitudinal Studies, Columbia University, September, 2017.
28. Centers for Disease Control Keynote Address for Statistical Science Awards, September, 2017.
29. SAMSI, Summer Program on Transportation Statistics, August, 2017.
30. Center Nonproliferation Enabling Capabilties Program Review, NCSU, August, 2017.
31. Food and Drug Administration, Silver Spring, MD, August, 2017.
32. Noether Lecture, Joint Statistical Meetings, Baltimore, MD, August, 2017.
33. Roundtable discussion m- and e-health and precision medicine, Joint Statistical Meetings, Baltimore, MD, August, 2017.
34. Atlantic Causal Inference Conference, UNC, June 2017
35. University of Georgia, Seminar, College of Ecology, May 2017
36. North Carolina State University, Personalized Medicine Clutster, April, 2017
37. Duke University, Machine Learning Seminar, March, 2017
38. Vanderbilt University, Seminar + Grad Student Workshop, Department of Biostatistics, December, 2016
39. University of Florida, Seminar, Department of Communications, October, 2016
40. Fall Technical Conference, ASQ, Minneapolis, October 2016.
41. Methodology Center, Pennsylvania State University, September 2016.

42. Department of Biostatistics, Johns Hopkins University, September, 2016.
43. Isaac Newton Institute Workshop on Network Science and its Applications, Cambridge, UK, August 2016.
44. Joint Statistical Meetings, Chicago, IL, August, 2016.
45. Department of Biostatistics, University of Michigan, April 2016.
46. Department of Statistics, George Mason University, April 2016.
47. Atlantic Causal Inference Conference, New York University, May 2016.
48. ENAR, Austin, TX, March 2016.
49. Department of Biostatistics, University of Michigan, December 2015.
50. Department of Statistics, University of Wisconsin, November 2015.
51. INFORMS, Philadelphia, PA, November 2015.
52. Conference in Honor of Vijay Nair, University of Michigan, October, 2015.
53. Joint Statistical Meetings, Seatle, WA, August 2015.
54. Reinforcement Learning and Decision Making, University of Alberta, June 2015.
55. Atlantic Causal Inference Conference, University of Pennsylvania, May, 2015.
56. Department Statistics, Marshall School of Business, University of Southern California, March, 2015.
57. Department of Statistics, Harvard University, Boston MA, February 2015.
58. Department of Biostatistics, Duke University/Veteran Affairs, Durham NC, February 2015.
59. Plant Sciences Institute, Iowa State University, Ames, IA, December 2014.
60. Department of Statistics, Virginia Tech., Blacksburg, VA, November 2014.
61. Innovative Methods for Advancing Clinical Trials, Cary, NC, November, 2014.
62. Affinity group on clinical trials, Fred Hutchinson Cancer Research Center, Seattle, WA, October 2014.
63. Biostatistics Group, Fred Hutchinson Cancer Research Center, Seattle, WA, October 2014.
64. Department of Biostatistics, University of Washington, Seattle, WA, October 2014.
65. International Conference on Advances in Interdisciplinary Statistics and Combinatorics, University of North Carolina at Greensboro, Greensboro, NC, October 2014.
66. Department of Biostatistics, Causal Inference Working Group, University of North Carolina at Chapel Hill, Chapel Hill, NC, October 2014.
67. Statistics Week, Hannover, Germany, September 2014.
68. Department of Biostatistics, University of Pennsylvania, Philadelphia, PA, September 2014.
69. Joint Statistical Meetings, Boston, MA, August, 2014.
70. Atlantic Causal Inference Conference, Brown University, Providence, RI, May 2014.
71. Midwest Biopharmaceutical Statistics Workshop, Ball State University, Muncie, IN, May 2014.
72. Trends and Innovations in Clinical Trial Statistics Conference, Morisville, NC, April 2014 (workshop and panelist).

73. Department of Biostatistics, University of Pittsburgh, Pittsburgh, PA, April 2014.
74. Duke-NUS, Singapore, Singapore, March 2014 (Seminar and Workshop).
75. Annual Connecticut Chapter Mini-Conference, Ridgefield, CT, March 2014.
76. Quintiles, Morisville, NC, October 2013.
77. NIPS, Workshop on Causality and Experimental Design, Lake Tahoe, NV, December 2013.
78. INFORMS, Minneapolis, MN, October 2013.
79. Society for Medical Decision Making, Baltimore, MD, selected for oral presentation.
80. y-BIS, Istanbul, Turkey, September 2013.
81. Joint Statistical Meetings, Montreal QC, August 2013.
82. ENAR, Orlando, FL, March, 2013.
83. Department of Biostatistics Seminar, McGill University, January 2013.
84. Department of Statistics, West Virginia University, December 2012.
85. Fred Hutchinson Cancer Research Center Seminar, November 2012.
86. Department of Mathematics and Statistics, Georgetown University, November, 2012.
87. H. Milton Stewart School of Industrial and Systems Engineering Seminar, Georgia Tech, October 2012.
88. Department of Biostatistics, University of North Carolina Chapel Hill, October 2012.
89. International Conference on Advances in Interdisciplinary Statistics and Combinatorics, Greensboro, NC, October 2012
90. Department of Biostatistics Seminar, Columbia University, September 2012.
91. Personalized medicine cluster retreat, North Carolina State University, Raleigh, NC, August 2012.
92. Joint meeting of y-BIS and jSPE, Lisbon, Portugal, 2012.
93. ASA Section on Statistical Learning and Data Mining, Ann Arbor, MI, 2012.
94. International Chinese Statistical Association Applied Statistics Symposium, Boston, MA, 2012.
95. Society for Clinical Trials, Miami, FL, 2012.
96. ENAR, Washington, D.C., 2012.
97. ISBIS, Bankok, Thailand, 2012.
98. Department of Statistics, University of Minnesota, Minneapolis, MN, February 2012.
99. IMPACT, Durham, NC, 2011.
100. INFORMS, Charlotte, NC, 2011.
101. Department of Statistics, University of Washington, Seattle, WA, February 2011.
102. Department of Statistics, Rutgers University, New Brunswick, NJ, January 2011.
103. Department of Statistics, Columbia University, New York, NY, January 2011.
104. Department of Statistics, North Carolina State University, Raleigh, NC, January 2011.

105. Department of Statistics, University of Florida, Gainesville, FL, January 2011.
106. 28th European Meeting of Statisticians, Pireaus, Greece, 2010.
107. Joint Statistical Meetings, Vancouver, B.C., Canada, 2010.
108. International Chinese Statistical Association Applied Statistics Symposium, Indianapolis, IN, 2010.
109. Student Symposium for Interdisciplinary Statistical Sciences, Ann Arbor, MI, 2010. Highlighted student talk.
110. Ford Credit, Dearborn MI, 2009.
111. Workshop on Challenges in Statistical Theory: Complex Data Structures and Algorithmic Optimization, Oberwolfach Germany, 2009.
112. Joint Statistical Meetings, Washington D.C., 2009.

HONORS AND AWARDS

- Elected Fellow of the American Statistical Association, 2019
- AGEP-NC Fellow, 2018-2020.
- Gold Medal, International Design Awards, for *Beyond Curie* with Amanda Phingbodhipakkiya, 2018.
- Charles Edison Lecture, Notre Dame University, 2018.
- Raymond J. Carroll Young Investigator Award, 2018.
- Elected Member of the International Statistics Institute, 2017.
- Noether Young Scholar Award, American Statistical Association, 2017.
- Consortium for Nonproliferation Enabling Capabilities (CNEC) Affiliated Faculty 2016-
- Laboratory for Analytic Sciences Consortium Fellow, 2016-2017
- Distinguished Alumni Award, Pennsylvania State Methodology Center, 2016
- Cavell Brownie Mentoring Award: 2015-16
- Invited speaker, meeting on Network Science and its Applications at Isaac Newton Institute, Cambridge, September, 2016
- NSF CAREER AWARD (2016-2021)
- North Carolina State University Faculty Scholar, 2016-2020
- Invited discussant, JASA Case Studies and Applications Invited Paper, Joint Statistical Meetings, Chicago, IL, August, 2016
- Invited participant, NSF INNOVATIONS Lab, SAMSI, July, 2015
- Invited discussant, JASA Theory and Methods Invited Paper, Joint Statistical Meetings, Seattle, WA, August, 2015
- Invited participant Abel Symposium, Trondheim, Norway, May 2014
- Invited participant Future of Statistical Sciences Workshop, London, UK, October 2013 (with funding)
- SAMSI faculty fellow, 2012-2013 program on data-driven decisions in healthcare
- Selected for the 2011 JASA Theory and Methods invited paper
- Rackham Predoctoral Fellowship, University of Michigan, 2010.
- Selected for highlighted student talk, MSSISS, 2010
- US Junior Oberwolfach Fellow, Oberwolfach Germany, 2009

- 20th Annual Albert J. Silverman Trainee Poster Award, 3rd Place, Ann Arbor, MI
- Best poster, Second Midwest Statistics Research Colloquium, Chicago, IL, 2009
- Nominated by University of Michigan for Microsoft Graduate Fellowship, 2008
- Travel Grant, IPAM, Workshop on Multiscale Resolution, UCLA, 2008
- Travel Grant, Uncertainty in Artificial Intelligence, Helsinki, Finland, 2008
- Travel Grant, Rackham Graduate School, University of Michigan, 2008
- Interdisciplinary Statistics Working Group Grant, University of Michigan, 2008
- Quantitative Methodology Program Fellowship, University of Michigan, 2007
- Outstanding First Year Ph.D. Student, University of Michigan, Department of Statistics, 2007
- JB Duke Fellowship, Duke University, 2006
- Sherwood Award in Mathematics, UCLA, 2005

Professional Activities

- Associate Editor, Biometrics, 2017-Present
- Local Scientific Committee, SAMSI Program on Statistical, Mathematical, and Computational Methods for Precision Medicine, 2018-2019.
- Statistical Learning and Data Science Section Representative, ENAR Program Committee, 2018.
- Organizing committee Atlantic Causal Inference Conference, Chapel Hill, NC, May 2017
- Editorial Board, Statistical Communications in Infectious Diseases, 2017-
- Chair, ASA Presidents Initiative on Outreach, 2016-2017
- Organizing committee meeting of the ASA Section on Statistical Learning and Data Mining, Chapel Hill, NC, June 2016
- STEM discipline outreach videogame demonstration, USA Science and Engineering Festival, spring 2016
- STEM discipline outreach videogame demonstration, NC Museum of Natural Science, spring 2016
- Co-Guest editor Statistical Methods in Medical Research (SMMR) special issue on "Optimal Dynamic Treatment Regimes," fall 2016
- Council of Sections Representative, 2016-2018, ASA Section on Statistical Learning and Data Mining
- Program Chair-Elect, 2016, ASA Section on Statistical Computing
- Associate Editor, Journal of the American Statistical Association, A&CS 2015-Present, T&M 2016-Present.
- Diversity Mentor, Joint Statistical Meetings, Seattle, WA, 2015
- Associate Editor, Biometrika, 2015-Present
- Associate Editor, Statistical Analysis and Data Mining , 2013-Present
- Associate Editor, ISI StatBlog, 2013-2014
- Ad hoc grant reviewer for NSA and Department of Veteran Affairs
- NIH review panel, BMRD study section, 2014, 2017
- Technical expert, Federal Highway Administration research meeting, NISS, 2013

- Speaker undergraduate workshop on personalized medicine, SAMSI, Durham, NC, 2013
- Co-organizer and speaker at workshop on personalized medicine, IMPACT, Durham, NC, 2012
- Vice president elect of y-BIS, 2013
- Reviewer for Annals of Applied Statistics, Annals of Statistics, Biometrics, Biometrika, Biostatistics, Clinical Trials, Electronic Journal of Statistics, International Statistical Review, International Journal of Biostatistics, Journal of the American Statistical Association, Journal of the Royal Statistical Society (Series B), Journal of Multivariate Analysis, Journal of Sociological Methodology, Journal of Statistical Research, Nonparametrics, Scandinavian Journal of Statistics, Statistics in Medicine, Statistical Analysis and Data Mining, among others
- Chair young researchers advisory committee STAT journal of statistics, 2012
- Guest editor Communications in Statistics: Simulation and Computation, special issue on the joint meeting of y-BIS and jSPE
- Organizing committee joint meeting of ASA Section of Statistical Learning and Data Mining and ISBIS, Durham, NC, 2014.
- Organized invited sessions at
  - SAMSI, RTP, 2018
  - JSM, Vancouver, 2018
  - SLDM, New York, 2018
  - ENAR, Atlanta, 2018
  - CFE, London, England, 2017
  - JSM, Baltimore, MD, 2017
  - SLDM, Chapel Hill, NC, 2016
  - Atlantic Causal Inference Conference, Philadelphia, PA, 2015
  - ISI World Congress, Rio, Brazil, 2015.
  - IMPACT, Cary, NC, 2014.
  - SLDM, Durham, NC, 2014.
  - Joint y-BIS ENBIS Meeting, Istanbul, 2013.
  - ISI Meeting, Hong Kong, 2013.
  - IMPACT Symposium, Raleigh, NC, 2012.
  - Joint Statistical Meeting, San Diego, CA, 2012.
  - ASA Section on Statistical Learning and Data Mining, Ann Arbor, MI, 2012.
  - ISBIS, Bangkok Thailand, 2012.
  - ISBIS Joint Meeting with the Portuguese Statistical Association, Lisbon, Portugal, 2012.
  - ISCA Applied Statistics Symposium, Boston, MA, 2012

STUDENTS DIRECTED

Completed

- Brad Ferguson, PhD, 2018. "Auxiliary Bootstrap Methods" (Co-advisor, Leonard Stefanski). Senior Director, Domo.
- Emily Butler, PhD, 2017, "Preference elicitation for personalized medicine" (Co-advisor, Michael Kosorok, UNC). Currently on market.
- Tao Hu, PhD, 2017, "Regret bounds for model-based planning with application to emerging infectious diseases." (Co-advisor Yihui Zhou.) Currently on market.
- Nicholas J. Meyer, PhD, 2017, Estimating optimal control strategies for large scale spatio-temporal sequential decision problems. Researcher, Argo AI.
- Yichi Zhang, PhD, 2016, List-based treatment regimes. (Co-advisors: Marie Davidian and Butch Tsiatis.) Post-doctoral fellow, Harvard University.
- Fan Wu, PhD, 2015, "Adaptive projection intervals for non-smooth functionals." Seattle Genetics.
- Kristin A. Linn, PhD, 2014. "Interactive methods for estimation of optimal dynamic treatment regimes." (Co-advisor: Len Stefanski.) Department of Biostatistics, University of Pennsylvania.
- Kasturi Talapatra, PhD 2014. "Computer aided simulation design." (Co-advisor: Len Stefanski.) Consultant, SAS Institute.
- Todd Reigh, MS. 2013. (Co-advisor: Marie Davidian.) Biostatistician, Boston Childrens Hospital.
- Na Zhang, PhD, 2014. "Variable selection for personalized medicine." (Co-advisor: Howard Bondell.) Biostatistician, Bristol-Meyers-Squibb.

Current

- Ben Hu, "Deep neural networks for forensic geolocation." (Co-advisor, Brian Reich.)
- Khazaima, Hameed, "Network estimation and decision making with application to infectious disease management."
- Lili Wu, PhD, 2022, "Massively parallel kernel-based estimation methods for online local Q-learning."
- Jesse Clifton, PhD, 2022, "Perturbation-based Thompson Sampling,"
- Zekun Xu, PhD, 2021, "Hypothesis testing for hidden semi-Markov models." (Co-advisor, Ana-Maria Staicu).
- Yeng Saanchi, PhD, 2021,"Network estimation in illegal trafficking problems."
- Joyce Yu, PhD, 2021, "Using mHealth technologies to inform monitoring and interventions in food safety."
- Nick Kapur, PhD, 2020, "Multi-agent reinforcement learning."
- Isaac Marchaud, PhD, 2020, "Linking equation-based and agent-based models for control of infectious diseases."
- Eric Rose, PhD, 2020, "Sample size and power calculations for estimation of optimal treatment regimes."
- Lin Dong, PhD, 2019, "Shared-decision making for large spatio-temporal planning problems."
- Daniel Luckett, PhD, 2019, "Semi-parametric outcome-weighted learning methods" (Co-advisor, Michael Kosorok, UNC).

- Alison Wu, PhD, 2017, "Approximation error bounds in model-based planning using Monte Carlo tree search."
- Qian Guan, PhD, 2018, "Optimal dynamic treatment regimes with noncompliance using non-parametric Bayes" (Co-advisor Brian Reich).
- Susheela Singh, PhD, 2018, "Spatial classification." (Co-advisor Brian Reich.)
- Wenhao Hu, PhD, 2018, "Inference for tuning parameters in model selection." (Co-advisor Len Stefanski.)
- Robert Pehlman, PhD, 2019, "Functional change point models for dynamic treatment regimes." (Co-advisor: Ana-Maria Staicu.)
- Longshaokan Wang, PhD, 2019, "Dimension reduction for real-time spatiotemporal decision problems."
- Shuping Ruan, PhD, 2017, "Constrained estimation and inference for data-driven decision making."
- Bradley Ferguson, PhD, 2016. "Semisupervised bootstrap swindles." (Co-advisor: Len Stefanski.)

SUPPORT

Funded or recommended

1. Principal investigator, " Modeling agent behavior in complex environments," ($151,442, 2018-2019), Laboratory for Analytic Sciences.
2. Principal investigator, "Real-time coordinated decision making in multi-agent environments with application to adaptive search for nuclear materials," ($387,772, 2018-2010), Consortium for Non-proliferation Enabling Capabilities.
3. Principal Investigator, "Optimization of Partially Observable Games," ($27,000, 2016-2017), Amazon EC2 Cloud Credit Program.
4. Principal Investigator, "Impact Evaluation of Parent Messaging Strategies on Student Attendance," (NCSU Subcontract, $292,561, 2016-2019), IES.
5. Co-Principal Investigator, "Mental Health Characteristics and Outcomes of Wake County Detainees," ($94,598, 2016-2017), Wake County.
6. Principal Investigator, 1 R01 CA207689-01, "Optimization, Implementation, and Dissemination of a Tailored Translational Communication Intervention to Reduce Colorectal Cancer Health Disparities," (NCSU Subcontract, $129, 364) NIH.
7. Investigator, A spatiotemporal recommendation engine for malaria control, (PI Reich, $100,000, 2016-2017), Gates Foundation.
8. Investigator, 1 R01 CA202779-01, "Optimizing Delivery of a Behavioral Cancer Pain Intervention Using a SMART," ($102,952, 2016-2021), NIH.
9. Principal Investigator, U01 MD011281-01, "A Pragmatic Trial of An Adaptive eHealth HIV Prevention Program for Diverse Adolescent MSM," (NCSU Sub-contract $191,201, total award 9.3m, 2016-2021), NIH.
10. Principal Investigator, "Forensic Geolocation via Biological Signatures," ($1,115,000, 2016-2017), DOD.
11. Principal Investigator, DMS-1555141, "CAREER: Big computation and the management of emerging infectious diseases," NSF, ($564,708, 2016-2021).
12. Principal Investigator, DMS-1557733, "QuBBD: Collaborative Research: Precision medicine and the management of infectious diseases," NSF, ($47,1440, 2015-2016).

13. Principal Investigator, "Research Collaboration Between SAS Institute and NCSU: Tuning Parameter Section in LASSO Regression and Related Regression Selection Methods," SAS Insitute ($127,911, 2015-2016).
14. Investigator, R01-DK-108073, "Statistical methods for complex patients with diabetes," NIH (PI Zhao, NCSU subcontract $128,670, 2015-2018).
15. Principal Investigator, DMS-1513579, "Optimal Decision Strategies for Large Spatio-Temporal Decision Problems," NSF ($150,000, 2015-2018).
16. Investigator, "Advancing the use and application of diverse data sources and species distribution models," (PI Collazo), USGS ($300,000, 2014-2018).
17. Investigator, 1R01DE024984-01A1 "Spatiotemporal models for periodontal disease monitoring and recall frequencies," NIH (PI Bandyopadhyay, NCSU subcontract $373,499, 2015-2019).
18. Investigator, 1R01CA202779-01 "Optimizing delivery of a behavioral cancer pain intervention using a SMART," under review, NIH (scored 29, 13th percentile).
19. Investigator, 1R01 AA023187-01A1 "Data-Based Methods for Just In Time Adaptive Interventions in Alcohol Use," NIH (PI Murphy, NCSU subcontract $87,823).
20. Investigator, Research and applications in support of the National Gap Analysis Program, USGS (PI Collazo, 2014-2018, $1,616,571).
21. Principal Investigator, Murdock Gift, Subcontract of Duke SEDI Project (PI Rob Calliff) ($44,740, 2014-2015).
22. Co-Principal Investigator, DMS0703392, "CSUMS: NC State University computation for undergraduates in statistics program," NSF (PI Reich, 2011-2014, $770,714).
23. Co-Principal Investigator, PR-W-F14AF00171, "Conservation Design and Habitat Conservation in Puerto Rico," USGS (PI Collazo, $1,364,995, 2014-2017).
24. Investigator, P01 CA142538, "Statistical methods for cancer clinical trials," NIH (PI Kosorok, $10,328,825, 2015-2020).
25. Investigator, "Relationship between gait analysis, MRI findings, and response to potassium channel blockade in chronically paralyzed dogs: a personalized medicine pilot study," NCSU (PI Olby, $17,800, 2014).
26. Principal Investigator, NSCU Minigrant, external mentoring, 2012.

Submitted

1. Investigator, "Violence Risk Assessment in Community-Based Treatment Settings," ($685,513, 2016-2019), under review, NIH.
2. Principal Investigator, "NCSU-RTI Data-Science and Artifcial Intelligence in Social Sciences Lab," ($575,000, 2016-2018), under review, Game-Changing Research Incentive Program.
3. Investigator, "I-SPY 2+: Evolving the I-SPY 2 TRIAL to Include MRI-directed, Adaptive Sequential Treatment in the Setting of Non-Response," (PI Davidian, $128,356), under review NIH-NCI.
4. Investigator, "Statistical methods for Healthcare of Complex Patients with Diabetes," (PI Zhao, $128,670), under review, NIH-NIDDK.

Teaching

New course design

1. Advanced Computing (STAT 790), targeted at advanced PhD students in statistics and related fields. Topics covered: reproducible research, convex optimization, dynamic programming, EM/MM algorithms, heterogeneous computing, and Bregman iteration.
2. Undergraduate Survival Analysis (STAT 495), targeted at senior undergraduate students. Topics covered: parametric, semi-parametric, and non-parametric models for censored data, and modeling time-to-event data in R.
3. Communicating Science (STAT 810), targeted at PhD students in statistics. Topics covered: reading and writing science, using social media to disseminate science, collaborative research, and interview skills.
4. Big Data (STAT 590, first offered Fall 2016 as part of Data Science certificate program). Topics covered: sampling, causal inference, scaling estimation and inference to large data, and complex data structures.
5. Introduction to Programming and Computing Through Statistics (TBD, first offered in 2016-2017 academic year). Topics covered: basic computer programming, random number generation, statistical simulation experiments, bootstrap, and permutation tests.

Evaluations

Summary comments from peer evaluations:

"My summary impression of Eric's teaching is very positive. It is clear that he enjoys being in the classroom and that he respects his students–two main ingredients of successful teaching." –Len Stefanski, Drexel Professor of Statistics, NCSU

"Overall, Eric's skills in delivering the lecture were excellent. The lecture paced appropriately and held student attention for the entire 75 minutes. The group activities and Eric's lecture style made the lecture seem much shorter than its 75-minute length." –Tom Reiland, Professor of Statistics, NCSU

Selected comments from student evaluations:

"Dr. Laber is one of the best teachers I have had in my entire time here at NCSU. He teaches effectively, is friendly and respectful to students, and is extremely fair in making and grading assignments He is also incredibly patient, explaining the same topic multiple times until everyone understands it, if necessary." –Student in STAT370 (Intro Stats)

"Dr. Eric Laber is the most awesome teacher I ever had in this school. I am a not that into statics [sic] but because of him it ended up being one the most effectively educational and interesting class to attend."–Student in STAT370 (Intro Stats)

"Yes, Dr. Laber was the best professor that I have ever had. Although the course material is very hard, he was always very patient to go over the information many times and make sure everyone understand. He gave every one of the lecture with passion and made the course material very interesting to be learned. He cares about every student. We all love him!"–Student in STAT495 (Undergrad Survival)

"On a scale from one to awesome, he's super great." –Student in STAT745 (Graduate Survival)

"Eric Laber was an engaging and enthusiastic teacher. The guest lectures he arranged were also very informative. He is genuinely interested in helping his students learn a lot from the class. One of the very best teachers in the program." –Student in STAT810 (Advanced Computing)

COMMITTEE WORK AT NC STATE UNIVERSITY

- Faculty Search Committee (Chair, 2017, 2018)
- Bureau of Mines Renovation Committee (2017-Present)
- Associate Dean for Research Search Committee
- Advancement Committee (Fall 2016, Spring 2017)
- Big data committee (co-Chair Spring 2014, Fall 2014, Spring 2015)
- Junior faculty representative (Fall 2013-2015)
- Department steering committee (Fall 2013, Spring 2014)
- Basic exam committee (Spring 2013)
- Department seminar committee (Fall 2011, Spring 2012)

ODDITIES

- Spent 12 years as a professional magician, performed more than 3000 shows
- Currently collects books on magic tricks and magic history
- Once hung upside down from a crane and escaped from a straight jacket