

Assistant Professor
Department of Statistics
Pennsylvania State University
Updated 9/3/14

323 Thomas Building, University Park, PA 16802
315-212-1996
klm47@psu.edu
www.personal.psu.edu/klm47

EDUCATION

- 2011 Ph.D. in Statistics, *Harvard University*
Rerandomization to Improve Covariate Balance in Randomized Experiments
Advisor: Donald Rubin
- 2007 A.M. in Statistics, *Harvard University*
- 2004 B.A. with Honors in Mathematics, *Williams College*

PRIMARY INTERESTS

- Statistics education
- Causal inference

EMPLOYMENT HISTORY

- 2014-present Assistant Professor & Coordinator of Undergraduate Advising, Department of Statistics, Pennsylvania State University
- 2011-2014 Assistant Professor of the Practice, Department of Statistical Science, Duke University
- 2007-2011 Research Assistant, Harvard Statistics Department
- 2007-2010 Teaching Fellow, Harvard Statistics Department
- 2009-2010 Departmental Teaching Fellow, Harvard Statistics Department
- 2009-2010 Project Statistician, Rigorous Research in Engineering Education
- 2008-2009 Analyst, Center for Multicultural Mental Health Research, Cambridge Health Alliance
- 2008 Lecturer, Boston University School of Management
- 2005-2006 Mathematics and Statistics Editor, Laurel Tech
- 2004-2006 Professional Figure Skater
- 1997-2004 Figure Skating Coach

PUBLICATIONS

Books

1. Lock, R.H., Lock, P.F., Lock Morgan, K., Lock, E.F., Lock, D.F. (2013). Statistics: Unlocking the Power of Data, John Wiley and Sons.

Peer-Reviewed Articles

2. Lock Morgan, K., Lock, R., Lock, P.F., Lock, E.F., Lock, D.F. (2014). "StatKey: Online Tools for Bootstrap Intervals and Randomization Tests," *International Conference on Teaching Statistics (ICOTS) 9 Proceedings*.
3. Lock, R., Lock, P.F., Lock Morgan, K., Lock, E.F., Lock, D.F. (2014). "Intuitive Introduction to the Important Ideas of Inference," *ICOTS 9 Proceedings*.
4. Lock Morgan, K. and Rubin, D.B. (2012) "Rerandomization to Improve Covariate Balance in Experiments," *Annals of Statistics*, **40**(2): 1262-1282.
5. Lock, K. and Gelman, A. (2010) "Bayesian Combination of State Polls and Election Forecasts," *Political Analysis*, **18**(3): 337-348.

6. Cook, B, McGuire, T., Lock, K., Zaslavsky, A., (2010). "Comparing Methods of Racial and Ethnic Disparities Measurement across Different Settings of Mental Health Care," *Health Services Research*, **45**(3): 825-847.
7. Morris, C.N. and Lock, K.F. (2009) "Unifying the Named Natural Exponential Families and their Relatives," *The American Statistician*, **63** (3): 247-253.

Articles under Review

8. Lock Morgan, K. and Rubin, D.B. (20xx). "Rerandomization to Balance Tiers of Covariates."

Other Publications

9. Lock Morgan, K., Cetinkaya-Rundel, M., Stangl, D. (2014). "Taking a Chance in the Classroom: Speed Dating: Exploring Initial Romantic Attraction," *Chance*, **27**(2): 44-49.
10. Cetinkaya-Rundel, M., Lock Morgan, K., Stangl, D. (2013). "Taking a Chance in the Classroom: Looking Good on Course Evaluations," *Chance*, **26**(2): 33-37.
11. Lock Morgan, K., Cetinkaya-Rundel, M., Stangl, D., (2013). "Taking a Chance in the Classroom: The American Community Survey," *Chance*, **26**(1): 42-46.
12. Stangl, D., Cetinkaya-Rundel, M., Lock Morgan, K. (2012). "Taking a Chance in the Classroom: Making the Old New Again," *Chance*, **25**(4): 46-49.
13. Cetinkaya-Rundel, M., Stangl, D., Lock Morgan, K. (2012). "Taking a Chance in the Classroom: Exploring Google's Transparency Report," *Chance*, **25**(2): 41-45.
14. Stangl, D., Cetinkaya-Rundel, M., Lock Morgan, K. (2012). "Taking a Chance in the Classroom: Uncounted Votes: A Case Study in Analyzing Aggregated Data," *Chance*, **25**(1): 18-23.
15. Lock, K. F. (2011) "Rerandomization to Improve Covariate Balance in Randomized Experiments," *Ph.D. Dissertation*, Harvard University. Advisor: Don Rubin.
16. Lock, K. and Meng, X.L. (2010). "Real-Life Module Statistics: A Happy Harvard Experiment," *ICOTS 8 Proceedings*.
17. Lock, K. (2007). "Mixing a Night Out with Probability... & Making a Fortune," *Math Horizons*, Feb: 8-9.
18. Lock, K. (2004) "Identifying Best Rational Approximations through Sharp Diophantine Inequalities," *Senior Honors Thesis*, Williams College, Advisor: Ed Burger.
19. Lock, K. and Lock, R.H. (2003). "Judging Figure Skating Judges," *STATS*, Winter, **36**: 19-23.

TEACHING EXPERIENCE

PSU 016: Statistics First-Year Seminar	Penn State	Professor	2014
STA 101: Data Analysis and Statistical Inference	Duke	Professor	'11-'14
STA 320: Design and Analysis of Causal Studies	Duke	Professor	2014
STA 790: Teaching Statistics (created course)	Duke	Professor	2012
STAT 100: Introduction to Quantitative Methods	Harvard	Head TF	2010
STAT 303: The Art and Practice of Teaching Statistics	Harvard	TF	'09-'10
STAT 105: Real Life Statistics: Your Chance for Happiness (co-created course)	Harvard	TF	'08-'09
QM 717: Data Analysis for Managerial Studies	Boston U.	Instructor	2008
STAT 139/239: Statistical Sleuthing through Linear Models	Harvard	TF	2008
STAT 110: Introduction to Probability	Harvard	TF	2007

2012 – 2014 Academic advisor (pre-major, undergrads, grads), undergraduate research advisor

2009 – 2010 Departmental Teaching Fellow (Harvard): Mentor for all statistics teaching fellows, liaison with Harvard's Bok Center for Teaching and Learning

PRESENTATIONS

Invited

1. "Building the capacity of new PhDs and graduate students to teach statistics," Panel, *International Conference on Teaching Statistics (ICOTS)*, 8/14.
2. "StatKey: Online Tools for Bootstrap Intervals and Randomization Tests," Paper, *ICOTS*, 8/14.
3. "Modifying introductory courses to use simulation methods as the primary introduction to statistical inference," Workshop, *ICOTS*, 8/14.
4. "Understanding the p-value... Really!!!," *Wiley Faculty Network*, 10/12.
5. "Introducing Inference with Bootstrapping and Randomization," *Electronic Conference on Teaching Statistics (ECOTS)*, 5/12.
6. "Using Bootstrap Intervals and Randomization Tests to Enhance Conceptual Understanding in Introductory Statistics," *Wiley Faculty Network*, 3/12.
7. "Using Simulation Methods to Introduce Inference," *CAUSE (Consortium for the Advancement of Undergraduate Statistics Education) Webinar*, 12/11.
8. "Rerandomization to Improve Covariate Balance in Randomized Experiments," *Bucknell, Cal Poly, Carnegie Mellon, Clarkson, Duke, NC State, Ursinus, Williams*, 2011.
9. "Real-Life Module Statistics: A Happy Harvard Experiment," with Xiao-Li Meng, *ICOTS*, 7/10.
10. "What Clicks in the Classroom: The Power of Clickers," *International Conference on Technology in Collegiate Mathematics (ICTCM)*, 3/10.
11. "Bayesian Combination of State Polls and Election Forecasts," *Harvard Institute for Quantitative Social Science (IQSS)*, 2/09.

Selected

12. "StatKey: Online Tools for Teaching a Modern Introductory Statistics Course," Breakout Session, *United States Conference on Teaching Statistics (USCOTS)*, 5/13.
13. "Using Randomization Methods to Build Conceptual Understanding of Statistical Inference," Minicourse, *Joint Mathematics Meetings (JMM)*, 1/13.
14. "Using Simulation Methods to Introduce Statistical Inference," *American Mathematical Association of Two-Year Colleges (AMATYC)*, 11/12.
15. "Using Randomization Methods to Build Conceptual Understanding of Statistical Inference," Minicourse, *JMM*, 1/12.
16. "Technology for Teaching Bootstraps and Randomizations," Breakout Session, *USCOTS*, 5/11.

Contributed

17. "One Crank or Two?" *Joint Statistical Meetings (JSM)*, 8/14.
18. "Teaching PhD Students How to Teach," *JSM*, 8/13.
19. "Simulating with StatKey," *JMM*, 1/13.
20. "Introducing Inference with Simulation Methods," Topic-contributed, *JSM*, 8/12.
21. "Early Inference: Using Randomization to Introduce Hypothesis Testing," *JMM*, 1/11.
22. "Rerandomizing Randomized Experiments," *JSM*, 8/10.
23. "Bayesian Combination of State Polls and Election Forecasts," *JSM*, 8/09.
24. "Unifying the Named Natural Exponential Families and their Relatives," *JSM*, 8/08.
25. "Identifying Best Rational Approximations," *Mathfest*, 8/04.
26. "Simultaneous Approximation of Generalized Golden Ratios," *Mathfest*, 8/04.
27. "Classifying Best Approximates Using Magical Intervals," *Hudson River Undergraduate Mathematics Conference (HRUMC)*, 4/04.
28. "Finding Best Approximates Through Magical Intervals," Poster, *JMM*, 1/04.

29. "Making Best Approximates Appear through Magical Intervals," *Regional MAA Meetings*, 11/03.
30. "Graceful Graphs," *HRUMC*, 4/03.
31. "How Subjective is Figure Skating?" *HRUMC*, 4/02.

Other Conference Presentations

32. "Stories from Award-Winning Teachers," Panel, *Winter Teaching Conference*, Harvard, 1/11.
33. "Statistical Results," *Rigorous Research in Engineering Education (RREE)*, 3/10.
34. "Grading and Feedback," *Winter Teaching Conference*, Harvard, 1/10.
35. "Descriptive Statistics," "Statistical Inference," "Measurement in Education Research," and "Types of Research," *RREE*, 12/09.
36. "Keeping Students Engaged," *Fall Teaching Conference*, Harvard, 8/09.
37. "Not Just Grades: Assessing Students & Yourself," *Fall Teaching Conference*, Harvard, 9/08.

AWARDS/HONORS

2013	Dexter C. Whittinghill III Outstanding Contributed Paper Award in Statistics Education
2010	Derek C. Bok Award for Excellence in Graduate Student Teaching of Undergraduates, <i>Harvard University, 1 of 5 Recipients University Wide</i>
'08, '09, '10	Certificate of Distinction in Teaching, <i>Harvard University</i>
'09, '10	Best Post-Qualifying Talk, <i>Harvard Statistics Department</i>
2004	MAA Undergraduate Research Award, <i>National AMS/MAA Meetings</i>
2004	Best Student Talk, <i>Mathfest (National MAA Summer Math Meetings)</i>
2004	Robert M. Kozelka Prize in Statistics, <i>Williams College</i>
2004	Phi Beta Kappa Inductee, Sigma Xi Inductee
2000-2004	Robert C. Byrd Scholarship, <i>New York State</i>
2000	Winner, <i>Pi Mu Epsilon Mathematics Competition</i>

SERVICE

2014 –	Executive Committee, ASA Section on Statistics Education
2013	Program Committee, United States Conference on Teaching Statistics (USCOTS)
2013 –	Member of the Randomization Curriculum Developers Group
2011 –	Co-editor of <i>Chance</i> column: "Taking a Chance in the Classroom"
2012	Advisor for the Hart Leadership Program: Service Opportunities in Leadership
2012	Volunteer for Females Excelling More in Math, Engineering, and Science (FEMMES)
2012	Co-developed one of the inaugural TED-Ed courses: "Visualizing Data"
2011	Co-developed <i>StatKey</i> , lock5stat.com/statkey , free online technology for using randomization-based inference in introductory classes

GRANTS

Active

1. New weighting methods for causal inference. NSF-SES 1424688, 9/2014-8/2016, \$ 190,000. PI: Fan Li. Role: Faculty Associate.
2. Broadening the impact and evaluating the effectiveness of randomization-based curricula for introductory statistics. NSF-DUE 1323210, 2/2014 – 1/2017, \$550,099. PI: Nathan Tintle. Role: Advisory board.

Pending

3. An adaptive measure of student understanding of statistical concepts. IES. PI: Eric Loken. Role: Co-Investigator.
4. Developing Expert and Flexible Teachers of Statistics: The DEFT Statistics Project. NSF. PIs: Joan Garfield and Robert Gould. Role: Advisor.

Completed

5. Rigorous research in engineering education: creating a community of practice. NSF-DUE 0517528, 9/2005 – 8/2008, \$177,073. PI: Karl Smith. Role: Project Statistician.

REVIEWS

1. JASA Applications and Case Studies
2. ICOTS 9 Proceedings
3. Goals and Outcomes Associated with Learning Statistics (GOALS) Assessment
4. Basic Literacy in Statistics (BLIS) Assessment
5. Public Opinion Quarterly

MISCELLANEOUS

- Professional Figure Skater, *performed in 19 countries and 14 states*
- Avid Ultimate Frisbee Player, *captain*