

Rajeshwari Sundaram, Ph.D., M.Stat.

Current Position: Senior Investigator, Biostatistics & Bioinformatics Branch
Division of Intramural Population Health Research
Eunice Kennedy Shriver National Institute of Child Health
& Human Development
The National Institutes of Health

Address: 6710B Rockledge Drive, Room 3232
Bethesda, Maryland 20817
301-435-6953
sundaramr2@mail.nih.gov

Education:

1994-1999 Ph.D., Statistics, Michigan State University, East Lansing
1991-1993 M.Stat. (Applied Statistics & Data Analysis), Indian
Statistical Institute, Kolkata
1988-1991 B.Sc. (Honors), Mathematics, University of Calcutta, India

Research Interests:

- Survival analysis
- Joint modeling of longitudinal and survival data
- Statistical methods with application to reproductive, perinatal and environmental epidemiology

Work Experience:

- Senior Investigator, Biostatistics & Bioinformatics Branch, DIPHR, NICHD, NIH, 2014 onwards
- Investigator, Biostatistics & Bioinformatics Branch, DIPHR, NICHD, NIH, 2006-2014
- Assistant Professor, Department of Mathematics, University of North Carolina-Charlotte, 1999-2006
- Statistical Consultant at UNC-Charlotte, Michigan State University
- Teaching Assistant, Michigan State University, 1994-1996, 1998-1999
- Course Coordinator, Michigan State University, Fall, 1996

Research projects:

Lead Statistician and Co-Investigator, *Eunice Kennedy Shriver* National Institute of Child Health and Human Development

2004-present Longitudinal Investigation of Fertility and the Environment (LIFE)

	Study)
2006-2009	Stress and Time to Pregnancy
2012-present	Exposome of Normal Pregnancy: Proof-of-Concept Study
2007-present	Upstate KIDS Study
2011-2012	Air Quality and Women's Reproductive Health. (LIFE Study and Consortium on Safe Labor Study), \$494,458 (Lead Statistician till June, 2013, currently Co-Investigator)
2014-2019	Upstate KIDS CVD Follow-Up

Co-Investigator, *Eunice Kennedy Shriver* National Institute of Child Health and Human Development

2006-2010	Persistent Environmental Compounds and Gynecologic Health (ENDO Study)
-----------	--

Awards:

- NICHD, NIH Collaboration award for Upstate KIDS. December 8, 2014.
- NIH Merit Award. *Eunice Kennedy Shriver* National Institute of Child Health & Human Development. For successfully designing and completing the novel ENDO Study aimed at answering questions about environmental influences on endometriosis. January 19, 2012.
- NIH Merit Award. National Institute of Child Health & Human Development. For ingenuity in designing and dedication in completing the LIFE Study, whose aim is to identify environmental reproductive toxicants. September 29, 2009

Grants:

- Principal Investigator, Junior Faculty Research Grants, UNC-Charlotte, Two month Summer Salary, 2000 & 2002
- Association for Women in Mathematics-National Science Foundation Travel Grant for 2002, \$1,500
-

At Eunice Kennedy Shriver National Institute of Child Health and Human Development:

Teaching:

- Faculty, *Eunice Kennedy Shriver* National Institute of Child Health and Human Development, National Institutes of Health and Institute of Human

Development, Child and Youth Health, Canadian Institutes of Health
Research Summer Institute in Reproductive and Perinatal Epidemiology,
2010-2012

Mentoring:

National Institutes of Health Summer Interns:

- 2007 Kirsten Lum (MS, American University)
- 2007 Elaine Nsoesie (PhD, Virginia Tech University)
- 2010 Kirsten Lum (PhD, Johns Hopkins University)
- 2016 Jenny Lee (MS, Yale University)

National Institutes of Health Intramural Research Training Award Fellows:

- 2006-2007 Seunggeun Hyun (PhD Student, University of North Carolina-Charlotte) Predoctoral Fellow. Subsequent Position: Assistant Professor, University of South Carolina
 - Won the “Best Student Oral Presentation” award at the Probability and Statistics Day Conference held at University of Maryland Baltimore County, May 2007
- 2006-2007 Katahyanee Murray, co-mentored with Dr Denise Haynie, Predoctoral Fellow, Prevention Research Branch
- 2008-2009 Kirsten Lum (PhD, Department of Biostatistics, George Washington University), Predoctoral Fellow
 - Won the Wray Jackson Smith Scholarship Award (sponsored by American Statistical Association and others) for her work on “Joint modeling of longitudinal data and time to an event: An application to time to pregnancy”
- 2007-2008 Sung Duk Kim (Postdoctoral student, University of Connecticut) Visiting Postdoctoral Fellow. Subsequent Position: Research Fellow, Biostatistics and Bioinformatics Branch
- 2008-2010 Sung Duk Kim (Postdoctoral fellow, NICHD), Research Fellow. Subsequent Position: Staff Scientist, Biostatistics and Bioinformatics Branch
- 2009-2011 Alexander C McLain (Postdoctoral fellow, North Carolina State University) Postdoctoral fellow. Subsequent Position: Research Fellow, Biostatistics and Bioinformatics Branch
- 2011-2012 Alexander C McLain (Postdoctoral fellow, NICHD), Research Fellow. Subsequent Position: Assistant Professor, University of South Carolina
- 2012-2014 Kirsten Lum (PhD Student, Department of Biostatistics, Johns Hopkins University), Predoctoral Fellow
 - Louis I. and Thomas D. Dublin Award for the advancement of Epidemiology and Biostatistics, Johns Hopkins University for thesis proposal
- 2013-2016 Kate Sapra (PhD Student, Department of Epidemiology, Columbia University), Predoctoral Fellow, co-mentoring with Dr Germaine M.

Buck Louis

-*American College of Epidemiology*, 2014 Student Paper Award for *Successive time to pregnancies among women experiencing hCG pregnancy loss*.

2014-2016 Ling Ma (Doctoral Student, University of Missouri), Visiting Postdoctoral Fellow. Subsequent Position: Assistant Professor, Clemson University from Fall, 2016

2016-onwards Sedigheh Mirzaeie (Doctoral Student, Indian Statistical Institute, Kolkata), Visiting Postdoctoral Fellow

Dissertation Committee Member for Extramural Doctoral Students:

2013-Present Somak Chatterjee (PhD Student), Department of Statistics, George Washington University. Role: Co-Advisor & Committee Member

2013-Present Li Cheung (PhD Student), Department of Statistics, George Washington University. Role: Committee Member

At University of North Carolina at Charlotte:

Teaching:

Graduate courses

- Applied Linear Statistical Models: Fall, 2000, 2001
- Design of Experiments: Spring, 2002
- Research Topics Course in Survival Analysis: Spring, 2003
- Theoretical Statistics I–II: Fall 2003, 2005; Spring 2004

Undergraduate courses

- Elementary Statistics for Business Majors: Fall, 1999; Spring, 2000
- Introductory Statistics for Social Sciences: Fall, 1999, 2000, 2001, 2003, 2004, 2005; Spring, 2000, 2001, 2002, 2003, 2004, 2005, 2006
- Probability and Statistics for Engineers: Fall, 2002; Spring, 2001
- Regression Analysis: Fall 2002, 2004; Spring 2005, 2006

Mentoring:

Master's Thesis:

- X. Guo -- Hazard estimation based on right censored data using Wavelets, 2002
- Z. Thompson -- Graphical analysis of proportional odds model, 2003
- G. Ranganathan -- Analysis of accelerated lifetime model with doubly censored data, 2003

- J. Jiang—Properties of Jeffrey’s prior, 2004
- M. Paulraj --Marginal estimation in multistage models based on right censored data, 2005

Professional Activities:

Editorial Service:

- Associate editor, *Biometrics* 2009-present

Journal Peer Review:

Statistics Journals:

Biometrics, Journal of Statistical Planning and Inference, Lifetime Data Analysis, Statistics and Probability Letters, Statistical Methodology, Statistics in Medicine, Statistics in Bioscience

Other Journals:

American Journal of Epidemiology, Environmental Health Perspective, Human Reproduction

Professional Association Activities:

- Newsletter Editor, International Indian Statistical Association, 2005-2006
- Director of New Professionals, International Indian Statistical Association (2008-present)

Organization of Symposia/Sessions at National Meetings:

- Organized and Chaired an invited session on “Multistage modeling approach to complex biomedical data”, Eastern North American Regional Conference of International Biometric Society, 2008
- Co-organizer of a Panel Discussion on research/career opportunities for new professionals, Joint Statistical Meeting, 2009
- Organized a topic contributed session on “Statistical methods in reproductive epidemiology”, Joint Statistical Meeting, 2010
- Organized a topic contributed session on “Statistical methods in reproductive epidemiology”, Joint Statistical Meeting, 2010
- Organized an invited session on “Statistical methods in reproductive and environmental epidemiology”, Eastern North American Regional Conference of International Biometric Society, 2011
- Chaired an invited session on “Joint modeling with a view towards risk prediction” at Eastern North American Regional Conference of International Biometric Society, 2011

- Organized a topic contributed session on “Statistical methods in large epidemiological studies” at Joint Statistical Meeting, Seattle, Washington, 2015
- Organized a topic contributed session on “Emerging Public Health Issues” at Joint Statistical Meeting, Chicago, Illinois, 2016

National Institutes of Health–Committees

- Ad-Hoc Member, Special Emphasis Panel ZDE1 JR 14, Review of NIDCR Small Research Grants for Oral Health Data Analysis and Statistical Methodology Development Applications, June, 2014
- DIPHR Representative for trans-NIH Women Scientist Advisory Committee, 2016 onwards

Eunice Kennedy Shriver National Institutes of Child Health and Human Development – Committees and Workshops

- Moderator of session on study design and methodological challenges in Preconception Care Research: Improving birth outcomes and reproductive health workshop, 2008
- Member, Search Committee for staff scientist, Epidemiology Branch, NICHD, 2008
- Representative of Biostatistics & Bioinformatics Branch for IRTA Postdoctoral Review Guidelines Committee, NICHD, 2008
- Member, Planning Committee, Preconception Care Workshop, NICHD, 2008
- Member, Search Committee for Biostatistics and Bioinformatics Branch Chief, 2009
- Member, Search Committee for Biostatistics and Bioinformatics Branch, Tenure Track, 2011
- Member, Search Committee for Staff Scientist for Health Behavioral Branch, NICHD, 2015
- Member, Professional Development Committee, DIPHR, NICHD, 2015 onwards
- Member, Tenure and Promotions Committee, DIPHR, NICHD, 2016 onwards

Academic Committees – University of North Carolina at Charlotte

- Committee Member, Search committee for recruitment of tenure track assistant professor, 2002, 2003
- Committee Member, Curriculum Development Committee at University of North Carolina, Charlotte, 2001-2003
- Chair, Committee for designing a large enrollment course on introductory statistics course for social sciences majors, 1999-2000
- Committee Member, Undergraduate curriculum committee for designing concentration in statistics, 2001-2003
- Curriculum development of a sequence course (core requirement) on introductory statistics for undergraduate concentration in statistics, 2001-2002
- Committee Member, Committee for restructuring Master’s program in Statistics

- Curriculum development of a course on “Statistical Computation” for graduate students, 2001-2002
- Chair (Spring, 2001, 2002, 2003, 2004) and member (Fall, 2002, 2003, 2004) of Common Final Exam Committee for Introductory Statistics

Talks:

Invited Grand Rounds

- Analytical strategies for assessing pregnancy related outcomes: fecundity and infertility. American Society for Reproductive Medicine, November, 2015
- Statistical challenges in modeling human fecundity. Department of Biostatistics, Johns Hopkins University, November, 2009

Invited Talks

- Analyzing gap time distribution in presence of panel count data and informative examinations and unknown start time. International Chinese Statistical Association, Atlanta, Georgia, June, 2016
- Statistical modeling of labor data. Department of Statistics, George Washington University, March, 2016
- Promising analytic methods for filling data gaps. NICHD Workshop on *Is Human Fecundity Changing?*, September, 2015
- Statistical modeling of human fecundity, National Library of Medicine, August, 2015
- Joint modeling of longitudinal binary data and time to event measured on nested time scales: an application to fecundity studies. Eastern North American Regional Conference of International Biometric Society, March, 2014
- Statistics at the Crossroads: Its multifaceted impact on the society, University of Akron and Cleveland Chapter of Statistics Workshop, October, 2013 (declined due to Federal Government Shutdown)
- Statistical models for human fecundity, Department of Biostatistics, University of South Carolina, February, 2013
- Monitoring Personal Hormonal Responses to Environmental Exposures, Emerging technologies for measuring individual exposomes workshop, The National Academies, December, 2011
- Joint modeling of longitudinal and time to event data: An application to prospective pregnancy study, International Indian Statistical Association, North Carolina State University, April, 2011
- Marginal estimation in multistage models. Biostatistics Workshop, University of Maryland, Baltimore County, March, 2011
- Modeling human fecundity: A survival analysis approach. George Mason University, December, 2009
- Statistical challenges in modeling human fecundity, Institute of the Mathematical Statistics, Young Researchers Conference, Bethesda, NIH, July, 2009
- Statistical modeling of human fecundity, University of Chicago, November, 2008

- Analysis of recurrent events data in presence of terminal events, Department of Statistics, University of Connecticut, October, 2008
- Statistical Modeling of human fecundity at International Indian Statistical Association Conference, University of Connecticut, May, 2008
- Robust inference for analysis of recurrent events data in presence of terminal events, Conference in Honor of Professor Hira Lal Koul, Michigan State University, May, 2008
- Joint modeling of longitudinal and time to an event data: An application to human fecundity, University of Maryland, Baltimore County, May, 2008
- Nonparametric inference in multistage models with current status data at Probability and Statistics Day Conference held at University of Maryland Baltimore County, May, 2007
- Marginal estimation in multistate models with current status data at Biostatistics Branch, National Institute of Allergy and Infectious Diseases, December, 2006
- Marginal estimation in multistate models with current status data at Office of Biostatistics Research, National Heart, Lung and Blood Institute, October, 2006
- Semi-parametric transformation models for recurrent events data, Department of Mathematics, University of Kansas, March, 2005
- Semi-parametric inference in proportional odds model with time-dependent covariates, Department of Statistics, University of Georgia, October, 2003
- Estimation in two sample doubly censored scale model, Department of Mathematics, University of Nevada, Las Vegas, February, 1999

Invited Seminars

- Statistical challenges in modeling labor in women, Part II, SLAM Working Group, Department of Biostatistics, Johns Hopkins University, November, 2013
- Statistical challenges in modeling labor in women, Part I, SLAM Working Group, Department of Biostatistics, Johns Hopkins University, May, 2013
- Marginal analysis of multistage models based on current status data, SLAM Working Group, Department of Biostatistics Johns Hopkins University, May, 2010

Invited Panel Discussant

- Career opportunities for women in mathematics, NSF-George Washington University, Department of Mathematics, July, 2011

Oral Presentations at Scientific Meetings

- Joint modeling of multiple longitudinal and time to event analysis: an application to fecundity studies. Eastern North American Regional Conference of International Biometric Society, March, 2015.
- Median cost associated with recurrent events in presence of terminal events, Eastern North American Regional Conference of International Biometric Society, March, 2013

- Joint modeling of menstrual cycle and time to pregnancy, Joint Statistical Meeting, August, 2010
- Semi-parametric regression of censored data incorporating both short term and long term covariate effects, Joint Statistical Meeting, August, 2008
- Quantile regression analysis of recurrent events data, Joint Statistical Meeting, August, 2007
- Robust analysis of recurrent events data in presence of terminal events, Eastern North American Regional Conference of International Biometric Society, March, 2007
- Robust analysis of recurrent events data in presence of terminal events, Joint Statistical Meeting, August, 2006
- Robust inference for censored point processes, Eastern North American Regional Conference of International Biometric Society of International Biometric Society, March, 2005
- Marginal analysis of multistage models based on current status data, Eastern North American Regional Conference of International Biometric Society, March, 2004
- Semi-parametric inference in proportional odds model with time-dependent covariates, Joint Statistical Meeting, August, 2003
- Semi-parametric inference in proportional odds model with time-dependent covariates, Eastern North American Regional Conference of International Biometric Society, March, 2002
- Semi-parametric inference in proportional odds model with time-dependent covariates, Western North American Regional Conference of International Biometric Society, March, 2002

Refereed Manuscripts:

* denotes mentee authored paper.

1. Rougoor CW, **Sundaram, R**, van Arendonk JAM. The relation between breeding management and 305-day milk production, determined via principal components regression and partial least squares. *Livestock Production Science*, 66:71-83, 2000.
2. **Sundaram R**. Estimation of scale parameter based on doubly censored samples. *Journal of Statistical Planning and Inference*, 115:657-681, 2003.
3. Brandon W, Troyer J, **Sundaram R**, Sun Y, Schoeps N, Walsh B. Medicaid enrollee switching among managed care plans. *Journal of Health Care for the Poor and Underserved*, 16:760-779, 2005.
4. **Sundaram R**. Semi-parametric inference in proportional odds model with time-dependent covariates. *Journal of Statistical Planning and Inference*, 136:320-334, 2006.
5. **Sundaram R**. Estimation in two sample randomly truncated scale model. *Journal of Statistical Planning and Inference*, 136:2983-3006, 2006.
6. Biswas A, **Sundaram R**. Kernel survival function estimation based on doubly censored data. *Communications in Statistics, Theory and Methods*, 35:1293-1307, 2006.

7. Datta S, **Sundaram R**. Nonparametric marginal estimation in a multistage model using current status data. *Biometrics*, 62: 829-837, 2006.
8. **Sundaram R**. Robust Analysis of recurrent events in presence of terminal events. *Statistical Advances in the Bio-Medical Sciences: State of the art and future directions*, Editors. Datta S, Segal M, Fine J, Biswas A; pages 245-264, John Wiley and Sons, NJ, 2007.
9. Chang M, Parker E, Muller T, Haenen C, Mistry M, Finkelstein G, Murphy-Ryan M, Barnes K, **Sundaram R**, Baron J. Changes in cell cycle kinetics responsible for limiting somatic growth in mice. *Pediatric Research*, 64:240-245, 2008.
10. Cooney M, Buck Louis GM, **Sundaram R**, McGuinness BJ, Lynch CD. Validity of self reported time-to-pregnancy. *Epidemiology*, 20:56-59, 2008.
11. Zhang J, **Sundaram R**, Sun W, Troendle J. Fetal growth and spontaneous onset of labor in humans. *American Journal of Epidemiology*, 168:946-951, 2008.
12. Brandon W, **Sundaram R**, Dunham A. Multiple switching in Medicaid managed care: A proportional hazards model. *Journal of Health Care for Poor and Underserved*, 20:1124-1141, 2009.
13. **Sundaram R**. Semi-parametric inference in proportional odds model with randomly truncated data. *Journal of Statistical Planning and Inference*, 139:1381-1393, 2009.
14. Datta S, Lan L, **Sundaram R**. Nonparametric estimation of waiting time distributions in a Markov model based on current status data. *Journal of Statistical Planning and Inference*, 13:2885-2897, 2009. Authorship in alphabetical order.
15. *Hyun S, Sun Y, **Sundaram R**. Assessing cumulative incidence functions under the semi-parametric additive risk model. *Statistics in Medicine*, 28:2748-2768, 2009.
16. Sun Y, **Sundaram R**, Zhao Y. Empirical likelihood inference for the Cox model with time-dependent coefficients via local partial likelihood. *Scandinavian Journal of Statistics*, 6:444-462, 2009. Authorship in alphabetical order.
17. Mikolajczyk R, Buck Louis GM, Cooney M, Lynch C, **Sundaram R**. Characteristics of prospectively measured vaginal bleeding among women trying to conceive. *Paediatric and Perinatal Epidemiology*, 24:24-30, 2010.
18. Murphy L, Gollenberg A, Buck Louis GM, Kostyniak J, **Sundaram R**. Preconception polychlorinated biphenyl exposure and infant birth weight. *Environmental Health Perspectives*, 118:297-302, 2010.

- 19.*Kim SD, **Sundaram R**, Buck Louis GM. Joint modeling of intercourse behavior and human fecundability using structural equation models. *Biostatistics*, 11:559-571, 2010.
20. Neta G, von Ehrenstein O, Lum K, **Sundaram R**, Zhang J. Risk association of cord blood cytokines with preterm delivery and small for gestational age infants. *American Journal of Epidemiology*, 171:859-867, 2010.
21. Pollack A, Buck Louis GM, **Sundaram R**, Lum K. Caffeine consumption and pregnancy loss. *Fertility and Sterility*, 93:304-306, 2010.
22. Zhang J, Troendle J, Mikolajczyk R, **Sundaram R**, Beaver J, Fraser W. The 1st stage of labor: 1959-1966. *Obstetrics & Gynecology* 115:705-710, 2010.
23. Bloom M, Buck Louis GM, **Sundaram R**, Kostyniak J, Jain J. Metals and fecundity. *Reproductive Toxicology*, 31:158-63, 2011.
24. Buck Louis GM, Rios LI, McLain A, Cooney M, Kostyniak P and **Sundaram R**. Persistent organochlorine pollutants and menstrual cycle length. *Chemosphere*, 85(11):1742-8, 2011.
25. ♦ Buck Louis GM, Lum K, **Sundaram R**, Chen Z, Kim S, Lynch C, Schisterman, EF and Pyper C. Stress reduces conception probabilities across the fertile window: Evidence in support of relaxation. *Fertility and Sterility*, 95(7):2184-2189, 2011.
♦ covered by multiple international media including BBC, CNN, USA Today, NY Times, WebMD
26. Gollenberg A, Cooney M, Mumford S, **Sundaram R**, Buck Louis GM. Validity of retrospectively reported behaviors during the periconception window. *Journal of Reproductive Medicine*, 56(3-4):130-7, 2011.
27. Buck Louis GM, Hediger M, Peterson M, Croughan M, **Sundaram R**, Stanford J, Chen Z, Fujimoto V, Varner M, Trumble A, Giudice L. Incidence of endometriosis by study population and diagnostic method: the ENDO Study. *Fertility and Sterility*, 96:360-365, 2011.
28. Buck Louis GM, Schisterman EF, Sweeney A, Wilcosky T, Gore-Langton R, Lynch C, Barr D, Schrader S, Kim SD, Chen Z, **Sundaram R**. Designing prospective cohort studies for assessing reproductive and developmental toxicity during sensitive windows of human reproduction and development-the LIFE study. *Paediatric and Perinatal Epidemiology*, 25:413-424, 2011.
29. *Lum K, **Sundaram R**, Buck Louis GM. Women's lifestyle behaviors while trying to become pregnant: evidence supporting preconception guidance. *American Journal of Obstetrics and Gynecology*, 205(3):203.e1-7, 2011.

- 30 *McLain AC, **Sundaram R.**, Cooney MA, Gollenberg AL, Buck Louis GM. Clustering of fecundability within women. *Paediatric and Perinatal Epidemiology*, 25: 460–465, 2011.
31. Buck Louis GM, **Sundaram R.** Exposome: time for transformative research. *Statistics in Medicine*, 31(22):2569-2575, 2012.
32. *McLain AC, *Lum K., **Sundaram R.** A joint mixed effects dispersion model for menstrual cycle length and time-to-pregnancy. *Biometrics*, 68:648-656, 2012.
33. *McLain AC, **Sundaram R.**, Buck Louis GM. Modeling time to pregnancy in presence of sterile fraction using transformation survival model. *Statistical methods in medical research*, doi:10.1177/0962280212438646, 2012.
34. Buck Louis GM, **Sundaram R.**, Schisterman EF, Sweeney AM, Lynch CD, Gore-Langton RE, Chen Z, Kim S, Caldwell K, & Barr DB. Heavy metals and couple fecundity, the LIFE study. *Chemosphere*, 87:1201-1207, 2012.
35. Kunisue T, Chen Z, Buck Louis GM, **Sundaram R.**, Hediger ML, Sun L, Kannan K. Urinary concentrations of benzophenone-type uv filters in the US women from two cities and their association with endometriosis. *Environmental Science and Technology*, 46:4624-4632, 2012.
36. Laughon SK, Zhang J, Grewal J, **Sundaram R.**, Beaver J, Reddy U. Induction of labor in contemporary obstetric practice. *American Journal of Obstetrics and Gynecology*, 206:486.e1-9, 2012
37. Buck Louis GM, Chen Z, Peterson CM, Hediger ML, Croughan MS, **Sundaram R.**, Stanford JB, Varner MW, Fujimoto VY, Giudice LY, Trumble A, Parsons PJ, Kannan K. Persistent lipophilic environmental chemicals and endometriosis: the ENDO study, 2007-2009. *Environmental Health Perspectives*, 120:811-816, 2012.
38. Buck Louis GM, Peterson CM, Chen Z, Hediger ML, Croughan MS, **Sundaram R.**, Stanford JB, Varner MW, Fujimoto VY, Giudice LY, Trumble A, Parsons P J, Kannan K. Perfluorochemicals and endometriosis: the ENDO study. *Epidemiology*, 23(6):799-805, 2012.
39. Lynch CD, **Sundaram R.**, Buck Louis GM, Lum KJ, Pyper C. Are increase levels of self-reported psychosocial stress, anxiety, and depression associated with fecundity? *Fertility and Sterility*, 98(2):453-458, 2012.
40. Chason R, McLain AC, **Sundaram R.**, Chen Z, Segars JH, Pyper C, Buck Louis GM. Preconception stress and the secondary sex ratio: a prospective cohort study. *Fertility and Sterility*, 98(4):937-941, 2012.

41. Thoma ME, Hediger ML, **Sundaram R**, Stanford JB, Peterson CM, Croughan MS, Chen Z, Buck Louis GM and the ENDO Study. Comparing “apples and pears:” women’s perceptions of their body size and shape. *Journal of Women’s Health*, 21(10): 1074-1081, 2012.
42. **Sundaram R**, McLain A, Buck Louis, GM. A survival analysis approach to modeling human fecundity. *Biostatistics*, 13:4-17, 2012.
43. *Kim SD, **Sundaram R**, Buck Louis GM, Pyper C. Flexible Bayesian Human Fecundity Models (with invited discussions). *Bayesian Analysis*, 7(4):771-800, 2012.
44. Wolff EF, Sun L, Hediger ML, **Sundaram R**, Peterson CM, Chen Z, Buck Louis GM. In utero exposures and endometriosis: the endometriosis, natural history, disease, outcome (ENDO) study. *Fertility and Sterility*, 99(3):790-795, 2013.
45. Buck Louis GM, Peterson CM, Chen Z, Croughan M, **Sundaram R**, Stanford J, Varner MW, Kennedy A, Giudice L, Fujimoto VY, Sun L, Wang L, Guo Y, Kannan K. Bisphenol A and phthalates and endometriosis: the endometriosis: natural history, diagnosis and outcomes study. *Fertility and Sterility*, 100(1):162-169, 2013.
46. Buck Louis GM, Yeung E, Sundaram R, Laughon SK, Zhang C. The exposome—exciting opportunities for discoveries in reproductive and perinatal epidemiology. *Paediatric and Perinatal Epidemiology*, 27(3):229-236, 2013.
47. Buck Louis GM, **Sundaram R**, Schisterman E, Maisog J, Kim SD, Chen Z, Sweeney A. Persistent organochlorine compounds and time to pregnancy. *Environmental Health Perspectives*, 121(2):231-236, 2013.
48. Thoma ME, McLain AC, Louis JF, King RB, Trumble A, **Sundaram R**, Buck Louis GM. The prevalence of infertility in the United States as estimated by the current duration approach and a traditional constructed approach. *Fertility and Sterility*, 99(5): 1324-1331, 2013.
49. Louis JF, Thoma ME, Sorensen DN, McLain AC, King RB, **Sundaram R**, Keiding N, Buck Louis GM. The prevalence of couple infertility in the United States from a male perspective: evidence from a nationally representative sample. *Journal of Andrology*, 1(5):741-748, 2013.
50. Pollack AZ, Buck Louis GM, Chen Z, Peterson CM, **Sundaram R**, Croughan MS, Sun L, Hediger ML, Stanford JB, Varner MW, Palmer CD, Steuerwald AJ, Parsons PJ. Trace elements and endometriosis: the ENDO study. *Reproductive Toxicology*, 42:41-48, 2013.
51. Laughon SK, McLain AC, **Sundaram R**, Catov J, Buck Louis GM. Maternal lipid change in relation to length of gestation: a prospective cohort study with preconception enrollment of women. *Gynecologic and Obstetric Investigation*, 77:6-13, 2014.

52. Buck Louis GM, **Sundaram R**, Schisterman EF, Sweeney A, Lynch CD, Kim SD, Maisog JM, Gore-Langton R, Eisenberg ML, Chen Z. Semen quality and time-to-pregnancy. *Fertility and Sterility*, 101:453-462, 2014.
53. Eisenberg ML, Kim SD, Chen Z, **Sundaram R**, Schisterman EF, Buck Louis GM. The relationship between male body mass index, adiposity, and activity level on semen quality: data from the LIFE Study. *Human Reproduction*, 29:193-200, 2014.
54. Mumford S, **Sundaram R**, Schisterman E, Maisog J, Chen Z, Kim S, Sweeney A, Buck Louis GM. Higher urinary lignan concentrations in women but not men are positively associated with shorter time-to-pregnancy. *The Journal of Nutrition*, 144(3):352-358, 2014.
55. Chen G, Li J, Ying Q, Sherman S, Perkins N, **Sundaram R**, Mendola P. Evaluation of observation-fused regional air quality model results for air pollution exposure estimation. *Science of the Total Environment*, 485-486:563-574, 2014.
56. ♦ Lynch C, **Sundaram R**, Maisog J, Sweeney A, Buck Louis GM. Increased levels of physiologic stress are associated with decreased fecundability: results from a couple-based prospective study, the LIFE study. *Human Reproduction*, 29(5):1067-1075, 2014.
♦ covered by multiple international media including CBS, NY Times, Reuters, Fox News, WebMD
57. Buck Louis GM, Hediger ML, Bell EM, Kus CA, **Sundaram R**, McLain AC, Yeung E, Hills EA, Thoma ME, Druschel CM. Methodology for establishing a population-based birth cohort focusing on couple fertility and children's development, the Upstate KIDS study. *Paediatric and Perinatal Epidemiology*, 28(3):191-202, 2014.
58. Laughon SK, Berghella V, Reddy U, **Sundaram R**, Lu Z, Hoffman M. Neonatal and maternal outcomes with prolonged second stage of delivery. *Obstetrics and Gynecology*, 124(1):57-67, 2014.
59. ♦ Buck Louis GM, **Sundaram R**, Schisterman EF, Sweeney A, Lynch CD, Kim SD, Maisog JM, Gore-Langton R, Eisenberg ML, Chen Z. Urinary bisphenol A, phthalates, and couple fecundity: the longitudinal investigation of fertility and sterility. *Fertility and Sterility*, 101(5):1359-1366, 2014.
♦ covered by multiple media news including Huffington Post, Live Science
60. Guo Y, Weck J, **Sundaram R**, Goldstone AE, Buck Louis GM, Kannan K. Urinary concentrations of phthalates in couples planning pregnancy and its association with 8-hydroxy-2'-deoxyguanosine, a biomarker of oxidative stress: the longitudinal investigation of fertility and the environment (LIFE) study. *Environmental Science and Technology*, 48:9804-9811, 2014
61. *Sapra K, McLain AC, Maisog JM, **Sundaram R**, Buck Louis GM. Successive time

to pregnancies among women experiencing hCG pregnancy loss. *Human Reproduction*, 29:2553-2559, 2014.

62. Mannisto T, Mendola P, Liu D, Leishear K, Ying Q, **Sundaram R**. Temporal variation in the acute effects of air pollution on blood pressure measured at admission to labor/delivery. *Air Quality, Atmosphere and Health*, 8:13-28, 2015.

63. Robledo CA, Yeung E, Mendola P, **Sundaram R**, Sweeney AM, Barr DB, Buck Louis GM. Preconception maternal and paternal exposure to persistent organic pollutants and birth size, the LIFE study. *Environmental Health Perspectives*, 123:88-94, 2015. Selected as the Children's Environmental Health Network's Article of the Month for February 2015.

64. Buck Louis GM, Chen Z, Schisterman E, Kim SD, Sweeney AM, **Sundaram R**, Lynch CD, Gore-Langton R, Calafat A, Barr DB. Perfluorochemicals and human semen quality, the LIFE study. *Environmental Health Perspectives*, 123:57-63, 2015.

65. Zhang C, **Sundaram R**, Maisog J, Calafat A, Barr DB, Buck Louis GM. A prospective study of pre-pregnancy serum concentrations of perfluorochemicals and the risk of gestational diabetes. *Fertility and Sterility*, 103:184-189, 2015.

66. ♦ Buck Louis GM, Kannan K, Sapra KJ, Maisog J, **Sundaram R**. Urinary concentrations of benzophenone-type ultraviolet radiation filters and couples' fecundity. *American Journal of Epidemiology*, 180:1168-1175, 2014.

♦ covered by multiple international media news including CNN, Reuters, UPI, CBS, Malaysian Digest, Shanghai Daily

67. Albert PS, **Sundaram R**, McLain A. Innovative applications of shared random parameter models for analyzing longitudinal data subject to dropout. *ISS-2012 Proceedings Volume on Longitudinal Data Analysis Subject to Measurement Errors*, Ed. Sutradhar B. Lecture notes in Statistics, 211; pages 139-155, Springer, New York, 2013.

68. ♦ *McLain AC, **Sundaram R**, Thoma M, Buck Louis GM. Semiparametric modeling of grouped current duration data with preferential reporting. *Statistics in Medicine*, 33:3961-3972, 2014.

♦ selected as a "featured article" by the *Statistics in Medicine*

69. *Lum K, **Sundaram R**, Louis T. Accounting for length-bias and selection effects in estimating the effects of menstrual cycle length. *Biostatistics*, 16:113-128, 2015.

70. *McLain AC, **Sundaram R**, Buck Louis GM. Joint analysis of longitudinal and survival data measured on nested time-scales using shared parameter models: an application to fecundity data. *Journal of the Royal Statistical Society-Series C*, 64:339-357, 2015.

71. Katki HA, Cheung LC, Fetterman B, Castle PE, **Sundaram R**. A joint model of persistent human papillomavirus infection and cervical cancer risk: implications for cervical cancer guidelines. *Journal of the Royal Statistical Society-Series A*, 178:903-923, 2015.
72. *Lum K, **Sundaram R**, Buck Louis GM, Louis T. A Bayesian approach to joint modeling of menstrual cycle length and fecundity. *Biometrics*, doi:10.1111/biom.12379
73. Williams KE, Miroschnyenko O, Johansen ER, Niles RK, **Sundaram R**, Kurunthachalam K, Albertolle M, Drake P, Giudice LC, Hall SC, Witkowska HE, Buck Louis GM, Fisher SJ. Urine, peritoneal fluid and omental fat proteomes of reproductive aged women: endometriosis related changes and associations with endocrine disrupting chemicals. *Journal of Proteomics*, 113:194-205, 2015.
74. Wylie A, **Sundaram R**, Kus C, Ghassabian A, Yeung EH. Maternal pre-pregnancy obesity and achievement of infant motor development milestones in the Upstate KIDS Study. *Obesity*, 23:907-913, 2015.
75. Bloom MS, Buck Louis GM, **Sundaram R**, Maisog JM, Steuerwald AJ, Parsons PJ. Birth outcomes and background exposures to select elements, the Longitudinal Investigation of Fertility and Environment (LIFE). *Environmental Research*, 138:118-129, 2015.
76. Mannisto T, Mendola P, Grantz SK, Leishear K, **Sundaram R**, Sherman S, Qi Y, Liu D. Acute and recent air pollution exposure and cardiovascular events at labor and delivery. *Heart*, 101:1491-1498, 2015.
77. Sapra KJ, McLain AC, Maisog JM, **Sundaram R**, Buck Louis GM. Clustering of retrospectively reported and prospectively observed time-to-pregnancy. *Annals of Epidemiology*, doi:10.1016/j.annepidem.2015.04.005, 2015.
78. Robledo CA, Mendola P, Yeung E, Mannisto T, **Sundaram R**, Liu D, Ying Q, Sherman S, Lipsky L, Laughon SK. Preconception and early pregnancy air pollution exposures and risk of gestational diabetes mellitus. *Environmental Research*, 137:316-322, 2015.
79. Buck Louis GM, Druschel C, Bell E, Stern JE, Luke B, McLain A, **Sundaram R**, Yeung E. Use of assisted reproductive technology treatment as reported by mothers in comparison with registry data: the Upstate KIDS Study. *Fertility and Sterility*, 103:1461-1468, 2015.
80. Smarr MM, Grantz KL, **Sundaram R**, Maisog J, Kannan K, Buck Louis GM. Parental urinary biomarkers of preconception exposure to bisphenol A, phthalates in relation to birth outcomes. *Environmental Health*, 14:1-11, 2015.

81. Ghassabian A, **Sundaram R**, Wylie A, Bell E, Bello SC, Yeung E. Maternal medical conditions during pregnancy and gross motor development up to age 24 months in the Upstate KIDS Study. *Developmental Medicine and Child Neurology*, doi:10.1111/dmcn.12947, 2015.
82. Yeung EH, **Sundaram R**, Bell EM, Druschel C, Kus C, Ghassabian A, Bello S, Xie Y, Buck Louis GM. Infertility treatment and early childhood development, the Upstate KIDS Study. Accepted by *JAMA Pediatrics*.
83. Jaacks L, Barr DB, **Sundaram R**, Zhang C, Buck Louis GM. Pre-pregnancy maternal exposure to polybrominated and polychlorinated biphenyls (PBB and PCBs) and gestational diabetes. Accepted by *Environmental Health*.
84. Mendola P, Wallace M, Hwang B, Liu D, Robledo C, Mannisto T, **Sundaram R**, Sherman S, Ying Q, Grantz K. Preterm birth and air pollution: Critical windows of exposure for women with asthma. Accepted by *Journal of Allergy and Clinical Immunology*.
85. *Lum K, **Sundaram R**, Louis T, Buck Louis GM. Preconception Female Serum Concentrations of Perfluoroalkyl Substances, Menstrual Cycle Length and Fecundity: Results from a Prospective Pregnancy Study. Accepted by *Epidemiology*.
86. Sapra KJ, Buck Louis GM, **Sundaram R**, Joseph KS, Bates LM, Galea S, Ananth CV. Signs and symptoms associated with early pregnancy loss: Findings from a population-based preconception cohort. Accepted by *Human Reproduction*.
87. Buck Louis GM, Barr DB, Kurunthachalam K, Chen Z, Kim SD, **Sundaram R**. Paternal exposures to environmental chemicals and time-to-pregnancy: Overview of results from the LIFE Study. Accepted by *Andrology*.
88. Michels KA, Mumford SL, **Sundaram R**, Bell E, Bello SC, Yeung EH. Differences in infant feeding practices by mode of conception among a United States cohort. Accepted by *Fertility and Sterility*.
89. Smarr MM, Grantz KL, Zhang C, **Sundaram R**, Maisog JM, Barr DB, Buck Louis GM. Preconception exposures to persistent organic pollutants and pregnancy complications. Accepted by *Science of the Total Environment*.
90. Sapra KJ, Barr DB, Maisog JM, **Sundaram R**, Buck Louis GM. Couples' use of tobacco and time-to-pregnancy. Accepted by *Nicotine and Tobacco Research*.
91. Buck Louis GM, Sapra KJ, Schisterman EF, Lynch CD, Maisog JM, Grantz KL, **Sundaram R**. Lifestyle and pregnancy loss in a contemporary cohort of women recruited prior to conception, LIFE Study. Accepted by *Fertility and Sterility*.

92. Ghassabian A, **Sundaram R**, Bell E, Bello SC, Kus C, Yeung E. How do motor milestones in infancy correlate with development in toddlers? Accepted by *Pediatrics*.
93. Yeung EH, **Sundaram R**, Bell EM, Druschel C, Kus C, Xie Y, Buck Louis GM. Growth from birth to 36 months among infants conceived by infertility treatment in a prospective U.S. cohort, the Upstate KIDS Study. Accepted by *Human Reproduction*.
94. Smarr MM, **Sundaram R**, Honda M, Kannan K, Buck Louis GM. Urinary Concentrations of Parabens and Other Antimicrobial Chemicals and Their Association with Couples' Fecundity. Accepted by *Environmental Health Perspectives*.
95. Smarr MM, Grantz KL, **Sundaram R**, Maisog JM, Kannan K, Buck Louis GM. Urinary biomarkers of preconception paracetamol exposure and couples' time-to-pregnancy. Accepted by *Human Reproduction*.
96. Eisenberg ML, **Sundaram R**, Maisog JM, Buck Louis GM. Diabetes, medical comorbidities, and couple fecundity: Data from the LIFE Study. Accepted by *Human Reproduction*.
97. Buck Louis GM, Sapra K, Barr DB, **Sundaram R**. Preconception perfluoroalkyl and polyfluoroalkyl serum concentrations and incident pregnancy loss, LIFE Study. Accepted by *Reproductive Toxicology*.
98. *Ma L, **Sundaram R**. Modeling gap times in panel count data with informative observation times: assessing spontaneous labor in women. Revised for *Journal of the American Statistical Association, Theory & Methods*.
99. Patel C, **Sundaram R**, Buck Louis GM. A Data-driven Search for Semen-related Phenotypes of Impaired Human Fecundity. Revised for *Andrology*.
100. Robledo CA, Yeung E, Mendola P, **Sundaram R**, Boghossian NS, Bell EM, Druschel C. Examining the prevalence rates of preexisting maternal medical conditions and pregnancy complications by source: evidence to inform maternal and child research. Revised for *Maternal and Child Health Journal*.
101. Grantz KL, **Sundaram R**, Ma L, Hinkle S, Berghella V, Hoffman MK, Lu Z., Reddy UM. Duration of the second stage of labor. Revised for *Obstetrics and Gynecology*.
102. Yeung E, **Sundaram R**, Ghassabian A, Xie Y, Buck Louis GM. Parental obesity and early childhood development: prospective population based study. Revised for *Pediatrics*.
103. **Sundaram R**, Ma L, Ghoshal S. Median cost analysis associated with recurrent episodic illnesses in the presence of terminal event. Submitted.

104. Mills J, Weck J, Kurunthachalam K, Buck Louis GM, **Sundaram R**. Iodine deficiency and delayed conception: The LIFE Study. Submitted.
105. **Sundaram R**, Mumford SL, Buck Louis GM. Couple's adiposity profile and their time-to-pregnancy: Results from The LIFE Study. Submitted.
106. Smarr MM, Sapra KJ, Gemmil A, Kahn L, Slama R, Wise L, Lobdell D, Mumford S, Stanford JB, Boyle EH, Jensen TK, Lynch C, Eisenberg M, Skkakebaek NE, Turek PJ, **Sundaram R**, Factor-Litvak P, Buck Louis GM. Human fecundity: patterns, perspectives and implications for health across the lifespan. Submitted.
107. Mendola P, **Sundaram R**, Buck Louis GM, Sun L, Wallace ME, Smarr MM, Sherman S, Zhu Y, Ying Q, Liu D. Proximity to major roadways and prospectively-measured time-to-pregnancy and infertility. Submitted.
108. Bae J, Lynch CD, Kim SD, **Sundaram R**, Sapra KJ, Buck Louis GM. Preconception stress and the secondary sex-ratio in a population-based preconception cohort. Submitted.
109. Chahal N, **Sundaram R**, Ghassabian A, Michels KA, Bell E, Yeung E. Maternal infections during pregnancy and neonatal outcomes in the Upstate KIDS Study. Submitted.
110. Sapra KJ, Buck Louis GM, **Sundaram R**, Joseph KS, Bates LM, Galea S, Ananth CV. Time-varying effects of signs and symptoms on early pregnancy loss: Findings from a preconception cohort study. Submitted.
111. Michels K, Ghassabian A, Mumford S, **Sundaram R**, Bell E, Bello SC, Yeung E. Breastfeeding and motor development among term and preterm infants in a longitudinal U.S. cohort. Submitted.
112. Ghassabian A, **Sundaram R**, Chahal N, McLain AC, Bell E, Lawrence DA, Gilman SE, Yeung EH. Inflammatory biomarkers and early development: a longitudinal study. Submitted.
113. Ghassabian A, **Sundaram R**, Chahal N, McLain AC, Bell E, Lawrence DA, Yeung EH. Factor and Association with Child Development Determinants of Neonatal Brain Derived Neurotrophic. Submitted.
114. Jaacks LM, Barr DB, **Sundaram R**, Grewal J, Zhang C, Buck Louis GM. Pre-pregnancy maternal exposure to persistent organic pollutants and gestational weight gain: a prospective cohort study. Submitted.
115. Palmsten K, Flores KF, Chambers CD, Weiss LA, **Sundaram R**, Buck Louis GM. Most Frequently Reported Prescription Medications and Supplements in Couples Planning Pregnancy: The LIFE Study. Submitted.

Book Chapters:

116. **Sundaram R**, Balakrishnan N. Semi-parametric inference for competing risks data. *Methods and applications of statistics in life and health sciences*, pages 749-765, Eds. Balakrishnan N, Read CB, Vidakovic B, Kotz S, Johnson NL; John Wiley and Sons, NJ, 2009.

117. **Sundaram R**, Buck Louis GM, Kim SD. Statistical modeling of human fecundity. *Methods and applications of statistics in life and health sciences*, pages 815-833, Eds. Balakrishnan N, Read CB, Vidakovic B, Kotz S, Johnson N L; John Wiley and Sons, NJ, 2009.

Manuscripts Under Preparation:

118. *Ma L, Biswas A, Buck Louis GM, **Sundaram R**. Analysis of multiple longitudinal data with time-to-event using a functional data analysis approach.

119. **Sundaram R**, Ma L, Smarr M, Buck Louis GM. Assessing mixtures of persistent organochlorine compounds on infertility using elastic-net approach: an application to LIFE Study.

120. *Lee J, Smarr M, Ma L, Buck Louis GM, **Sundaram R**. Assessing mixtures of persistent organochlorine compounds on birth outcomes using shrinkage based and tree based methods.

121. **Sundaram R**, Ma L, Lynch CD, Buck Louis GM. Stress and menstrual cycle length.

122. Liu D, Yeung E, McLain AC, Xie Y, Louis GMB, **Sundaram R**. Analysis of nonignorable missing data in longitudinal regression: an application to Upstate KIDS Study

122. **Sundaram R**, Ma L, Buck Louis GM. Assessing high dimensional covariates based on discrete survival data with applications to fecundity modeling using random forests.

123. Buck Louis GM, Grantz K, Yeung E, Maisog J, Kannan K, **Sundaram R**. The exposome of normal pregnancy: The proof-of-concept.

124. Yeung EH, **Sundaram R**, Bell EM, Druschel C, Kus C, Xie Y, Buck Louis GM. Adipokine levels at birth and infant growth to 18 months.

125. Yeung EH, **Sundaram R**, Bell EM, Druschel C, Kus C, Xie Y, Buck Louis GM. Gestational diabetes and childhood development.

126. Buck Louis GM, **Sundaram R**, Bell EM, Druschel C, Kus C, Xie Y, Yeung EH. Infertility treatment and adverse birth outcomes.

127. Mumford S, **Sundaram R**, Lu Z, Buck Louis GM. Trace metals and time-to pregnancy.
128. Buck Louis GM, **Sundaram R**, Kannan K, Lu Z, Smarr M, Sapra K, Steuerwald AS, Palmer CD, Parsons PJ. Environmental exposure to toxic metals/metalloids and risk of incident pregnancy loss.
129. Lynch CD, **Sundaram R**, Lu Z, Buck Louis GM. Preconceptional stress and risk for miscarriage.
130. Ali M, **Sundaram R**, Buck Louis GM, Mills J. Iodine levels and risk for miscarriage.