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Education

Harvard University, Ph.D. (Statistics), June, 2004. Thesis Advisor: Donald B. Rubin. Thesis Title: Modeling Monotone Nonlinear Disease Progression using Historical Patients and Ensuring the Correctness of the Associated Software.

Harvard University, A.M. (Statistics), June, 2001.

University of Michigan, B.S. (Mathematics and Statistics), August, 1999. Graduated with High Distinction.

Work Experience

January, 2006 - present. Visiting Professor, Departament d'Economia i Empresa, Universitat Pompeu Fabra.

August, 2004 - December, 2005. Postdoctoral research fellow, Department of Statistics, Columbia University.

Publications

1. Michael J. Coleman, Samantha Cook, Stephen Matthysse, John Barnard, Yungtai Lo, Deborah L. Levy, Donald B. Rubin, and Philip S. Holzman (2002). "Spatial and Object Working Memory Impairments in Schizophrenia Patients: A Bayesian Item Response Theory Analysis." *Journal of Abnormal Psychology* **111**, 425-435.

2. Samantha Cook, John Barnard, Yungtai Lo, Donald B. Rubin, Michael J. Coleman, Stephen Matthysse, Deborah L. Levy, and Philip S. Holzman (2002). "Working Memory Impairments in Schizophrenia Patients: A Bayesian Bivariate IRT Analysis." In *Case Studies in Bayesian Statistics, Volume VI*, Edited by Gatsonis, C., Kass, R.E., Carriquiry, A., Gelman, A., Higdon, D., Pauler, D.K., and Verdinelli, I. New York: Springer, 193-206.

3. Deborah L. Levy, Gillian O'Driscoll, Steven Matthysse, Samantha Cook, Philip S. Holzman, and Nancy R. Mendell (2004). "Antisaccade Performance in Biological Relatives of Schizophrenia Patients: A Meta-analysis." *Schizophrenia Research.* **71**, 113-125.

4. Samantha R. Cook (2004). "A Note on Testing for Homogeneity Among Effect Sizes Sharing a Common Control Group." *Psychological Methods.* **9**, 446-452.

5. Samantha R. Cook and Donald B. Rubin. "Imputation." Entry to appear in *The Encyclopedia of Clinical Trials,* Edited by Chow, S.-C. and Liu, J. New York: Wiley.

6. Samantha R. Cook and Donald B. Rubin. "Use of Multiple Imputation Models in Medical Device Trials." Chapter to appear in *Clinical Evaluation of Medical Devices, Principles and Case Studies,* Edited by Becker, K.M. and Whyte, J.J. Totowa, NJ: Humana Press.

7. Samantha R. Cook and Elizabeth A. Stuart. Comment on "Does the Effect of Micronutrient Supplementation on Neonatal Survival Vary with respect to the Percentiles of the Birth Weight Distribution?" To appear in *Bayesian Analysis.*

8. Samantha R. Cook, Andrew Gelman, and Donald B. Rubin "Validation of Software for Bayesian Models using Posterior Quantiles." To appear in *Journal of Computational and Graphical Statistics.*

Working Papers

Samantha R. Cook and Donald B. Rubin. "Using Historical Control Data to Impute Missing Outcomes when Randomized Clinical Trials become Open-Label." Fits a model for disease progression in untreated historical patients and incorporates trends for specific parameters into an imputation model for placebo control patients' missing data.

Samantha R. Cook and Donald B. Rubin. "Principal Stratification for Surrogate Outcomes." Presents the topic of surrogate outcomes in the context of the Rubin Causal Model and discusses strategies for using surrogate outcomes to predict primary outcomes.

Samantha R. Cook and Donald B. Rubin. "Constructing Vague but Proper Prior Distributions for Complex Bayesian Models." Uses the relationship between prior and posterior means and variances to calculate a normal approximation to the likelihood function. A normal distribution that is diffuse relative to the estimated likelihood is used as a vague prior distribution.

Samantha R. Cook and Andrew Gelman. "Survey Weighting and Regression." Explores model-based alternatives to weighting for analyzing survey data, using Bayesian hierarchical regression and interaction modeling.

Consulting Experience

Columbia University Biostatistics Department/New York State Psychiatric Institute (2005 - present). Developing statistical methods to resolve heterogeneity in schizophrenia patients based on known subgroups, using Bayesian hierarchical mixture modeling. With Eva Petkova (Columbia Biostatistics Department/NYSPI), Dolores Malaspina (NYSPI), and Shane Jensen (University of Pennsylvania).

Genzyme Corporation (2002 - present). Developed a method to impute missing placebo controls' outcomes in an FDA Phase IV clinical trial after the trial became open label and some placebo controls began receiving active treatment. With Donald B. Rubin and Elizabeth Stuart (Harvard University).

Centers for Disease Control and Prevention (CDC; 2002 - present). Developing methods to multiply impute missing data in safety and efficacy trials of anthrax vaccine (AVA). With Donald B. Rubin (Harvard University), Constantine Frangakis (Johns Hopkins University), and Fabrizia Mealli (University of Florence).

Harvard University Anthropology Department (June, 2001 - August, 2002). Used missing data methods to predict the diets of extinct animals using data on tooth markings. With Donald B. Rubin (Harvard University) and Sherry Nelson (Harvard University).

Presentations

"Working Memory Impairments in Schizophrenia Patients: A Bayesian Item Response Theory Analysis." Psychiatric Biostatistics Seminar Series, Harvard University School of Public Health, April, 2002; Society for Multivariate Analysis in the Behavioural Sciences Biennial Meeting Conference, Jena University, July, 2004; International Meeting of the Psychometric Society, Tilburg University, July 2005.

"Statistical Inference for Causal Effects in Experiments and Observational Studies through Potential Outcomes," with Donald B. Rubin and Elizabeth Stuart. Short Course. April, 2003 (North Texas Chapter ASA); May, 2003 (Boston Chapter, ASA); August, 2003 (Joint Statistical Meetings); October, 2003 (FDA); June, 2004 (Karolinska Institute, Sweden); July, 2004 (Society for Multivariate Analysis in the Behavioural Sciences Biennial Meeting, Jena University, Germany).

"Using Historical Control Data to Impute Missing Outcomes when Clinical Trials become Open-Label." Boston University School of Public Health, VA Medical Center, September, 2003; Worcester Polytechnic Institute, Mathematical Sciences Department, October, 2003; Joint Statistical Meetings, Toronto, August, 2004; University of Pennsylvania, Statistics Department, October, 2004; New York State Psychiatric Institute, February, 2005.

"Validation of Software for Bayesian Models using Posterior Quantiles." New Researchers' Conference, Minneapolis, MN, August, 2005; Joint Statistical Meetings, Minneapolis, MN, August, 2005.

Discussion of "Does the Effect of Micronutrient Supplementation on Neonatal Survival Vary with respect to the Percentiles of the Birth Weight Distribution?" Case Studies in Bayesian Statistics Workshop VIII, Carnegie Mellon University, September, 2005.

Teaching Experience

Instructor, Universitat Pompeu Fabra (January, 2006 - April, 2006)
Introductory Statistics

Instructor, Columbia University (January, 2005 - May, 2005)
Statistics W4315 Linear Regression Models

Teaching Consultant, Bok Center for Teaching and Learning at Harvard University (September, 2000 - May, 2004)

Teaching Fellow, Harvard University (September, 1999 - May, 2004)

Statistics 110 Introduction to Probability

Statistics 111 Introduction to Theoretical Statistics

Statistics 110 Introduction to Probability, head Teaching Fellow

Statistics 102 Introduction to Biostatistics

Quantitative Reasoning 33 Causal Inference

Statistics 101 Introduction to Quantitative Methods

Journal Refereeing

Bayesian Analysis
Journal of the American Statistical Association
Journal of Computational and Graphical Statistics
Journal of Statistical Planning and Inference
Metron
Psychological Methods
Psychometrika
Statistica Neerlandica
Statistics in Medicine

References

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