

# Brian J. Reich

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- CONTACT INFORMATION      NCSU Department of Statistics      Phone: (919) 513 - 7686  
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Raleigh, NC 26795      Webpage: www4.stat.ncsu.edu/~reich
- EDUCATION      **University of Minnesota**, Minneapolis, Minnesota  
Ph.D., Biostatistics, 2005.  
M.S., Biostatistics, 2002.  
**University of Wisconsin - River Falls**, River Falls, Wisconsin  
B.S., Mathematics, 1999.
- PROFESSIONAL EXPERIENCE      2008–Present      *Assistant Professor*, Department of Statistics, NCSU.  
2005–2008      *Postdoctoral fellow*, Department of Statistics, NCSU.
- HONORS AND AWARDS      *Technometrics* Invited Lecture, JSM, 2009.  
Travel award to ENAR Workshop for Junior Researchers, 2009.  
International Society for Disease Surveillance Technical Contest, 2nd place, 2008.  
Outstanding Teaching Assistant Award, University of Minnesota, 2005.  
ENAR Distinguished Student Paper Award, 2005.
- COURSES TAUGHT      Applied Spatial Statistics, Spring 2012.  
Introduction to Probability and Distribution Theory, Spring 2011.  
Bayesian Inference, Fall 2008–2011.  
Statistics for Management and the Social Sciences II, Fall 2007, 2010–2011.  
Introduction to Regression Analysis, Fall 2010–2011.  
Preparation for Statistical Research, Spring 2007–2009.  
Economics and Business Statistics, Fall 2005–2006.  
SAS Computing Lab (UMN), Spring 2004.
- PUBLICATIONS      **Reich BJ**. Spatiotemporal quantile regression for detecting distributional changes in environmental processes. Accepted, *Journal of the Royal Statistical Society: Series C*.  
  
Chang HH, **Reich BJ**, Miranda ML. Fine Particle Air Pollution and Preterm Birth in North Carolina, 2001–2005 (with discussion). Accepted, *American Journal of Epidemiology*.  
  
Chang HH, **Reich BJ**, Miranda ML. Response to “Epidemiology studies of the health associations of environmental exposures on preterm births. Accepted, *American Journal of Epidemiology*.  
  
Fuentes M, Henry JB, **Reich BJ**. Nonparametric Spatial Models for Extremes: Application to Extreme Temperature Data. Accepted, *Extremes*.

**Reich BJ**, Eidsvik J, Guindani M, Nail AJ, Schmidt AM. A class of covariate-dependent spatiotemporal covariance functions for the analysis of daily ozone concentrations. Accepted, *Annals of Applied Statistics*.

**Reich BJ**, Kalendra E, Storlie CB, Bondell HD, Fuentes M. Variable selection for high-dimensional Bayesian density estimation: Application to human exposure simulation. Accepted, *Journal of the Royal Statistical Society: Series C*.

Pati D, **Reich BJ**, Dunson DB. Bayesian geostatistical modeling with informative sampling locations. Accepted, *Biometrika*.

Modlin D, Fuentes M, **Reich BJ**. Circular conditional autoregressive modeling of vector fields. Accepted, *Environmetrics*.

**Reich BJ**, Li L, Bondell HD. Sufficient Dimension Reduction via Bayesian Mixture Modeling. Accepted, *Biometrics*.

Havard S, **Reich BJ**, Bean K, Chaix B. Social Inequalities in Residential Exposure to Road Traffic Noise: An Environmental Equity Analysis Based on the RECORD Cohort Study. Accepted, *Occupational and Environmental Medicine*.

**Reich BJ**, Bondell HD. A spatial Dirichlet process mixture model for clustering population genetics data. Accepted, *Biometrics*.

Storlie CB, Bondell HD, **Reich BJ**, Zhang HH. Surface estimation, variable selection, and the nonparametric oracle property. Accepted, *Statistica Sinica*.

**Reich BJ**, Fuentes M (2012). Nonparametric Bayesian models for a spatial covariance. *Statistical Methodology*, **9**, 265-274.

**Reich BJ**, Haran M (2011). Guest editors' introduction to the special issue on computer models and spatial statistics for environmental science. *Journal of Agricultural, Biological, and Environmental Sciences*, **16**, 451-452.

Bandyopadhyay D, **Reich BJ**, Slate E (2011). A spatial beta-binomial model for clustered count data on dental caries. *Statistical Methods in Medical Research*, **20**, 85-102.

**Reich BJ**, Fuentes M, Dunson DB. Bayesian spatial quantile regression (2011). *Journal of the American Statistical Association*, **106**, 6-20.

Bondell HD, **Reich BJ**, Wang H (2010). Non-crossing quantile regression curve estimation. *Biometrika*, **97**, 825-838.

Hayashi K, Mizoguchi I, Lee SP, **Reich BJ** (2010). Development of a novel statistical model for mandibular kinematics. *Medical Engineering and Physics*, **32**, 423-428.

Storlie CB, Bondell HD, **Reich BJ** (2010). A locally adaptive penalty for estimation of functions with varying roughness. *Journal of Computational and Graphical Statistics*, **19**,

569–589.

**Reich BJ**, Fuentes M, Herring AH, Evenson KR (2010). Bayesian variable selection for multivariate spatially-varying coefficient regression. *Biometrics*, **66**, 772-782.

Hodges JS, **Reich BJ** (2010). Adding spatially-correlated errors can mess up the fixed effect you love. *The American Statistician*, **64**, 325–334.

**Reich BJ**, Bandyopadhyay D (2010). A latent factor model for spatial data with informative missingness. *Annals of Applied Statistics*, **4**, 439–459.

**Reich BJ**, Bondell HD, Wang H (2010). Flexible Bayesian quantile regression for independent and clustered data. *Biostatistics*, **11**, 337-352.

Bandyopadhyay D, **Reich BJ**, Slate E (2009) . Bayesian modeling of multivariate spatial binary data with applications to dental caries. *Statistics in Medicine*, **28**, 34923508.

**Reich BJ**, Storlie CS, Bondell HD (2009). Variable selection in Bayesian smoothing spline ANOVA models: Application to deterministic computer codes. *Technometrics*, **51**, 110-120.

**Reich BJ**, Fuentes M, Burke J (2009). A Bayesian analysis of the effects of particulate matter using a human exposure simulator. *Environmetrics*, **20**, 131-146.

Bondell HD, **Reich BJ**. (2009) Simultaneous factor selection and collapsing of levels in ANOVA. *Biometrics*, **69**, 169-177.

Hayashi K, **Reich BJ**, DeLong R, Lee SP, Mizoguchi I (2009). A novel statistical model for mandibular helical axis analysis. *Journal of Oral Rehabilitation*, **36**, 102–109.

Costalonga M, Batas L, **Reich BJ** (2009). Effects of Toll-Like Receptor-4 in Porphyromonas gingivalis-induced bone loss. *Journal of Periodontal Research*, **44**, 537–542.

Choi J, Fuentes M, **Reich BJ** (2009). Spatial-temporal association between fine particulate matter and daily mortality. *Journal of Computational and Graphical Statistics*, **53**, 2989-3000.

Choi J, **Reich BJ**, Fuentes M, Davis JM (2009). Multivariate spatial-temporal modeling and prediction of speciated fine particles. *Journal of Statistical Theory and Practice*, **3**, 407–418.

Fuentes M, **Reich BJ**, Lee G (2008). Spatial-temporal mesoscale modeling of rainfall intensity using gage and radar data, *The Annals of Applied Statistics*, **4**, 1148–1169.

**Reich BJ**, Hodges JS (2008). Modeling longitudinal spatial periodontal data: A spatially-adaptive model with tools for specifying priors and checking fit. *Biometrics*, **64**, 790–799.

Bondell HD, **Reich BJ** (2008). Simultaneous regression shrinkage, variable selection and clustering of predictors with OSCAR. *Biometrics*, **64**, 115–123.

**Reich BJ**, Hodges JS (2008). Identification of the variance components in the general two-variance linear model. *Journal of Statistical Planning and Inference*, **138**: 1592–1604.

**Reich BJ**, Fuentes M (2007). A multivariate nonparametric Bayesian spatial framework for hurricane surface wind fields. *The Annals of Applied Statistics*, **1**: 249–264.

**Reich BJ**, Fuentes M (2007). Non-Gaussian Bayesian spatial modeling of hurricane surface wind fields. *In the proceedings of the International Statistical Institute Conference*, IMP08, Lisboa, 2007.

**Reich BJ**, Hodges JS, Carlin BP (2007). Spatial analysis of periodontal data using conditionally autoregressive priors having two types of neighbor relations. *Journal of the American Statistical Association*, **102**: 44–55.

**Reich BJ**, Hodges JS, Zadnik V (2006). Effects of residual smoothing on estimation of the fixed effects in disease-mapping models. *Biometrics*, **62**: 1197–1206.

**Reich BJ**, Hodges JS, Carlin BP, Reich AM (2006). Spatial analysis of Sam Cassell's 2003–2004 shot chart data. *American Statistician*, **60**: 3–12.

Zadnik V, **Reich BJ** (2006). Analysis of the relationship between socioeconomic factors and stomach cancer incidence in Slovenia. *Neoplasma*, **53**: 103–10.

Allen SS, Britnell D, Hatsukami DK, **Reich BJ** (2004). Energy intake and physical activity during short-term smoking cessation in post-menopausal women. *Addictive Behaviors*, **29**: 947–951.

Lemmonds CA, Mooney M, **Reich BJ**, Hatsukami D (2004). Characteristics of cigarette smokers seeking treatment for cessation versus reduction. *Addictive Behaviors*, **29**: 357–364.

SUBMITTED  
PAPERS

Fuentes M, **Reich BJ**. Multivariate spatial nonparametric modeling via kernel processes mixing.

Chang H, **Reich BJ**, Miranda ML. Spatial time-to-event analysis of fine particulate matter and preterm birth.

**Reich BJ**, Berrocal VJ. Local Bayesian model averaging for numerical model calibration.

**Reich BJ**, Shaby B. A finite-dimensional construction of a max-stable process for spatial extremes.

Eidsvik J, Shaby B, **Reich BJ**. Estimation and prediction in spatial models with block composite likelihoods using parallel computing.

Bondell HD, **Reich BJ**. Consistent high-dimensional Bayesian variable selection via penalized credible regions.

**Reich BJ**, Cooley D, Foley KM, Napelenok SL, Shaby BA. Extreme value analysis for evaluating ozone control strategies.

Storlie CB, **Reich BJ**, Helton JC, Swiler LP. Analysis of Computationally Demanding Models with Continuous and Categorical Inputs.

Boehm L, **Reich BJ**, Bandyopadhyay D. Bridging conditional and marginal inference for spatially-referenced binary data.

Foley KM, Reich BJ, Napelenok SL. Estimating the probability of exceeding air quality standards using Bayesian analysis of a reduced-form air quality model.

BOOK  
CHAPTERS

**Reich BJ**, Fuentes M (2011). Accounting for design in the analysis of spatial data. *Spatio-temporal design: Advances in efficient data acquisition*. Wiley.

Fuentes M, **Reich BJ** (2009). Spectral Analysis for Spatial Data. *Handbook of Spatial Statistics*. CRC Press.

INVITED  
PRESENTATIONS

SAMSI Workshop on Uncertainty Quantification, Asheville, NC, January 2012.

Joint Statistical Meetings, Miami, FL, August 2011.

Workshop on Environmental Risk and Extreme Events, Ascona, Switzerland, July 2011.

The Seventh Conference on Extreme Value Analysis, Lyon, France, July 2011.

U.S. EPA, Research Triangle Park, NC, May 2011.

International Indian Statistical Association Annual Meeting, Raleigh, NC, April 2011.

NCSU Scope Lecture Series, Raleigh, NC, April 2011.

SAMSI transition workshop, RTP, NC, October, 2010.

The International Environmetrics Society Annual Meeting, Venezuela, June 2010.

New England Statistics Symposium, Cambridge, MA, April 2010.

Harvard University, Department of Biostatistics, April, 2010.

SAMSI Workshop on Environmental Risk, RTP, NC, April, 2010.

Chilean Biometric Conference, Santiago, Chile, January, 2010.

Chilean Dental Statistics Meeting, Santiago, Chile, January, 2010.

Conference on Geomedical Systems, Charleston, SC, November 2009.

The University of South Carolina, Department of Statistics, November 2009.

Duke University, Division of Statistical Sciences, November 2009.

North Carolina State University, Department of Statistics, October 2009.

Joint Statistical Meetings, Washington, DC, August 2009.

North Carolina State University, Undergraduate Statistics Club, March 2009.

University of New Mexico, Department of Mathematics and Statistics, March 2009.

Joint Statistical Meetings, Denver, CO, August 2008.

Indian Statistical Institute Annual Meeting, Storrs, CT, March 2008.

North Carolina State University, Department of Statistics, October 2006.

The International Environmetrics Society Annual Meeting, Kalmar, Sweden, June 2006.

North Carolina State University, Department of Statistics, September 2005.

CONTRIBUTED  
PRESENTATIONS

Joint Statistical Meetings, Salt Lake City, UT, August 2007.

Spring Lecture Series, Fayetteville, AR, April, 2007.

Joint Statistical Meetings, Seattle, WA, August 2006.  
Biometric Society (ENAR) Regional Meeting, Tampa, FL, March 2006.  
Joint Statistical Meetings, Minneapolis, MN, August 2005.  
Biometric Society (ENAR) Regional Meeting, Austin, TX, March 2005.  
IMS/ISBA Joint Meeting, Bormio, Italy, January, 2005.

GRANT  
ACTIVITY

Robust Spatial Models for Periodontal Data (2011-2013). National Institute of Dental and Craniofacial Research. PI (joint with Bandyopadhyay). Total funding, \$45,423.

Space-time Modeling for Linking Climate Change, Pollutant Exposure, Built Environments, and Health Outcomes (2010-2015). National Institutes of Health. Co-PI. Total funding, \$1,204,878.

Statistical Methods for Spatiotemporal Crime Series Linkage Analysis (2011-2013). National Institute of Justice. Co-PI. Total funding, \$36,317.

Multivariate nonstationary spatial extremes in climate and atmospheric (2009–2010). National Science Foundation. Co-PI. Total funding, \$325,000.

A spatial-temporal modeling approach for evaluating the impact of environmental stressors, in conjunction with human activity, on human health outcomes (2007–2010). US Environmental Protection Agency, Co-Investigator. Total funding, \$893,439.

Multivariate space-time models and methods to combine large disparate spatial data and numerical models (2007–2010). National Science Foundation. Co-PI. Total funding, \$260,000.

PROFESSIONAL  
ACTIVITIES

**Associate Editor:** Annals of Applied Statistics (2011-present); Journal of Agricultural, Biological, and Environmental Statistics (2011-present).

**Guest Co-Editor:** Journal of Agricultural, Biological, and Environmental Statistics, special issue on “Computer models and spatial statistics for environmental science”, 2011.

**Journal Referee:** American Journal of Epidemiology; The American Statistician; Annals of Applied Statistics; Applied Statistics; Atmospheric Environment; Bayesian Analysis; Biometrics; Computational Statistics and Data Analysis; Environmetrics; Environmental and Ecological Statistics; IEEE Transactions on Power Systems; Journal of Agricultural, Biological, and Environmental Statistics; Journal of the American Statistical Association: Applications and Case Studies; Journal of the American Statistical Association: Theory and Methods; Journal of Computational and Graphical Statistics; Journal of Multivariate Analysis; Journal of Quantitative Analysis in Sports; Journal of Statistical Planning and Inference; Journal of the Royal Statistical Society: Series B; Spatial and Spatiotemporal Epidemiology; Statistical Methods in Medical Research; Statistics in Medicine; Technometrics.

**Proposal Reviewer:** NSF CAREER Award (2008); NSF Geography and Spatial Sciences Program (2011).

**Society Member:** American Statistical Association; The International Environmetrics Society; International Society for Bayesian Analysis; International Biometric Society.

**PhD Committee Member:** Jungsoon Choi (Statistics, 2008); Elizabeth Nelson (Statistics, 2009); Carl DiCasoli (Statistics, 2009); John White (Statistics, 2010); Eric Kalendra (Statistics, 2010); Dhruv Sharma (Statistics, 2010); Yu-Cheng Ku (Statistics, 2010); Shenek Alston (Statistics, 2010); Donna Hollar (Civil engineering, 2011); Muhtar Osman (Statistics, 2011); Joshua Warren (Statistics, 2011); Jiangdian Wang (Statistics, 2011); Zifang Guo (Statistics, 2011); Eric Reyes (Statistics, 2011); Danny Modlin (Statistics, expected, 2012); Justin Post (Statistics, expected, 2012); Qian Chen (Electrical Engineering, expected, 2012); Ian Fiske (Statistics, expected, 2012); Samuel Wilson (Statistics, expected, 2013); Beth Ann Tidemann-Miller (Statistics, expected, 2013); Deidra Coleman (Statistics, expected, 2013).

**MS Committee Member:** Mike Waine (Fisheries and Wildlife Sciences, 2010); Andrew Beam (Statistics, 2011); Jared Flowers (Fisheries and Wildlife Sciences, expected, 2013); Paul Rudershausen (Fisheries and Wildlife Sciences, expected, 2014); Morgan Elfelt (Fisheries and Wildlife Sciences, expected, 2014).

**Departmental Committees:** PhD preliminary written exam committee member (2009, 2011); Beach trip committee chair (2009); Search committee member (2010); Seminar committee member (2010); Basis exam committee member (2012).

**Seminar Organizer:** NCSU environmental statistics seminar series (2011-2012).

**Conference Organizer:** Workshop on Environmetrics, Raleigh, NC (2012).

**Conference Committees:** Section on Bayesian Statistical Science Student Award Selection Committee member (2011, 2012); Environmetrics representative on the ENAR Program Committee (2012).

**Session Chair:** Session on Environmental Health Effects (2007), Joint Statistical Meetings, Salt Lake City, UT; Statistical Methods for Clinical Trials (2008), Joint Statistical Meetings, Denver, CO; Random Effect Specification/Misspecification in Spatial/Spatio-Temporal Health Modeling (2009), Joint Statistical Meetings, Washington, DC; Particulate Matter Air Policy Standards: From Statistical Evidence to Federal Policy (2009), Joint Statistical Meetings, Washington, DC; Sampling and Modeling Environmental Spatial Data (2010), Joint Statistical Meetings, Vancouver, BC; Special invited session (2011), International Indian Statistical Association Annual Meeting, Raleigh, NC.

**Session Organizer:** Particulate Matter Air Policy Standards: From Statistical Evidence to Federal Policy (2009), Joint Statistical Meetings, Washington, DC; Geostatistical modeling for environmental data (2010), Joint Statistical Meetings, Vancouver, BC. Computer models and spatial statistics for environmental science (2012), Joint Statistical Meetings, San Diego, CA.

**Working group leader:** Spatial health effects research group, SAMSI workshop on spatial statistics (2009-2010); Model-based geostatistics research group, SAMSI workshop on

spatial statistics (2009-2010).

**Faculty Advisor:** Student Consulting projects for ST841 (NCSU), Spring 2008-2010; Industrial Mathematical and Statistical Modeling Workshop for Graduate Students, Summer 2009; Pack promise academic coach for first-year students whose parental income is at or below 150 percent of poverty level, Fall 2009.