

# Brian J. Reich

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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 with minor in Computer Science, 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      Bayesian Inference, Fall 2008–2009.  
Preparation for Statistical Research, Spring 2007–2009.  
Statistics for Management and the Social Sciences II, Fall 2007.  
Economics and Business Statistics, Fall 2005–2006.  
SAS Computing Lab (UMN), Spring 2004.

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

PUBLICATIONS      **Reich BJ**, Bondell HD, Wang H. Flexible Bayesian quantile regression for independent and clustered data. Accepted, *Biostatistics*.

**Reich BJ**, Bandyopadhyay D. A latent factor model for spatial data with informative missingness. Accepted, *Annals of Applied Statistics*.

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

**Reich BJ**, Fuentes M, Herring AH, Evenson KR. Bayesian Variable Selection for Multivariate Spatially-Varying Coefficient Regression. Accepted, *Biometrics*.

Porter MD, Niemi JB, **Reich BJ**. Mixture likelihood ratio scan statistic for disease outbreak detection. Accepted, *Advances in Disease Surveillance*.

Bandyopadhyay D, **Reich BJ**, Slate E. Bayesian Modeling of Multivariate Spatial Binary Data with applications to Dental Caries. Accepted, *Statistics in Medicine*.

**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

Storlie CB, Bondell HD, **Reich BJ**. A Locally Adaptive Penalty for Estimation of Functions with Varying Roughness.

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

Fuentes M, Henry JB, **Reich BJ**. Nonparametric Spatial Models for Extremes: Application to Extreme Temperature Data.

**Reich BJ**, Fuentes M, Dunson DB. Bayesian spatial quantile regression.

**Reich BJ**, Bondell HD. A Bayesian spatial model for genetic clustering.

**Reich BJ**, Kalendra E, Storlie CB, Bondell HD, Fuentes M. Variable selection for high-dimensional Bayesian density estimation: Application to human exposure simulation.

Bondell HD, **Reich BJ**, Wang H. Non-crossing quantile regression curve estimation.

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

NON-REFEREED  
PAPERS

Byrne E, Choib H, Laungrungrongc B, Lomusciod M, Samarakoone N, Sunf J, Langstaff J, **Reich BJ** (2009). Modeling the effects of air pollution on public health. Industrial Mathematical and Statistical Modeling Workshop Report.

INVITED  
PRESENTATIONS

**Reich BJ**, Bandyopadhyay D. A latent factor model for spatial data with informative missingness. GEOMED 2009 - Conference on Geomedical Systems, Charleston, SC, November

2009.

Bayesian spatial quantile regression. Duke University, Division of Statistical Sciences, November 2009.

Bayesian spatial quantile regression. The University of South Carolina, Department of Statistics, November 2009.

Bayesian spatial quantile regression. North Carolina State University, Department of Statistics, October 2009.

Variable Selection in Bayesian Smoothing Spline ANOVA Models: Application to Deterministic Computer Codes. Joint Statistical Meetings, Washington, DC, August 2009.

A Bayesian analysis of the effects of particulate matter using a human exposure simulator. North Carolina State University, Undergraduate Statistics Club, March 2009.

Variable selection in Bayesian smoothing spline ANOVA models. University of New Mexico, March 2009.

Bayesian Modeling of Multivariate Spatial Binary Data: Applications to Dental Epidemiology. Joint Statistical Meetings, Denver, CO, August 2008.

Bayesian Variable Selection for Multivariate Spatially-Varying Coefficient Regression: Application to Physical Activity in Pregnancy. Indian Statistical Institute, Storrs, CT, March 2008.

A review of Bayesian variable selection. North Carolina State University, Department of Statistics, October 2006.

A Bayesian analysis of the effects of particulate matter using a human exposure simulator. The International Environmetrics Society Annual Meeting, Kalmar, Sweden, June 2006.

Effects of residual smoothing on estimation of the fixed effects in disease-mapping models. North Carolina State University, Department of Statistics, September 2005.

CONTRIBUTED  
PRESENTATIONS

A multivariate nonparametric Bayesian spatial framework for hurricane surface wind fields. Joint Statistical Meetings, Salt Lake City, UT, August 2007.

A multivariate nonparametric Bayesian spatial framework for hurricane surface wind fields. Spring Lecture Series, Fayetteville, AR, April, 2007.

Spatiotemporal analysis of longitudinal periodontal data. Joint Statistical Meetings, Seattle, WA, August 2006.

A Bayesian analysis of the effects of particulate matter using a human exposure simulator. Biometric Society (ENAR) Regional Meeting, Tampa, FL, March 2006.

Spatial analysis of Sam Cassell's 2003-2004 shot chart data. Joint Statistical Meetings, Minneapolis, MN, August 2005.

Spatial analysis of periodontal data using conditionally autoregressive priors having two types of neighbor relations. Biometric Society (ENAR) Regional Meeting, Austin, TX, March 2005.

GRANT  
SUPPORT

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).

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

Multivariate nonstationary spatial extremes in climate and atmospherics (2010–2012). National Science Foundation, Co-PI (Total funding \$325,000).

PROFESSIONAL  
ACTIVITIES

**Journal Referee:** American Journal of Epidemiology; The American Statistician; Annals of Applied Statistics; Applied Statistics; Atmospheric Environment; Bayesian Analysis; Biometrics; Environmetrics; Environmental and Ecological Statistics; 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 Quantitative Analysis in Sports; Technometrics; Journal of Statistical Planning and Inference; Spatial and Spatiotemporal Epidemiology; Statistics in Medicine.

**Proposal Reviewer:** NSF CAREER Award, 2008.

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

**PhD Committee Member:** Jungsoon Choi (Statistics, 2008); Donna Hollar (Civil Engineering, expected, 2009); Elizabeth Nelson (Statistics, expected, 2009); Carl DiCasoli (Statistics, expected, 2009); Ian Fiske (Statistics, expected, 2009); Dhruv Sharma (Statistics, expected, 2009); Shenek Alston (Statistics, expected, 2009); Eric Kalendra (Statistics, expected, 2010); Danny Modlin (Statistics, expected, 2010).

**Departmental Committee Member:** PhD Preliminary Written Exam Committee (2009); Beach Trip Committee Chair (2009).

**Working group leader:** Spatial health effects research group. SAMSI workshop on spatial statistics (2009).

**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.

**Session Organizer:** Particulate Matter Air Policy Standards: From Statistical Evidence to Federal Policy (2009), Joint Statistical Meetings, Washington, DC.

**Faculty Advisor:** Industrial Mathematical and Statistical Modeling Workshop for Graduate Students, 2009; Pack promise academic coach for first-year students whose parental income is at or below 150 percent of poverty level, 2009.