Chanmin Kim

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Research Interests

Bayesian nonparametric methods and Machine learning
Causal modeling and Causal mechanism
Policy Evaluation, Environmental statistics, and behavioral sciences

Current Position

Boston University, Department of Biostatistics, Boston, MA
Assistant Professor of Biostatistics, Sep 2017 -

Education / Training

Harvard University, Department of Biostatistics, Boston, MA
Research Associate & Postdoctoral Research Fellow July 2014 - Aug 2017
Project: *Developing Bayesian causal inference methods for evaluating air pollution regulatory policies.*
Mentor: Corwin M. Zigler, Ph.D.

University of Florida, Gainesville, FL
Ph.D., Statistics Aug 2013
Thesis: *Bayesian methods for inference on the causal effects of mediation.*
Advisor: Michael J. Daniels, Sc.D.

Columbia University in the City of New York, New York, NY
M.A., Statistics May 2008

Sogang University, Seoul, Korea
B.B.A., B.A., Business and History (Double Major) Feb 2006
Magna Cum Laude the second highest GPA in the department.

Research and Professional Experience

Postdoctoral Research Fellow Aug 2013 - Jun 2014
Department of Integrative Biology, The University of Texas, Austin
- Developed Bayesian nonparametric methods for causal mediation in various settings (single, multiple, or longitudinal mediators).
Mentor: Michael J. Daniels, Sc.D.

Research Assistant Jan 2010 - Jul 2013
Department of Statistics, University of Florida
- Causal mediation analysis in the TOURS project (weight management trial) and the Rural LITE project.
Supervisor: Michael J. Daniels, Sc.D.

Research Assistant Jan 2007 - Dec 2007
Applied Statistics Center, Columbia University

Employee, Samsung Electronics, South Korea Jan 2006 - May 2006
- Worked at the HR headquarters of the Tele-Communication Business Division which is in charge of Samsung's cell phone business.

Internship, Bearing Point Consulting formerly KPMG Korea Jul 2004 - Aug 2004
- As a member of PMO, evaluated daily outputs for a project to construct a new banking system for Korean Exchange Bank (KBE). Worked with 600 IT experts.

Refereed Journal Publications

Publication in Statistical Methodology

Kim, C., Daniels, M. J., Hogan, J. W., Choirat, C., Zigler, C. M. Bayesian Methods for Multiple Mediators: Relating Principal Stratification and Causal Mediation in the Analysis of Power Plant Emission Controls, *awarded ASA 2017 Biometrics section travel award*; [arXiv], ***Annals of Applied Statistics***, To appear.

Kim, C., Deviance Information Criteria for Mixtures of Distributions, ***Communications in Statistics - Simulation and Computation***, 2019, DOI:10.1080/03610918.2019.1617878.

Liu, Y., **Kim, C.**, Wu, A. D., Gustafson, P., Zumbo, B. D. Investigating Causal Differential Item Functioning (DIF) via Propensity Scores Methods, ***Journal of Modern Applied Statistical Methods***, To appear.

Kim, C., Daniels, M. J., Li, Y., Milbury, K., Cohen, L., A Bayesian Semiparametric Latent Variable Approach to Causal Mediation, ***Statistics in Medicine***, 37(7), 1149-1161, 2018.

Kim, C., Daniels, M.J., Marcus, B., Roy, J., A framework for Bayesian nonparametric inference for causal effects of mediation, ***Biometrics***, 73(2), 401-409, 2017.

Zigler, C. M., **Kim, C.**, Choirat, C. Hansen, J. B., Wang, Y., Hund, L., Samet, J., King, G., Dominici, F., Causal Inference Methods for Estimating Long-Term Health Effects of Air Quality Regulations, ***Health Effects Institute Research Report***, 187, 5-49, 2016 (peer-reviewed).

Daniels, M. J., Roy, J., **Kim, C.**, Hogan, J. W., Perri, M., Bayesian Inference for the Causal Effects of Mediation, ***Biometrics***, 68(4), 1028-1036, 2012.

Collaborative Publications

Nguyen, M., Feeney, T., **Kim, C.**, Drake, T., Mitchell, S., Bednarczyk, M., Sanchez, S., Differential Utilization of Palliative Care Consultation between Medical and Surgical Services, ***American Journal of Hospice and Palliative Medicine***, To appear.

Mahalingaiah, S., Lane, K.J., **Kim, C.**, Cheng, J., Hart, J., Impacts of Air Pollution on Gynecologic Disease: Infertility, Menstrual Irregularity, Uterine Fibroids, and Endometriosis: a Systematic Review and Commentary, ***Current Epidemiology Reports***, 5(3), 197-204, 2018.

Zhang, Z., Zheng, C., **Kim, C.**, Van Poucke, S., Lin, S., Lan, P., Causal Mediation Analysis in the Context of Clinical Research, ***Annals of Translational Medicine***, 4(21), 1-20, 2016.

Perri, M., Limacher, M., von Castel-Roberts, K., Daniels, M., Durning, P., Janicke, D., Bobroff, L., Radcliff, T., Milsom, V., **Kim, C.**, Martin, A., Comparative Effectiveness of Three Doses of Weight Loss Counseling: Two-Year Findings from the Rural LITE Trial, ***Obesity***, 22, 2293-2300, 2014.

Manuscripts Submitted or Under Revision

Kim, C., Henneman, L., Choirat, C. Zigler, C. M., Health Effects of Power Plant Emissions through Ambient Air Quality, invitation to revise from ***Journal of the Royal Statistical Society: Series A***, resubmitted after revision.

Kim, C., Zigler, C. M., Daniels, M. J., Choirat, C., Roy, J. A., Bayesian Longitudinal Causal Inference in the Analysis of the Public Health Impact of Pollutant Emissions [arXiv], submitted to ***Journal of the American Statistical Association***.

Cummiskey, K., **Kim, C.**, Choirat, C., Schwartz, J., Zigler, C. A Source-Oriented Approach to Coal Combustion $PM_{2.5}$ Health Effects [arXiv], under revision.

Liu, Y., Wu, A. D., Hubley, A. M., **Kim, C.**, Chen, Y., Beliveau, A., Zumbo, B. D., Understanding Item Response Processes of CES-D from a Social-Cognitive Perspective via Bayesian Mixed Effects Models, submitted

Liu, Y., Beliveau, A., Besche, H., Zhang, X., Stefan, M., Gutlerner, J., **Kim, C.**, Analytical Strategies for Modeling Open Online Formative Assessment Data, submitted

Papers in Preparation

Kim, C., Hogan, J. W., Marcus, B., Daniels, M. J., A Framework for Causal Inference for Multiple Mediators, In preparation (draft available upon request).

Kim, C., Lin, X., Edwards, D., Nelson, K., Measuring Rater Bias in Diagnostic Tests with Ordinal Ratings (draft available upon request).

Kim, C., An Efficient Bayesian inference for Gaussian copula in Causal Inference, In preparation

Unrefereed Publications

Kim, C., Choi, S. *Marginal Structural Models for the Causal Effects of Higher Education Rates on Cancer Mortality*, Proceedings of Joint Meeting of the IASC Satellite Conference and the 8th Conference of the Asian Regional Section of the IASC, 424-428, 2013.

Package / Software

BNPMediation, an R package. Implements Bayesian nonparametric methods to estimate the causal effects of mediation. Available in CRAN.

BayesODT, an R package. Implements Bayesian hierarchical model to measure rater bias for ordinal classification processes. Available in lit777.github.io.

Awards

Honors

ASA Biometrics Section Paper Award — Aug 2017
- Invited to present the paper at the 2017 JSM

Winner (1st place), 2013 IASC data analysis competition — Aug 2013
- Invited to present the result at the joint meeting of the IASC Satellite Conference for the 59th ISI WSC and the 8th Conference of the Asian regional section of the IASC, Seoul, Korea (22-23 August 2013)

Honorable Mention, NSF research day poster competition, UF — Oct 2011

3rd Place, Human Consulting Group case competition, NEMO Partners, South Korea — May 2003

Travel Awards

Sackler Travel Award (granted by NSF) Mar 2015
for the Sackler Colloquium Drawing Causal Inference from Big Data, D.C.

Graduate Student Council (GSC) at UF May 2013
for 2013 Atlantic Causal Inference Conference, Boston, MA

College of Liberal Arts and Sciences (CLAS) at UF May 2013
for 2013 Atlantic Causal Inference Conference, Boston, MA

Boyd Harshbarger Travel Award (granted by NSF) Jun 2012
for SRCOS 2012 Summer Research Conference, GA

College of Liberal Arts and Sciences (CLAS) at UF May 2012
for 2012 Atlantic Causal Inference Conference, Baltimore, MD

Centre de recherches mathématiques (CRM) at University of Montreal May 2011
for Workshop on Causal Inference in Health Research, Canada

Graduate Student Council (GSC) at UF May 2011
for Workshop on Causal Inference in Health Research, Canada

Presentations

Invited Talks

Bayesian Causal Inference Workshop, Ohio State University, OH, June 2019
(cancelled)
-*Health Effects of Power Plant Emissions through Ambient Air Quality*

Atlantic Causal Inference Conference, McGill University, Canada, May 2019
-*Health Effects of Power Plant Emissions through Ambient Air Quality*

Institute for Computational and Experimental Research in Mathematics, Brown University, RI, Jan 2019
-*Bayesian Methods for Multiple Mediators: Principal Stratification and Causal Mediation Analysis*

Graduate School of Future Strategy, KAIST, Daejeon, Korea Aug 2018
-*Bayesian Methods for Causal Mediation: Causal Inference in the Analysis of Power Plant Emission Control Policies*

2018 Joint Statistical Meeting, Vancouver, Canada Aug 2018
-*Bayesian longitudinal causal inference in the analysis of the public health impact of air pollution*

The 3rd ISBA-EAC Conference , Seoul, Korea Jul 2018
-*Bayesian longitudinal causal inference in the analysis of the public health impact of air pollution*

2018 ICSA China Conference with the Focus on Data Science, Qingdao, Shangdong, China Jul 2018
-*Bayesian nonparametric causal inference methods for health outcomes*

2018 IISA International Conference on Statistics, Gainesville, FL May 2018
-*Bayesian longitudinal causal inference in the analysis of the public health impact of*

air pollution

Statistics and Probability Seminar Series, Boston University, MA Apr 2018
-*Bayesian Methods for Multiple Intermediate Variables: Principal Stratification and Causal Mediation Analysis*

Biostatistics Student Association (BSA) Seminar, Boston University, MA Nov 2017
-*A Bayesian Semiparametric Latent Variable Approach to Causal Inference*

Global Health Research Seminar Series, Boston University, MA Oct 2017
-*Bayesian methods for Causal Inference and Mediation Analysis*

Environmental Statistics Seminar, Harvard University, MA May 2017
-*Public Health Impact of Pollutant Emissions*

The 31st New England Statistics Symposium, Univ. of Connecticut, CT Apr 2017
-*Public Health Impact of Pollutant Emissions*

Department of Biostatistics, Boston University, MA Feb 2017
-*Bayesian Methods for Causal Mediation Analysis*

Department of Biostatistics and Bioinformatics, Duke University, NC Jan 2017
-*Bayesian Methods for Causal Mediation Analysis*

Department of Biostatistics, Indiana University, Indianapolis, IN Jan 2017
-*Bayesian Methods for Causal Mediation Analysis*

Div. of Sleep and Circadian Disorders, Brigham and Women's Hospital Nov 2016
-*Bayesian Methods for Causal Mediation Analysis*

P01 Retreat, Harvard University Oct 2016
-*Bayesian Latent Mediation Model*

Department of Statistics, SungKyunKwan University, South Korea Apr 2016
-*Bayesian Methods for Multiple Intermediate Variables: Principal Stratification and Causal Mediation Analysis*

Environmental Statistics Seminar at Harvard Biostatistics Sep 2015
-*Bayesian Methods for Multiple Mediators: Principal Stratification and Causal Mediation Analysis of Power Plant Emission Controls*

2015 Atlantic Causal Inference Conference, Philadelphia, PA May 2015
-*A Bayesian Approach to the Estimating Causal Effect of Air Quality Regulations with Multiple Mediators*

Department of Biostatistics, Harvard School of Public Health Dec 2013
-*Longitudinal causal mediation analysis for behavioral trials*

Joint meeting of the IASC satellite conference for the 59th ISI WSC Aug 2013
and the 8th conference of the ARS of the IASC, South Korea
-*Marginal structural models for causal effects of higher education rates on cancer mortalities*

Topic-Contributed Talks

2017 Joint Statistical Meeting, Baltimore, MD (Missed) Aug 2017
- Biometrics Section Award Presentation : *Bayesian Methods for Multiple Intermediate Variables: Principal Stratification and Causal Mediation Analysis*

2016 Joint Statistical Meeting, Chicago, IL Aug 2016
-*Bayesian Semiparametric Latent Mediation Model*

2014 Joint Statistical Meeting, Boston, MA Aug 2014
-*A Bayesian approach to the causal effect of multiple mediators with sensitivity analysis*

Contributed Talks

2017 ENAR Meeting, DC Mar 2017
-*Bayesian Latent Mediation Model*

2016 ENAR Meeting, Austin, TX Mar 2016
-*Bayesian Methods for Multiple Intermediate Variables*

P01 retreat at Harvard Biostatistics Oct 2015
-*Bayesian Approach to Estimating the Causal Effect of Air Quality Regulations with Multiple Mediators*

Bayesian Causal Inference Group Seminar at Harvard Biostatistics Jun 2015
-*Bayesian semiparametric latent mediation model*

Bayesian Causal Inference Group Seminar at Harvard Biostatistics Jan 2015
-*Bayesian Causal Inference with Multiple Mediators*

Bayesian Causal Inference Group Seminar at Harvard Biostatistics Sep 2014
-*Bayesian Longitudinal Mediation Analysis*

Acid Rain Program Group Seminar at Harvard Sep 2014, Feb 2015
-*Causal Inference with Interference*

2015 ENAR Meeting, Miami, FL Mar 2015
-*Bayesian semiparametric latent mediation model*

2014 ENAR Meeting, Baltimore, MD Mar 2014
-*Longitudinal causal mediation analysis for behavioral trials*

2013 Joint Statistical Meeting, Montreal, Canada Aug 2013
-*Bayesian inference for longitudinal mediation analysis*

Poster Presentations

2015 International Health Policy Statistics Conference, Providence, RI Oct 2015
-*The public health impact of air quality regulations through change in ambient PM2.5*

2015 Atlantic Causal Inference Conference, Philadelphia, PA May 2015
-*Bayesian semiparametric latent mediation model*

2013 Atlantic Causal Inference Conference, Boston, MA May 2013
-*Bayesian inference for longitudinal mediation analysis*

2012 SRCOS Summer Research Conference, GA Jun 2012
-*A Bayesian approach to the causal effect of multiple mediators*

2012 Atlantic Causal Inference Conference, Baltimore, MD May 2012
-*A Bayesian approach to the causal effect of multiple mediators*

Workshop on Causal Inference and Graphical Models, Jan 2012
Winter Workshop 2012, University of Florida
-*Bayesian inference for the causal effect of mediation with baseline covariates*

NSF Research Day, University of Florida Oct 2011
-*Bayesian inference for the causal effect of mediation with baseline covariates*

Workshop on Causal Inference in Health Research, May 2011
CRM, University of Montreal, Canada
-*Bayesian inference for the causal effect of mediation with baseline covariates*

Professional Service

Reviewer (Publons)

Journal of American Statistical Association (theory and methods; applications and case studies), Biometrics, Statistics in Medicine, Bayesian Analysis, Journal of Royal Statistical Society: Series C, Journal of Causal Inference, Statistica Sinica, Annals of Applied Statistics, Biostatistics, Epidemiologic Methods, BMJ Open, BMC Medical Research Methodology, Computational Statistics and Data Analysis, The Canadian Journal of Statistics, BMC Public Health

Professional Society

Elected Member of ENAR Council for Emerging and New Statisticians. 2014 - 2016
Members of ENAR, ASA, ISBA

Conference Organization

Session Organizer : Invited Session at ENAR (2019), Invited Session at JSM (2018), Invited Session at ACIC (2018), Topic-contributed sessions at JSM (2016, 2017)
Session Chair : ENAR (2015), JSM (2016)
Others: Judge of 2014 ENAR spring meeting RAB poster competition.

Departmental Service

PhD Committees

Kevin Cummiskey (Harvard Biostatistics, 2018). Advisor: Corwin M. Zigler
Aya Mitani (Boston Univ. Biostatistics, 2019). Advisor: Kerrie Nelson
Mandy Du (Boston Univ. Biostatistics). Advisor: Paola Sebastiani
Daniel Nguyen (Boston Univ. Environmental Health). Advisor: Junenette Peters

MS Committees

Amelia Williams (Boston University Epidemiology, 2018). Advisor: Kimberly Shea

Qual Examiner

Chloe Kim (Boston University Environmental Health, In progress). Advisor: Michael McClean
Komal Basra (Boston University Environmental Health, 2019). Advisor: Patricia Fabian

Other Services

Co-Organizer, Epidemiology+Biostatistics Joint Seminar Series, Boston University 2018
Co-Organizer, Seminar Series, Department of Biostatistics, Boston University 2017 - 2019

Co-Chair, Course Development Task Force (Topics in Causal Inference), Department of Biostatistics, Boston University 2018 - 2019
Convener, PhD Program Review Committee, Department of Biostatistics, Boston University 2018
Faculty Search Committee, Department of Biostatistics, Boston University 2018 - 2019
Co-Organizer, Causal Inference Seminar Series, Departments of Biostatistics + Mathematics and Statistics, Boston University 2018-
Biostatistics Program Advisory Committee (BPAC), Departments of Biostatistics, Boston University 2019-
MA/PhD Admission Committee, Departments of Biostatistics, Boston University 2019-

Teaching Experience

Instructor Spring 2018, Spring 2019
BS730 - Introduction to Statistical Computing
Teaching core statistical concepts and computing skills with R
Department of Biostatistics, Boston University

Postdoc Mentor Summer 2017
6 weeks mentoring of summer project participants (Pipelines into Biostatistics)
Department of Biostatistics, Harvard T. H. Chan School of Public Health

Postdoc Mentor Summer 2016
6 weeks mentoring of summer project participants (Pipelines into Biostatistics)
Department of Biostatistics, Harvard T. H. Chan School of Public Health

Guest Lecturer Fall 2018, Spring 2019
Causal Mediation Analysis (3 hours) in BS852 (Bayesian Methodology in Biostatistics)
Department of Biostatistics, Boston University School of Public Health

Guest Lecturer Fall 2014
Causal Mediation Analysis (2 hours) in BIO 249 (Bayesian Methodology in Biostatistics)
Department of Biostatistics, Harvard T. H. Chan School of Public Health

Guest Lecturer Spring, Fall 2013
2 hour BUGS tutorial in the course SSC 384.7 (spring)
1 hour BUGS tutoral in the course SSC 383C (Fall)
Division of Statistics and Scientific Computation, The University of Texas at Austin

Lab-Instructor Fall 2008, Spring 2009
STA 2023 - Introduction to Statistics
Teaching lab sessions of the course 3 hours a week
Evaluation: 4.31/5 (Spring 2009), 4.38/5, 4.26/5, 4.35/5 (Fall 2008)
Department of Statistics, University of Florida

Teaching Assistant at UF Spring, Fall 2009
STA 3032 - Engineering Statistics
STA 4210 - Regression Analysis
STA 4183 - Theory of Interest
ESI 6546 - Stochastic Modeling and Analysis (Grader)

Teaching Assistant at Columbia University Spring 2007
W1211 - Introduction to Statistics (with Calculus)

Grant Funding

Active

US-EPA (PI: Corwin Zigler) $1,328,069 Sep 2016 - Aug 2020
Air Climate and Energy Center: Regional Air Pollution Mixtures: The Past and Future Impacts of Emission Controls and Climate Change on AirQuality and Health, Project 4: A Causal Inference Framework to Support Policy Decisions by Evaluating the Effectiveness of Past Air Pollution Control Strategies for the Entire United States.
Role: **PI on subcontract**, subcontract from Harvard University

NIH (PI: Kerrie Nelson) Sep 2014 - Aug 2019
Model Agreement in Cancer Diagnostic Tests
Role: **Investigator**

NIH (PI: Kerrie Nelson) Sep 2018 - Aug 2022
Improving Accuracy and Reliability in Cancer Screening Tests
Role: **Investigator**

Completed

NIH (PI: Jason Roy) $1,420,785 Sep 2014 - Aug 2018
Non-Parametric Bayesian Methods of Causal Inference.
Role: **PI on subcontract**, subcontract from University of Pennsylvania

NIH (PI: Corwin Zigler) Sep 2015 - Aug 2020
Causal Inference with Interference for Evaluating Air Quality Policies
Role: **Investigator**

Computing

Statistical Programs (Packages)

R, SAS, Stan, BUGS (WinBUGS, OpenBUGS), MATLAB
- SAS Certified Base Programmer for SAS 9 Credential May 2012
- SAS Certified Advanced Programmer for SAS 9 Credential Sep 2012

Programming Languages

Some experience in Python, C++

Operating System

Unix, Linux, Windows

Miscellaneous

Exam P pass, Society of Actuaries Mar 2011

References

Corwin Zigler
Associate Professor Phone: 617-432-5014
Department of Biostatistics E-mail: czigler@hsph.harvard.edu
Harvard T. H. Chan School of Public Health

Michael Daniels
Professor and Chair Phone: 352-262-9892
Andrew Banks Family Endowed Chair E-mail: daniels@ufl.edu
Department of Statistics
University of Florida

Jason Roy
Professor of Biostatistics
Chair of Biostatistics and Epidemiology
Co-Director, Center for Causal Inferece
Rutgers School of Public Health

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