

HWANHEE HONG, PhD  
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Last updated September 11<sup>th</sup>, 2018

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#### RESEARCH KEYWORDS

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Bayesian analysis, comparative effectiveness research, network meta-analysis, data synthesis, causal inference, propensity score, measurement error, personalized medicine, patient-centered outcome, generalizability, clinical trial data analysis, observational study, missing data

#### EDUCATION

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- 2013    **University of Minnesota**, Minneapolis, MN, USA  
PhD in Biostatistics  
Thesis: *Hierarchical Bayesian methods for multiple outcomes in mixed treatment comparisons*  
Advisor: Bradley P. Carlin, PhD
- 2010    **Harvard University**, Boston, MA, USA  
MS in Biostatistics
- 2008    **Chung-Ang University**, Seoul, South Korea  
BS in Statistics

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#### PROFESSIONAL EXPERIENCE

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- 2018 - present    **Assistant Professor**  
Department of Biostatistics and Bioinformatics, Duke University School of Medicine  
Duke Clinical Research Institute
- 2014 - 2018    **Postdoctoral Fellow**  
Department of Mental Health, Johns Hopkins Bloomberg School of Public Health  
Faculty Mentor: Elizabeth A. Stuart, PhD
- 2013 - 2014    **Postdoctoral Associate**  
Division of Biostatistics, University of Minnesota  
Division of Health Policy and Management, University of Minnesota  
Faculty Mentors: Bradley P. Carlin, PhD and Nathan D. Shippee, PhD
- 2011 - 2013    **Research Assistant**  
Division of Biostatistics, University of Minnesota  
Principal Investigator: Bradley P. Carlin, PhD
- 2012 - 2013    **Research Assistant**  
Division of Health Policy and Management, University of Minnesota  
Principal Investigator: Tetyana Shippee, PhD
- 2010 - 2011    **Research Assistant**  
Division of Biostatistics, University of Minnesota  
Principal Investigator: Wei Pan, PhD
- 2009 - 2010    **Research Assistant**  
Harvard AIDS Initiative (Marlink group), Harvard School of Public Health  
Principal Investigator: Richard G. Marlink, MD
- 2007    **Research Assistant**  
Korean Food and Drug Administration, Seoul, South Korea  
Principal Investigator: Sang-Gue Park, PhD
- 2006 - 2007    **Research Assistant**  
National Customer Satisfaction Index (NCSI) Research, Chung-Ang University  
Principal Investigator: Sang-Gue Park, PhD

**PUBLICATIONS** (†: author names in alphabetical order)

## PEER REVIEWED JOURNAL ARTICLES

1. Li T, Mayo-Wilson E, Fusco N, **Hong H**, Dickersin K, and the MUDS investigators (2018). Caveat emptor: the combined effects on multiplicity and selective reporting. *Trials*. Forthcoming.
2. **Hong H**, Aaby DA, Siddique J, and Stuart EA (2018). Propensity score-based estimators with multiple error-prone covariates. *American Journal of Epidemiology*. 10.1093/aje/kwy210.
3. **Hong H**, Fu H, and Carlin BP (2018). Power and commensurate priors for synthesizing aggregate and individual patient-level data in network meta-analysis. *Journal of the Royal Statistical Society: Series C (Applied Statistics)*. 67(Part 4):1047-1069.
4. Susukida R, Crum RM, **Hong H**, Stuart EA, and Mojtabei R (2018). Comparing pharmacological treatments for cocaine dependence: Incorporation of methods for enhancing generalizability in meta-analytic studies. *International Journal of Methods in Psychiatric Research*. <https://doi.org/10.1002/mpr.1609>.
5. Mayo-Wilson E, Li T, Fusco N, Bertizzolo L, Canner J, Cowley T, Doshi P, Ehmsen J, Gresham G, Guo N, Haythornthwaite J, Heyward J, **Hong H**†, Lock D, Payne J, Rosman L, Stuart EA, Suarez-Cuervo C, Tolbert E, Twose C, Vedula S, and Dickersin K (2017). Cherry-picking by trialists and meta-analysts can drive conclusions about intervention efficacy. *Journal of Clinical Epidemiology*. 91:95-110.
6. Mayo-Wilson E, Fusco N, Li T, **Hong H**, Canner J, Dickersin K, and the MUDS team (2017). Multiple outcomes and analyses in clinical trials create challenges for interpretation and research synthesis. *Journal of Clinical Epidemiology*. 86:39-50.
7. **Hong H**, Rudolph K, and Stuart EA (2017). Bayesian approach for addressing differential covariate measurement error in propensity score methods. *Psychometrika*. 82(4):1078-1096.
8. Li T, Lindsey K, Rouse B, **Hong H**, Shi Q, Friedman DS, Wormald R, and Dickersin K (2016). Comparative effectiveness of first-line medications for primary open angle glaucoma - A systematic review and network meta-analysis. *Ophthalmology*. 123(1):129-140.
9. **Hong H**, Chu H, Zhang J, and Carlin BP (2016). A bayesian missing data framework for generalized multiple outcome mixed treatment comparisons. (**with discussion and rejoinder**). *Research Synthesis Methods*. 7(1):6-22.
10. Mayo-Wilson E, Hutfless S, Li T, Gresham G, Fusco N, Ehmsen J, Heyward J, Vedula S, Lock D, Haythornthwaite J, Payne JL, Cowley T, Rosman L, Twose C, Stuart EA, **Hong H**, Doshi P, Suarez-Cuervo C, Singh S, and Dickersin K (2015). Integrating multiple data sources (MUDS) for meta-analysis to improve patient-centered outcomes research: a protocol for a systematic review. *Systematic reviews*. 4(1):1.
11. Zhang J, Chu H, **Hong H**, Neaton JD, Virnig BA, and Carlin BP (2015). Bayesian hierarchical models for network meta-analysis incorporating nonignorable missingness. *Statistical Methods in Medical Research*. 26(5):2227-2243.
12. **Hong H**, Fu H, Price KL, Carlin BP (2015). Incorporation of individual patient data in network meta-analysis for multiple continuous endpoints, with application to diabetes treatment. *Statistics in Medicine*. 34(20):2794-2819.
13. Shippee TP, **Hong H**, Kane RL, and Henning-Smith C (2015). Longitudinal changes in nursing home resident-reported quality of life: The role of facility characteristics. *Research on Aging*. 37(6):555-580.
14. Ohlssen D, Price KL, Xia HA, **Hong H**, Kerman J, Fu H, Quartey G, Heilmann CR, Ma H, and Carlin BP (2014). Guidance on the implementation and reporting of a drug safety Bayesian network meta-analysis. *Pharmaceutical Statistics*. 13(1):55-70.
15. **Hong H**, Carlin BP, Shamliyan T, Wyman JF, Ramakrishnan R, Sainfort F, and Kane RL (2013). Comparing Bayesian and frequentist approaches for multiple outcome mixed treatment comparisons. *Medical Decision Making*. 33(5):702-714.
16. Wester WC, Koethe JR, Shepherd BE, Stinnette SE, Rebeiro PF, Kipp AM, **Hong H**, Bussmann H, Gao-lathe T, McGowan CC, Sterling TR, and Marlink RG (2011). Non-AIDS-defining events among HIV-1-infected adults receiving combination antiretroviral therapy in resource-replete versus resource-limited urban setting. *AIDS*. 25(12):1471-1479.

NON-REFEREED JOURNAL ARTICLES & BOOK CHAPTERS

17. **Hong H**, Price KL, Fu H, and Carlin BP (2016). Bayesian network meta-analysis for multiple endpoints. To appear in *Methods in Comparative Effectiveness Research*, eds. S. Morton and C. Gatsonis, Boca Raton, FL: CRC Press.
18. Carlin BP and **Hong H** (2014). Bayesian network meta-analysis for safety evaluation. *Quantitative Evaluation of Safety in Drug Development: Design, Analysis, and Reporting*, eds. Jiang, Q. and Xia, H.A., Boca Raton, FL: CRC Press.

MANUSCRIPT UNDER REVIEW AND IN PREPARATION

19. **Hong H**, Wang C, and Rosner G. Meta-analysis of rare adverse events in randomized clinical trials: Bayesian and frequentist methods. Submitted to *Statistics in Medicine*.
20. Nguyen TQ, **Hong H**, Ebnesajjad C, Stuart EA. Measurement error bias due to a latent covariate in propensity score weighting analysis: Correction using the “fully inclusive” factor score. Submitted to *Journal of Educational and Behavioral Statistics*.
21. Fusco N, Mayo-Wilson E, Li T, **Hong H**, Canner JK, Cowley T, Haythornthwaite J, Payne J, Tolbert E, and Dickersin K. Underreporting of non-systematic adverse events in clinical trials. Submitted to *PLOS Medicine*.
22. Fusco N, Mayo-Wilson E, Li T, **Hong H**, Canner JK, Cowley T, Haythornthwaite J, Payne J, Tolbert E, and Dickersin K. Underreporting of systematic adverse events in clinical trials of quetiapine for bipolar disorder. Submitted to *PLOS Medicine*.
23. Siotos C, **Hong H**, Uzosike A, Seal SM, Rosson GD, Cooney CM, and Cooney DS. Keloid excision and adjuvant treatments: a network meta-analysis. Submitted to *Plastic and Reconstructive Surgery*.
24. **Hong H**, Mojtabei R, and Stuart EA. Estimating population treatment effects in meta-analysis.
25. **Hong H**, Nguyen TQ, and Stuart EA. The effect of covariate measurement error on the population treatment effect estimation.
26. **Hong H**, Chen Y, and Li T. Bayesian network meta-analysis for estimating drug class effects, with applications to primary open angle glaucoma.
27. Nadiv S, **Hong H**, and Perry DF. Longitudinal effects of early childhood mental health consultation services on school readiness.
28. Pasala T, Kanmanthareddy A, Balakumaran K, **Hong H**, Bolen S, Kondapaneni M, Owan T, and Gajulapalli RD. Conventional percutaneous coronary intervention, manual thrombectomy, and mechanical thrombectomy in patients with ST-elevation myocardial infarction: A network meta-analysis of randomized trials.

HONORS AND AWARDSTRAVEL AWARDS

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|------|---|
| 2017 | Travel Awards for Junior Researchers, Biostatistics in the Modern Computing Era |
| 2013 | Student Paper Award, ASA Section on Health Policy Statistics                    |
| 2012 | Student Paper Award, ASA Section on Health Policy Statistics                    |
| 2012 | Young Investigator Travel Award, International Society for Bayesian Analysis    |

UNIVERSITY OF MINNESOTA

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| 2014 | Delta Omega, Honorary Society in Public Health                        |
| 2013 | Jacob E. Bearman Student Achievement Award, Division of Biostatistics |
| 2012 | Outstanding Research Assistant Award, Division of Biostatistics       |
| 2011 | Outstanding Teaching Assistant Award, Division of Biostatistics       |

CHUNG-ANG UNIVERSITY

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|---------|---|
| 2004-07 | Scholarship for Excellent Records, Department of Mathematics and Statistics |
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**RESEARCH SUPPORT**

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**ACTIVE:**

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Role: Principal Investigator (100% effort), 07/01/2017 - 06/30/2019  
 National Institute of Mental Health (NIMH, K99MH111807).  
 Estimating Population Effects in Mental Health Research Using Meta-Analysis. PI: Hong, Hwanhee

**COMPLETED:**

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Role: Statistician (20% effort) 02/01/2015 - 01/31/2016  
 Patient-Centered Outcomes Research Institute (PCORI).  
 Integrating Multiple Data Sources for Meta-analysis to Improve PCOR. PI: Dickersin, Kay

Role: Statistician (10% effort) 05/01/2010 - 04/30/2017  
 National Eye Institute (U01EY020522).  
 Comparative Effectiveness Research & the Cochrane Eyes & Vision Group. PI: Dickersin, Kay

Role: Postdoctoral Fellow (80% effort) 07/01/2013 - 06/30/2017  
 National Institute of Mental Health (NIMH, R01MH099010).  
 Using propensity scores for causal inference with covariate measurement error. PI: Stuart, Elizabeth

Role: Statistician (13% effort) 03/01/2014 - 02/28/2018  
 National Institute of Health (NIH, R01DA036520).  
 Generalizing RCT Efficacy Evidence: Application to NIDA Clinical Trials Network. PI: Mojtabai, Ramin

Role: Co-Investigator (7% effort) 03/01/2014 - 02/28/2018  
 Center of Excellence in Regulatory Science and Innovation (CERSI)  
 Bayesian Approaches for Meta-Analyses of Rare Adverse Events in Randomized Clinical Trials. PI: Alexander, George Caleb

**PRESENTATIONS**

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**ORAL: INVITED**

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- 2017 Power and Commensurate Priors for Synthesizing Aggregate and Individual Patient-Level Data in Network Meta-Analysis. Center for Data Science, Chung-Ang University. November, Seoul, South Korea.
- 2017 Power and Commensurate Priors for Synthesizing Aggregate and Individual Patient-Level Data in Network Meta-Analysis. Biostatistics in Psychiatry Seminar, Department of Psychiatry, Columbia University. April, New York, NY.
- 2017 Propensity Score-Based Estimators with Multiple Error-Prone Covariates. Eastern North American Regional meeting of the International Biometric Society. March, Washington, DC.
- 2017 Integrating Data for Comparative Effectiveness Research. Division of Biostatistics, Department of Public Health Sciences, University of California, Davis. March, Davis, CA.
- 2017 Integrating Data for Comparative Effectiveness Research. Department of Epidemiology and Biostatistics, Drexel University. February, Philadelphia, PA.
- 2017 Integrating Data for Comparative Effectiveness Research. Department of Biostatistics, Indiana University. February, Indianapolis, IN.
- 2017 Integrating Data for Comparative Effectiveness Research. Department of Biostatistics and Bioinformatics, Duke Clinical Research Institute, Duke University School of Medicine. February, Durham, NC.
- 2017 Meta-Analysis of Rare Adverse Events in Randomized Controlled Trials: Bayesian and Frequentist Methods. Informal Biostatistics Meetings, Sidney Kimmel Comprehensive Cancer Center, Johns Hopkins University. February, Baltimore, MD.

- 2017 Integrating Data for Comparative Effectiveness Research. Department of Biostatistics and Computational Biology, University of Rochester Medical Center. January, Rochester, NY.
- 2017 Integrating Data for Comparative Effectiveness Research. Department of Statistics, Florida State University. January, Tallahassee, FL.
- 2017 Integrating Data for Comparative Effectiveness Research. Department of Biostatistics, Georgia Southern University. January, Statesboro, GA.
- 2014 Hierarchical Bayesian methods for multiple outcomes in network meta-analysis. Department of Mathematics and Statistics, University of Maryland, Baltimore County. October, Baltimore, MD.
- 2014 Hierarchical Bayesian methods for multiple outcomes in network meta-analysis. Survival, Longitudinal and Multivariate Data Working Group, Department of Biostatistics, Johns Hopkins Bloomberg School of Public Health. October, Baltimore, MD.
- 2014 Hierarchical Bayesian methods for multiple outcomes in network meta-analysis. Department of Biostatistics, University of Pittsburgh. January, Pittsburgh, PA.
- 2012 A Bayesian missing data framework for multiple outcome mixed treatment comparisons. Research Center for Data Science: the 3rd International Conference, Chung-Ang University. July, Seoul, South Korea.

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 ORAL: CONTRIBUTED
 

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- 2018 Estimating population treatment effects in meta-analysis. International Conference on Health Policy Statistics. January, Charleston, SC.
- 2017 Power and commensurate priors for synthesizing aggregate and individual patient-level data in network meta-analysis. Biostatistics in the Modern Computing Era, Medical College of Wisconsin. September, Milwaukee, WI.
- 2016 Incorporation of individual patient data in network meta-analysis for multiple continuous endpoints, with application to diabetes treatment. Joint Statistical Meetings. August, Chicago, IL.
- 2016 Propensity score-based estimators with multiple error-prone covariates. Atlantic Causal Inference Conference. May, New York, NY.
- 2015 Bayesian network meta-analysis for estimating drug class effects and temporal effects, with applications to primary open angle glaucoma. International Conference on Health Policy Statistics. October, Providence, RI.
- 2015 Bayesian approach for addressing differential covariate measurement error in propensity score methods. Joint Statistical Meetings. August, Seattle, WA.
- 2013 A Bayesian missing data framework for generalized multiple outcome mixed treatment comparisons. Joint Statistical Meetings. August, Montreal, Quebec, Canada.
- 2012 Hierarchical Bayesian methods for combining efficacy and safety in multiple treatment comparisons. Joint Statistical Meetings. July, San Diego, CA.

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 TECHNICAL TALK
 

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- 2013 A Bayesian missing data framework for combining multiple outcomes in network meta-analysis. Lilly Research Awards Program Collaboration Seminar. May, Indianapolis, IN.
- 2011 Bayesian approaches for multiple treatment comparisons. Minnesota Evidence-based Practice Center, Minneapolis VA Medical Center. November, Minneapolis, MN.
- 2009 When should antiretroviral treatments be started in Botswana? - Tshepo study. Technical workshop: HIV/AIDS interventions in Botswana, Harvard University. July, Boston, MA.

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 POSTER
 

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- 2015 Incorporation of individual patient data in network meta-analysis for multiple continuous endpoints, with application to diabetes treatment. G70 conference. April, Durham, NC.

- 2012 Hierarchical Bayesian methods for combining efficacy and safety in multiple treatment comparisons. World Meeting of the International Society for Bayesian Analysis. June, Kyoto, Japan.
- 2012 Hierarchical Bayesian methods for combining efficacy and safety in multiple treatment comparisons. Eastern North American Regional meeting of the International Biometric Society. April, Washington, DC.

## TEACHING

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### TEACHING ASSISTANT

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- 2011 Biostatistics I (PubH 6450), Division of Biostatistics, University of Minnesota  
Instructors: Susan Telke, MS and Andrew Mugglin, PhD  
Responsibilities: teaching weekly one-hour SAS sessions, grading, and holding office hours
- 2010 ANOVA and Design (PubH 7406), Division of Biostatistics, University of Minnesota  
Instructor: Tracy L. Bergemann, PhD  
Responsibilities: writing homework solutions, grading, and holding office hours

### SHORT COURSE

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- 2016 Network meta-analysis for behavioral trials: an introduction and overview.  
Society of Behavioral Medicine Annual Meeting & Scientific Sessions. March, Washington, DC.  
(taught with Dr. Tianjing Li)
- 2015 Introduction to indirect comparison and network meta-analysis workshop at AHQR.  
Agency for Healthcare Research and Quality. June, Rockville, MD. (taught with Dr. Tianjing Li)

### GUEST LECTURE (\* upcoming)

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- 2016 Seminar on Statistical Methods for Mental Health (330.805), Department of Mental Health, Johns Hopkins Bloomberg School of Public Health\*  
Instructor: Rashelle J. Musci, PhD
- 2014 Seminar on Statistical Methods for Mental Health (330.805), Department of Mental Health, Johns Hopkins Bloomberg School of Public Health  
Instructor: Elizabeth A. Stuart, PhD

## PROFESSIONAL ACTIVITIES

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### SESSION ORGANIZER

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- 2017 Eastern North American Regional meeting of the International Biometric Society (ENAR). March, Washington, DC.
- 2015 International Conference on Health Policy Statistics. October, Providence, RI.

### SESSION CHAIR

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- 2017 Atlantic Causal Inference Conference. May, Chapel Hill, NC.

### SOCIETY MEMBERSHIP

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- 2012- American Statistical Association (ASA)
- 2012- Eastern North American Region International Biometric Society (ENAR)
- 2012- International Society for Bayesian Analysis (ISBA)
- 2012- Korean International Statistical Society (KISS)
- 2016- Caucus for Women in Statistics
- 2014- JHSPH Causal Inference Working Group

### CONSULTATIONS

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- 2014 - 2015 School of Medicine, Johns Hopkins University
- 2015 - 2016 Division of Interventional Cardiology, University of Utah Health Sciences Center
- 2015 - 2016 School of Social Work, University of Maryland

### REVIEWER

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Journals     *American Journal of Epidemiology*  
              *Annals of Epidemiology*  
              *Biometrics*  
              *Biostatistics*  
              *Biometrical Journal*  
              *BMC Medical Research Methodology*  
              *BMJ Open*  
              *Cochrane Intervention Review*  
              *Communications in Statistics*  
              *Epidemiology*  
              *International Journal of Epidemiology*  
              *International Journal of Methods in Psychiatric Research*  
              *International Journal of Pediatric Research*  
              *Journal of the American Medical Association-Cardiology*  
              *Journal of Clinical Epidemiology*  
              *Journal of Educational and Behavioral Statistics*  
              *Nature: Scientific Reports*  
              *Observational Studies*  
              *Ophthalmology*  
              *Pharmaceutical Statistics*  
              *Psychometrika*  
              *Statistics in Medicine*  
              *The Lancet*

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#### COMPUTING SKILLS

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Statistical Software     R, Stata, SAS, JAGS, WinBUGS, STAN  
Operating Systems     Unix/Linux, Windows