JIWON PARK

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Research Interests

Statistical Genetics and Genetic Epidemiology; Genome-wide association studies (GWAS) using summary statistics; Case–control, family-based, and overlapping-sample designs; Robust statistical methods for complex biomedical data; Pleiotropy testing and causal inference in complex traits; Mixture models and survival analysis; High-dimensional regression, variable selection, and clustering; Bayesian inference and EM-algorithm–based estimation.

Academic Appointments

University of Massachusetts Lowell, Lowell, MA Sep. 2026 – present

- **Assistant Professor, Department of Mathematics and Statistics**

Johns Hopkins University, Baltimore, MD Sep. 2023 – Aug. 2026

- **Postdoctoral fellow, Department of Epidemiology**
  Mentor: Debashree Ray

Education

University of Connecticut, Storrs, CT

- **Ph.D., Statistics** Aug. 2023
  Advisor: Dr. Dipak K. Dey
  Co-Advisor: Dr. Victor Hugo Lachos Davila

Kyungpook National University, Daegu, South Korea

- **M.S., Statistics** Feb. 2017
  Advisor: Dr. Dal Ho Kim
  Thesis: Bayesian Analysis of Batting Average Data
- **B.S., Statistics (Minor: Business Administration)** Aug. 2015

Publications

1. **Park, J.,** Ray, D**.** (2026). A robust pleiotropy method with applications to lipid traits and to inflammatory bowel disease subtypes with sample overlap. *Human Genetics and Genomics Advances, 7*(1), 100501. https://doi.org/10.1016/j.xhgg.2025.100501
2. Mahajan, A., **Park, J.**, Moore, T. E., Baker, W. L., Zoni, C. R., Akinfenwa, S., Mohamed, M., Dean, M., & Sai-Sudhakar, C. (2025). Generic versus brand-name immunosuppression following heart transplant: An analysis of the UNOS database. *Clinical Transplantation*, 39(6), e70196. DOI: 10.1111/ctr.70196
3. **Park, J.**, Dey, D. K., & Lachos, V. H. (2024). Finite mixture of regression models for censored data based on the skew-t distribution. *Computational Statistics*, 39(7), 3695-3726-32.
4. Lachos, V. H., Bazán, J. L., Castro, L. M., & **Park, J**. (2022). The skew-t censored regression model: parameter estimation via an EM-type algorithm. *Communications for Statistical Applications and Methods*, *29*(3), 333-351.
5. Kim, JJ, Jang EJ, **Park JW**, Sohn HS (2020) "Association between proton pump inhibitor use and risk of fracture: A population-based case-control study". PLoS One. 2020; 15(7): e0235163. doi: 10.1371/journal.pone.0235163
6. Jung SY, Suh HS, **Park JW**, Kwon JW (2018) "Drug Holiday Patterns and Bisphosphonate-Related Osteonecrosis of the Jaw". *Oral Diseases*. 10.1111/odi.12966.
7. Park HY, **Park JW**, Sohn HS, Kwon JW (2017) "Association of Parkinsonism or Parkinson Disease with Polypharmacy in the Year Preceding Diagnosis: A Nested Case-Control Study in South Korea.", *Drug Safety*; 40(11):1109-1118. doi: 10.1007/s40264-017-0559-5.
8. Park HY, **Park JW**, Song HJ, Sohn HS, Kwon JW (2017) "The Association between Polypharmacy and Dementia: A Nested Case-Control Study Based on a 12-Year Longitudinal Cohort Database in South Korea", *PLoS One*.;**12**(1):e0169463. doi: 10.1371/journal.pone.0169463. eCollection 2017.
9. Jung SY, Sohn HS, Park EJ, Suh HS, **Park JW**, Kwon JW (2016) "Oral Bisphosphonates and Upper Gastrointestinal Cancer Risks in Asians with Osteoporosis: A Nested Case-Control Study Using National Retrospective Cohort Sample Data from Korea", *PLoS One*;11(3):e0150531

Working Papers

Manuscripts in Preparation

1. **Park, J.**, Song, W., Gaunt, R. E. & Ray, D. Joint Inference of Shared Genetic Effects Across Complex Diseases with Application to Type 2 Diabetes, Heart Failure, and

Prostate Cancer. Manuscript in preparation for submission to Journal of the American Statistical Association: Applications and Case Studies.

2. **Park, J.**, & Lachos, V. H. Variable selection in Weibull mixture cure models for high-dimensional data. (manuscript in preparation)
3. **Park, J.**, Dey, D. K., & Lachos, V. H. Spike-and-Slab Variable Selection in a Weibull-Based Mixture Cure Model (to be submitted to Computational Statistics & Data Analysis)
4. Zhang, J.**, Park, J.**, Chatterjee, N., Boerwinkle, E., Selvin, E., & Ray, D. Genetic epidemiology and causal roles for newer type 2 diabetes biomarkers. (to be submitted to *Genetic Epidemiology)*

Software and Packages

FMCensReg: R package for finite mixture regression models for censored data using Normal, t, skew-normal, and skew-t distributions. [CRAN | GitHub]

PLACO+: Extension of the PLACO R package (Ray Lab), adding a correlated option to account for sub-null scenarios under the composite null hypothesis in pleiotropy testing. Contributed code integrated into the official PLACO repository. [GitHub]

Presentations

Invited Seminars

- **Division of Statistics and Data Science**, Department of Mathematical Sciences, University of Cincinnati, Cincinnati, OH, Nov 2025
- **Department of Mathematics and Statistics**, Auburn University, Auburn, AL, Apr 2025

Contributed Presentations (Talks & Posters)

- **STATGEN 2025**: Conference on Statistics in Genomics and Genetics, Minneapolis, MN, May 2025 - *A New Approach for Identifying Shared Variants Among Disease Subtypes* (Poster Presentation)
- **Genetics Research Day 2024**, Department of Epidemiology, Johns Hopkins Bloomberg School of Public Health, Baltimore, MD, Sep 2024 - *A Robust Pleiotropic Analysis under Composite Null hypothesis Exploring Shared Genetic Loci between Crohn's Disease and Ulcerative Colitis* (Poster Presentation)
- **Joint Statistical Meetings (JSM)**, Portland, OR, Aug 2024 - *Robust Pleiotropic Analysis under Composite Null: Shared Loci between correlated Lipid traits* (Poster Presentation)
- **37th New England Statistics Symposium**, Storrs, CT, May 2024 - *A robust pleiotropic analysis under composite null hypothesis exploring shared genetic loci between correlated lipid traits.* (Invited Talk)

- **STATGEN 2024**: Conference on Statistics in Genomics and Genetics, Pittsburgh, PA, May 2024 - *A robust pleiotropic analysis under composite null hypothesis exploring shared genetic loci between correlated lipid traits.* (Poster Presentation)
- **Pushing the Boundary of Data Science through Statistical Modeling and Inference: A Conference in Honor of Prof. Dipak K. Dey,** Blacksburg, VA, July 2023 - *Spike and Slab Variable Selection on Mixture Cure Model on Weibull distribution* (Poster Presentation)
- **International Indian Statistical Association (IISA) Conference**, Golden, CO, June 2023 - *Finite mixture of regression models for censored data based on the skew-t distribution* (Poster Presentation)
- **35th New England Statistics Symposium**, Storrs, CT, May 2022 - *Finite mixture of regression models for censored data based on the skew-t distribution* (Poster Presentation)

Awards and Honors

- University of Connecticut Department of Statistics Pre-doctoral Fellowship, 2022
- Champion in Travelers Modeling Competition, Claim Fraud Detection, 2021
- Scholarship for Academic Excellence, Kyungpook National University, Fall 2016
- Academic Support Scholarship, Kyungpook National University, Spring 2015
- National Science and Engineering Undergraduate Scholarship, Korea Student Aid Foundation, 2014, 2015
- Scholarship for Academic Excellence, Kyungpook National University, 2013
- Global challenger A, Kyungpook National University, 2012

Professional Activities

Session Chair

- Session Chair, Selected Bayesian Research from Editorial Board Members of Sankhya, the 6th Eastern Asia Chapter of the International Society for Bayesian Analysis, 2022
- Session Chair, Emerging Insights on Insurance Statistics, the 35th New England Statistics Symposium, 2022

Society membership

- American Statistical Association (ASA) **— Regular Member**
- Korean Statistical Society (KSS) **— Student Member**
- Korean Data and Information Science Society (KDIS) **— Student Member**
- Bayesian Statistical Science, Korean Statistical Society **— Student Member**

Journal peer-review

- Electronic Journal of Statistics (EJS) – Reviewed manuscript: “On Exact Posterior Mean and Covariance of Generalized Linear Mixed Models” (Sep 2023)
- Electronic Journal of Statistics (EJS) – Reviewed manuscript: “Resistant Convex Clustering: How Does the Fusion Penalty Enhance Resistance?” (Sep 2023)

Research Experience

Research Assistant Jan. 2020 – Aug. 2023

Department of Statistics, University of Connecticut, Storrs, CT

Travelers Insurance Company

P.I: Dr. Dipak K. Dey

- Project1: Demand surge after Catastrophic Events (Project Leader)
  - Literature study to predict the demand surge after Catastrophic Events
- Project2: Correlated Variables in Pricing Model (Project Leader)
  - Constructed Tweedie Generalized Linear Models to predict for average loss with handling correlated temporal variables.
- Project3: Bodily Injury Severity
  - Constructed Gamma Finite Mixture model to predict the severity of the liability with application to auto insurance data
- Project4: Clustering of Policy Holders based on insurance score
  - Develop Unsupervised Clustering method to identify the characteristic of the policy holders

Research Assistant Sep. 2018 – Apr. 2019

Department of Information Statistics, Andong National University, Andong, South Korea

P.I: Dr. Eun Jin Jang

- Project: Use of proton pump inhibitor (PPI) and risk associated with osteoporotic fracture
  - Conducted nested case-control cohort study for investigation of the Use of proton pump inhibitor (PPI) and risk associated with osteoporotic fracture
  - Managed data using SAS: the claims databased of National Health Insurance Review and Assessment Service and National Patient sample dataset

Research Assistant Sep. 2015 – Jun. 2017

College of Pharmacy and Research Institute of Pharmaceutical Sciences, Kyungpook National University, Daegu, South Korea

P.I: Dr. Jin-Won Kwon

- Managed data using SAS: the claims database of National Health Insurance Review and Assessment Service and National Patient Sample dataset

- Conducted nested case-control cohort study for investigation of
  (a) The association of Parkinsonism or Parkinson Disease with Polypharmacy in the Year Preceding Diagnosis
  (b) The association between Polypharmacy and Dementia, and
  (c) Oral Bisphosphonates and Upper Gastrointestinal Cancer Risks in Asians with Osteoporosis

Statistical Consulting

Consultant Aug. 2021 – Aug. 2023

Department of Statistics, University of Connecticut, Storrs, CT

- Data Analysis in survey research using SPSS, R, and SAS

Selective Projects (2 out of 6)

- Methods to compare the effect of a sub-inhibitory concentration of eugenol Listeria monocytogenes proteome via not only adjusted p-value but also the Empirical Bayes method to overcome the small sample size. And identify the up and down-regulated proteins through Heatmap, Volcano plot, and PCA.
- Compare the physical, psychological, and social differences in experience with amputation between men and women. For the bounded response variables calculated via various scoring guidelines, generalized ordered beta regression and fractional regression models are constructed.

Consultant Mar. 2015 – Jun. 2017

Department of Statistics, Kyungpook National University, Daegu, South Korea

- Data Analysis in survey research using SPSS, R and SAS

Teaching Experience

Instructor

Department of Mathematics and Statistics, University of Massachusetts, Lowell, MA

- Applied Statistics. Fall 2026

Department of Information Statistics, Andong National University, Andong, South Korea

- Introduction to Statistics, Statistical Methods. Spring 2019
- Statistical Mathematics, Introduction to Probability Theory. Fall 2018
- Nonparametric statistics. Spring 2017

Teaching Assistant

Department of Statistics, University of Connecticut, Storrs, CT

- STAT 3675Q Statistical Computing — Fall 2022
- STAT 1100Q Elementary Concepts of Statistics — Fall 2020, Spring 2021

Teaching Assistant

Department of Statistics, Kyungpook National University, Daegu, South Korea

- Categorical Data Analysis and Lab — Fall 2018
- Statistical Computing and Lab — Spring 2017

Tutoring

Department of Statistics, University of Connecticut, Storrs, CT

- STAT 1000 level — Spring 2021, Spring 2022
- STAT 2000 level — Spring 2022

Tutoring

Department of Statistics, Kyungpook National University, Daegu, South Korea

- Statistical Mathematics II — Spring 2022
- Mathematical Statistics II — Fall 2016

Certifications

- SAS Certified Base Programmer for SAS 9
- SAS Certified Advanced Programmer for SAS 9
  SAS Institute Inc., Issued July 24, 2015
  Credential Verification Numbers:
  - Base: cc4b6a58d88142d0866634c08c909e8b
  - Advanced: 53f8c3096c704c32bf93148c9e81f024

  Verification Link: https://cp.certmetrics.com/SAS/en/public/verify/credential

Skills

- Statistical Packages: R, SAS, Python and SPSS
- Algorithms: Proficient in statistical computing
- Operating Systems: Windows, Mac OS X
- Word Processors: LaTeX and MS-Word