# Kenneth Menglin Lee

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## RESEARCH INTERESTS

Clinical trials; Cluster randomized trials; Stepped-wedge designs; Cross-over designs; Multilevel data; Time-varying treatment effects; Informative cluster sizes; Self-controlled case series; Causal inference; Estimands; Palliative care

## EDUCATION

**Duke-NUS Medical School**, Singapore — Aug 2020 – Aug 2024
Doctor of Philosophy (PhD), Biostatistics
*Committee: Dr. Cheung Yin Bun (Advisor), Dr. Roger Vaughan (Chair), Dr. Bibhas Chakraborty, Dr. Li Jialiang*

**Vassar College**, Poughkeepsie, New York — Aug 2014 – May 2018
Bachelor of Arts (BA), Neuroscience

## PROFESSIONAL EXPERIENCE

**Post-Doctoral Researcher** — Sep 2024 – Present
University of Pennsylvania, Department of Biostatistics, Epidemiology, & Informatics, Philadelphia, Pennsylvania
*Mentors: Dr. Michael Harhay, Dr. Katherine Courtright, Dr. Fan Li (Yale University)*

- Studying the consistency of common model-based estimators for individual and cluster-level estimands in the analysis of cluster randomized trial designs with informative cluster sizes.
- Extending the fixed effects model in the analysis of cluster randomized trials.
- Developing methods for analyzing hospital-free-days as a novel outcome in palliative care research.
- Providing statistical support in the design and analysis of pragmatic cluster randomized trials for improving patient-centered outcomes in palliative care.

**Graduate Researcher** — Aug 2020 – Aug 2024
Duke-NUS Medical School, Centre for Quantitative Medicine, Singapore
*Mentor: Dr. Cheung Yin Bun*

- Evaluated time-varying treatment effects and fixed effects models in the design and analysis of cluster randomized trials.
- Developed a novel partitioned analysis method to control for bias in self-controlled case series studies for vaccine safety with recurrent exposures and event-dependent outcomes.

**Visiting Researcher** — Mar 2024 – Apr 2024
Duke University, Duke Global Health Institute, Durham, North Carolina
*Mentors: Dr. Elizabeth Turner, Dr. Avi Kenny*

- Researched the effects of treatment effect structure misspecification in stepped-wedge cluster randomized trials with exposure or calendar time-varying treatment effects.

**Biostatistician** (part-time) — Jan 2022 – Jul 2022
Singapore Clinical Research Institute, Singapore
*Mentor: Dr. Mihir Gandhi*

- Reviewed statistical analysis plans and used SAS to generate and analyze ADaM datasets for two clinical trials exploring the effects of (i.) continuous glucose monitoring on diabetes and (ii.) aspirin on colorectal cancer.

**Bioinformatician** (part-time) — Dec 2021 – Feb 2023
Treat Therapeutics, Singapore

- Programmed a pipeline to output reports for canine gut microbiomes using Bioconductor in R and Picrust2.

**Research Associate** — Jul 2018 – Jul 2020
NYU Langone Health, Neuroscience Institute, New York, New York
*Mentor: Dr. James Salzer*

- Studied the role of MYPT1 in the assembly of the axon initial segment in mouse layer V pyramidal neurons.

## PUBLICATIONS

1. **Lee, K. M.**, & Li, F. (2024). How Should Parallel Cluster Randomized Trials With a Baseline Period be Analyzed? — A Survey of Estimands and Common Estimators. *Biometrical Journal*, *67*(3), e70052. [https://doi.org/10.1002/bimj.70052]

2. Courtright, K. R., …, **Lee, K. M.**, …, Halpern, S. D. Nudging clinicians to promote serious illness communication for critically ill patients: a pragmatic cluster randomized trial. *JAMA Internal Medicine*, *185*(5), 510-520. [https://doi.org/10.1001/jamainternmed.2025.0090]

3. **Lee, K. M.** (2025). Advantage Federer: The expected value of tennis. *Significance*, *22*(2), 8-11 [https://doi.org/10.1093/jrssig/qmaf005]

4. **Lee, K. M.**, Yang, G. M., & Cheung, Y. B. (2024). Inclusion of unexposed clusters improves the precision of fixed effects analysis of stepped-wedge cluster randomized trials with binary and count outcomes. *BMC Medical Research Methodology*, *24*(1), 254. [https://doi.org/10.1186/s12874-024-02379-z]

5. **Lee, K. M.** & Cheung, Y. B. (2024). The fixed effects model for robust analysis of stepped-wedge cluster trials with a small number of clusters and continuous outcomes: a simulation study. *Trials*, *25*(1), 1-18. [https://doi.org/10.1186/s13063-024-08572-1]

6. **Lee, K. M.** & Cheung, Y. B. (2024). Estimation and reduction of bias in self-controlled case series with non-rare event dependent outcomes and heterogeneous populations. *Statistics in Medicine*, *43*(10), 1955-1972. [https://doi.org/10.1002/sim.10033]

7. **Lee, K. M.** (2024). Boxing with George EP Box. *Significance*. [https://significancemagazine.com/boxing-with-george-box/]

8. **Lee, K. M.** & Cheung, Y. B. (2024). Cluster randomized trial designs for modeling time-varying intervention effects. *Statistics in Medicine*, *43*(1), 49-60. [https://doi.org/10.1002/sim.9941]

9. **Lee, K. M.**, Ma, X., Yang, G. M., & Cheung, Y. B. (2022). Inclusion of unexposed clusters improves the precision of fixed effects analysis of stepped-wedge cluster randomized trials. *Statistics in Medicine*, *41*(15), 2923-2938. [https://doi.org/10.1002/sim.9394]

10. Arndtsen, C., Ballon, J., Blackshear, K., Corbett, C. B., **Lee, K.**, Peyer, J., ... & Duncan, K. A. (2020). Atypical gene expression of neuroinflammatory and steroid related genes following injury in the photoperiodic Japanese quail. *General and comparative endocrinology*, *288*, 113361. [https://doi.org/10.1016/j.ygcen.2019.113361]

## MANUSCRIPTS

1. **Lee, K. M.**, Forbes, A.B., Kasza, J., Copas, A., Kahan, B.C., Young, P.J., Harhay, M.O., Li, F. (2025) What is estimated in cluster randomized crossover trials with informative sizes? — A survey of estimands and common estimators (under review, *Statistics in Medicine*) [https://doi.org/10.48550/arXiv.2505.00925]

2. **Lee, K. M.**, Turner, E. L., & Kenny, A. (2024). Analysis of Stepped-Wedge Cluster Randomized Trials when treatment effects vary by exposure time or calendar time. (under review, *Statistics in Medicine*) [https://doi.org/10.48550/arXiv.2409.14706]

3. Mobley, A, … , **Lee, K. M.**, …, Altice, F. L. Syndemic profiles of incarcerated men living with HIV in Malaysia transitioning back to the community: A Latent Class Analysis. (under review, *AIDS and Behavior*)

## PRESENTATIONS

1. **Lee, K. M.** (2025, March). Mixed up Mixed Effects: Estimands, Estimators, and Informative Sizes in Cluster Randomized Trials. Invited oral presentation at the University of Pennsylvania CCEB DBEI Epidemiology Seminar, Philadelphia, PA.

2. **Lee, K. M.** (2025, January). Mixed up Mixed Effects: Estimands, Estimators, and Informative Sizes in Cluster Randomized Trials. Invited oral presentation at the Duke University Department of Biostatistics and Bioinformatics, Durham, NC.

3. **Lee, K. M.** (2024, November). Parallel cluster randomized trials with a baseline period: Estimands, Estimators, and Informative Cluster Sizes. Submitted oral presentation at the 10th Annual Meeting on Current Developments in Cluster Randomised Trials & Stepped Wedge Designs, Birmingham, England.

4. **Lee, K. M.** (2024, June). Estimation and reduction of bias in self-controlled case series with non-rare event dependent outcomes and heterogeneous populations. Invited oral presentation at the Health Sciences Authority, Singapore.

5. **Lee, K. M.** (2024, June). Modelling exposure time-varying treatment effects in cluster randomized trials. Invited oral presentation at the University of Birmingham, Birmingham, England.

6. **Lee, K. M.** (2024, March). Cluster randomized trials for modelling time-varying treatment effects. Invited oral presentation at the Duke Global Health Institute, Durham, NC.

7. **Lee, K. M.** (2023, September). Boxing with George Box. Invited oral presentation at the Royal Statistical Society (RSS) International Conference 2023, Harrogate, England

8. **Lee, K. M.**, Cheung Y. B. (2023, September). Cutting the Gordian Knot: Partitioned Analysis of Self Controlled Case Series of non-rare recurrent events. Contributed oral presentation at the Royal Statistical Society (RSS) International Conference 2023, Harrogate, England.

9. **Lee, K. M.**, Poh, Z. W., Yeung K. F. (2022, February). Monitoring of treatment response in metastatic colorectal cancer patients with cfDNA. Contributed oral presentation at the Duke-NUS PhD Student Research Symposium 2022, Duke-NUS, Singapore.

## POSTERS

1. **Lee, K. M.**, Cheung Y. B. (2023, October). Cluster Randomized Trial designs for modelling time-varying intervention effects. Poster presentation at the 15th Duke-NUS Early Career Scientists Association (DUNES) Scientific Symposium, Singapore.

2. **Lee, K. M.**, Cheung Y. B. (2023, October). Cluster Randomized Trial designs for modelling time-varying intervention effects. Poster presentation at the Duke-NUS PhD Student Research Symposium 2023, Singapore.

3. **Lee, K. M.**, Cheung Y. B. (2023, September). Robust Monitoring of Vaccine and Drug Safety using the Self-Controlled Case Series. Poster presentation at the SingHealth Duke-NUS Scientific Conference 2023, Singapore.

## HONORS & AWARDS

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| FDA-OCE-ASA Oncology Educational Fellowship | Oct 2024 |
| Duke University School of Medicine 2024 Pre-Doctoral Research Exchange Award | Mar 2024 |
| (Finalist) Royal Statistical Society 2023 Statistical Excellence Award for Early-Career Writing | Jun 2023 |
| (1st Place) Duke-NUS 2022 PhD Student Research Symposium | Feb 2022 |
| Khoo Pre-Doctoral Fellowship | Aug 2020 |

## TEACHING EXPERIENCE

**Core Instructor** Nov 2024 – Present

University of Pennsylvania, Pragmatic Clinical Research Institute, Philadelphia, Pennsylvania

- Instructing clinicians about common statistical considerations for the analysis of cluster randomized trials

**Guest Lecturer (EPID 7020)** March 2025
University of Pennsylvania, M

- Guest lecturer for "EPID 7020: Advanced Topics in Epidemiologic Research", discussing statistical analysis considerations for clustered study designs

## REFEREEING

*Statistics in Medicine* (1)
*International Journal of Epidemiology* (1)
*Clinical Trials* (1)
*BMC Medical Research Methodology* (1)

## ADDITIONAL EXPERIENCE

**FDA-OCE-ASA Oncology Educational Fellow** Oct 2024 – May 2025
Food and Drug Administration, Oncology Center of Excellence, American Statistical Association

- Participating in workshops on statistics in oncology drug development, research, and regulatory policy.

**Student** (part-time) Oct 2019 – May 2020
NYU School of Professional Studies, New York, New York

- Completed Advanced Python, Data Visualization for Business, The Art of Data Visualization.

**Volunteer Statistician** Aug 2019 – Feb 2020
Statistics Without Borders
*Mentor: Dr. Janet Raboud*

- Used R to characterize, clean, and visualize data collected from the organization membership survey.

**Biostatistics Trainee** Jun 2018 – Jul 2018
Emory University, Summer Institute for Training in Biostatistics (SIBS), Atlanta, Georgia
*Mentors: Dr. Reneé Moore, Dr. Lance Waller, Dr. Ixavier Higgins, Dr. Raphiel Murden, Dr. Andrea Lane*

- Analyzed the efficacy of sleep apnea treatments and identified biomarkers of chronic kidney disease.

**Undergraduate Thesis Researcher** Sep 2016 – May 2018
Vassar College, Department of Neuroscience, Poughkeepsie, New York
*Mentors: Dr. Kevin Holloway, Dr. Kelli Duncan*

- Identified the role of steroid hormones in response to traumatic brain injury in the Japanese quail brain.

**Undergraduate Summer Researcher** May 2016 – Aug 2016
Rutgers-RWJMS, Department of Neuroscience and Cell Biology, New Brunswick, New Jersey
*Mentors: Dr. Long-Jun Wu, Dr. Ukpong Eyo*

- Identified the role of the microglia P2Y12 receptor in neuroprotection, seizures and microglia development.

## TECHNICAL SKILLS

R, SAS, Python, LaTeX